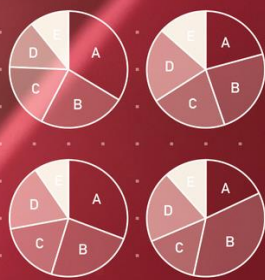


AIU 1,822 (-35)	HJI 20,369 (+580)	WWE 890 (-20)	PLO 6,350 (-200)	EER 10,985 (+580)	QRT 665 (-15)	OPY 6,800 (-115)
MBC 3,605 (+210)	LJH 9,542 (-128)	MJB 2,609 (+35)	PON 7,654 (+169)	NFR 6,522 (+122)	UGH 1,632 (-54)	OMJ 3,652 (+182)
YBV 3,204 (-33)	QMN 5,211 (+156)	MMJ 7,100 (-60)	IIT 7,150 (-150)	KLM 782 (+74)	CCX 1,901 (+101)	EMH 3,280 (-120)
MBB 3,320 (-120)	WFF 712 (+12)	HJM 134 (+5)	QLC 2,022 (-18)	LSD 631 (+40)	SDH 6,287 (-57)	GHS 12,630 (+330)



2023

INTEGRATION VECTORS OF SUSTAINABLE DEVELOPMENT ECONOMIC, SOCIAL AND TECHNOLOGICAL ASPECTS

COLLECTIVE MONOGRAPH



Integration vectors of sustainable development: economic, social and technological aspects

Edited by Aleksander Ostenda
and Oleksandra Mandych

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PREFACE

The directions and priorities issue for ensuring sustainable development is based on the importance of the development of science and practice, the development of business processes, and the development of social and economic systems in general. Conducting research requires scientists to constantly search for knowledge and obtain new modern results in order to popularize scientific ideas and implement their practical use for the development. Delineation of the thematic areas sustainable development allowed the team authors of the collective monograph to pay attention to issues that are important for certain spheres and industries, as well as to formulate proposals regarding priority areas.

The presented collective monograph covers a wide range of scientific results in terms of the formation and functioning financial and economic, technological and environmental mechanisms for ensuring sustainable development.

The financial and economic mechanisms for ensuring sustainable development are presented through the prism modern business trends as the basis of the company's philosophy, the development of integrated models management, accounting and innovative, research reproductive environment of the labor potential sustainable development. Particular attention was paid to the issues of social and ethical problems digital transformation, the formation political brands in the conditions of the digital economy and the influence of the digital economy on world politics, the peculiarities of the activity trade organization in the conditions modern economy, research on entrepreneurial activity as the basis of the formation country's economic growth. The papers are presented in the areas of spatial development innovative territorial systems, development land management system of Ukraine in the context of a sustainable future, sustainable development as a conceptual basis for the restoration territories of the post-war economy, and the development territorial communities. Scientific searches for modern ideas to attract the transfer technologies, trends in the development technology transfer in the international environment, as well as opportunities for the development transfer innovative technologies for the post-war reconstruction of Ukraine are considered. The collective monograph contains research about harmonization investment and operating costs, outlined directions for the development financial innovations and directions for attracting international assistance.

Technological and ecological directions sustainable development formed the second section of the collective monograph, industry specifics were described, scientific results from various fields were presented, and issues environmental security were raised.

An important component sustainable development is social entrepreneurship and economic education, which is why separate divisions are dedicated to increasing youth employment during the reconstruction of Ukraine. The social dimensions sustainable development of the company's personnel are outlined through the prism of legislative, managerial and accounting aspects.

CHAPTER 1

FINANCIAL AND ECONOMIC MECHANISMS FOR ENSURING SUSTAINABLE DEVELOPMENT

INTEGRATED MODEL OF MANAGEMENT ACCOUNTING OF INNOVATIVE COSTS

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Abstract. It was determined that innovative activity is a key element of ensuring the successful and sustainable functioning of the enterprise. The definition of management accounting of innovation activity is given. Innovation costs are defined as the main object of management accounting of innovation activity. A logical model of management accounting of innovative costs based on the integration of modern concepts and methods (elements of the method) of management accounting of costs has been developed: Target Costing, Life Cycle Costing, Kaizen Costing, Activity Based Costing, etc., allowing to optimize the amount of direct and indirect innovation costs at all stages innovative activity taking into account external and internal factors; the origin and essence of these concepts are considered, their advantages and disadvantages are highlighted. The essence and features of target costing as a method of targeted strategic cost management to increase the competitiveness of the company's products on the market was considered, and the sequence of stages of its practical implementation during the implementation of innovative activities was developed.

Keywords: innovative activity, management accounting of innovation activity, costs, cost accounting methods, Life Cycle Costing, target costing.

The state of innovative activity is the most important indicator of the development of our society and its economy, and in the conditions of globalization, the innovative potential of the country becomes a decisive factor that determines its competitiveness. Innovative activity is a key to the competitiveness of both individual enterprises and the national economy as a whole¹

Modern European integration aspirations of Ukraine must be ensured by real socio-economic transformations, in which the innovation factor is irreplaceable. The beginning of the effective process of forming a single universal approach to the organization of the innovative economy for any country is the study of the existing experience in this field of the countries of the world, for Ukraine it is the experience of the EU countries².

¹ Акімова Н.С., Янчева Л.М. (2021) Організація обліку інноваційної діяльності: вітчизняні та міжнародні аспекти, с.18.

² Михайлишин Л. І. (2016) Зарубіжний досвід активізації інноваційної, с.99.

Recently, a new concept of “innovative accounting” has been increasingly encountered in the scientific literature. The authors determine the need for the formation and development of innovative accounting in the accounting system by the formation of the information needs of enterprise managers for innovation because in a competitive environment they are charged with analyzing the micro- and macroeconomic environment, studying technical, organizational, marketing innovations that exist on the market. At the same time, the authors do not give a definition of innovative accounting, but only note that at the stage of formation it can be considered as a specialized segment of management accounting and analysis in the accounting system of an enterprise.

In our opinion, the concept of innovative accounting can be interpreted in two senses:

1) the use of new, modern concepts and accounting methods (for example, elements of management accounting, international experience) to increase its effectiveness in terms of meeting the information needs of users;

2) a system for the formation and use of information about the objects of innovation activity.

The ambiguous understanding of this term can lead to confusion when using it. In this regard, leaning more towards the second interpretation of the concept of "innovation accounting", we consider it more appropriate to use the concept of "accounting for innovation activity".

Management accounting of innovation activity is, in our opinion, a system for the formation and use of information on innovation activity using accounts and (or) management reports for the purpose of planning, monitoring, and analyzing indicators of innovation activity in order to make informed operational and strategic management decisions at different levels of management organization, which ensures the achievement of its tactical and strategic development goals. The focus on achieving the goals of the company determines the target nature of the modern system of management accounting for innovation.

Important in the study of the system of management accounting of innovation, in our opinion, is the definition of its objects.

In our opinion, the objects of management accounting of innovation activity are directly dependent on the information needs of management for making effective management decisions. In this regard, as the main objects of management accounting of innovative activity, we single out the costs and results of this activity. Other objects of accounting, in our opinion, should be considered from the standpoint of their impact on the costs and results of innovative activities. The most important object of management accounting for innovation activity is costs since their effective management directly affects the result of innovation activity. At the same time, under the costs of innovation activity, we understand the costs in the form of expended assets or resources, valued in terms of value, incurred to achieve the goals of innovation activity.

Today, in the era of rapid development of information technologies, it is impossible to present an effective management system of an innovatively active

enterprise without the use of modern accounting tools for managing the costs of its innovative activities, which directly include management accounting and budgeting.

Today, there is a wide variety of cost management methods that can be used and adjusted by enterprises in relation to the specifics of their economic activity. A properly developed cost management system allows you to reduce production costs and predict the emergence of threats and risks to the organization, as well as it allows you to get more profit without changing the cost of sales. This is extremely important in the conditions of competitive struggle and in the implementation of venture and innovation projects in the conditions of the current market of innovative breakthroughs³.

In countries with a more developed market economy, entrepreneurs focus their attention on methods that, in addition to accounting and costing, include the aspect of management and provide more comprehensive information for analysis and improvement of cost management⁴.

Cost accounting methods are used to calculate the cost of production. The method of cost accounting is a set of ways of displaying, grouping and systematizing data about costs, which ensure the achievement of a defined goal, the solution of a specific task.

In foreign practice, world-known concepts of "direct costing", "target costing", "life cycle costing", "kaizen costing", "activity-based costing" and others are used, as well as methods of target cost accounting. However, this does not exclude the possibility of using operational management tools in the process of implementing innovative activities.

In the system of cost management for innovation, in our opinion, the most effective mechanism will be the use of an integrated model of management accounting for innovation costs based on ideas and individual elements of these concepts, which is shown in Figure 1.

LCC analysis (Life Cycle Costing), or the calculation of costs by stages of the product life cycle, is used in strategic management because it covers a period of several years. It is the only cost management method that considers the impact of inflation through cash flow discounting in decision making⁵.

It is advisable to use LCC analysis for enterprises that produce a range of non-standard products and are in a market niche that is unstable in terms of demand parameters.

The emergence of the concept of the product life cycle is associated with the name of Theodore Lewitt and his article, published in 1965 in the Harvard Business Review entitled "Exploit the Product Life Cycle".

³ Назаренко Т.П., Франчук І.Б., Вітер С.А. (2021). Методичні аспекти обліку та управління витратами на виробництво продукції, с.84.

⁴ Загарій В. К., Мельнік К. В. (2018). Особливості обліку та управління витратами на підприємствах: вітчизняний та зарубіжний досвід, с.159.

⁵ Лепетан І. Методи обліку витрат: вітчизняний та зарубіжний досвід.

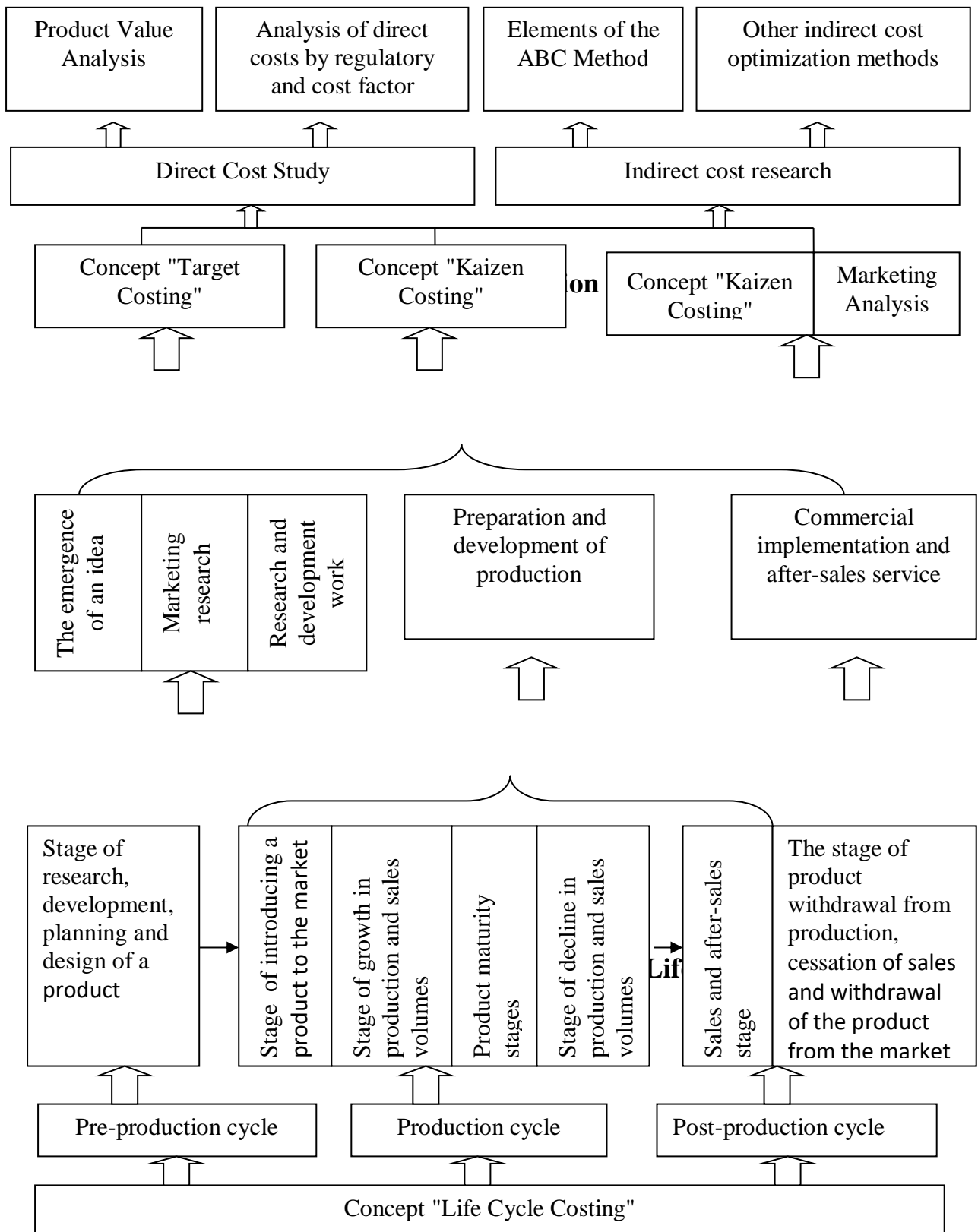


Fig. 1. The proposed integrated model of management accounting for innovation costs

The essence of this concept is that each new product introduced to the market at a certain moment goes through a certain life cycle, during which there is a change in the ratio between the volume of its sales and the amount of profit received. The attempt to use the product life cycle concept as a management accounting tool has given rise to a new concept of product life cycle costing (“product LCC”).

The main idea of the concept of management cost accounting by stages of the product life cycle is that the calculation of the cost of a product is carried out by including all the costs associated with it throughout its life, from the moment of the first research and ending with the withdrawal of the product from the market. In other words, not only the costs of the production stage of the product life cycle, but also the pre-production and post-production costs associated with this product must be correlated with an individual product.

Thus, the possibility of accounting for innovation costs, singling them out as a separate object arises only within the framework of this concept, while traditional accounting systems do not make it possible to link these costs with specific products, but unreasonably treat them as overhead costs. This is the reason why our proposed innovation cost management model is based on the concept of managerial cost accounting by product life cycle stages (LCC).

Figure 1 shows that the innovative activity of the organization associated with the release of new products covers, to one degree or another, all product life cycles. We can safely say that the costs of the pre-production cycle are completely innovative and are distributed between such stages of innovative activity as the emergence of an idea, marketing research and research and development work. Statements regarding the qualification of individual production stages as stages of innovative activity are rather controversial. In our opinion, the processes of preparing and mastering the production of new products, which are an integral part of the production cycle (the stage of introducing the product to the market and, in part, the growth of sales volumes), can reasonably be considered as separate stages of innovation activity. As a result, there is a stage of commercial implementation and after-sales service of products released in the process of development, that is, in the first years of the implementation of an innovative project, which belongs to the after-sales cycle.

Although full life cycle costs can be associated with a particular product, they are different in their economic nature. So, the costs of the pre-production cycle are the costs of conducting various kinds of research, experimental, work aimed at developing a new product. At this stage, the ideas of the “target costing” concept are being increasingly used. The concept of "kaizen costing" is aimed at optimizing costs at the production stage and is complemented by marketing analysis methods at the post-production stage of the product life cycle. Identification of individual stages of innovation activity at each product life cycle requires a comprehensive application of these concepts in the innovation cost management system.

The concept of "target costing" (calculation of target costs, the Japanese name is genka kikaku) was developed in the 1960s in Japan. Its first practical application in 1965 is associated with the Toyota Corporation.

Japanese managers based the concept of "target costing" on a revolutionary and simple plan. The target cost will be determined by the difference between the expected market price and the company's expected profit. At the same time, managers and production personnel are working on matching product costs with the target cost price⁶.

The term "target costing" was coined by Toshiro Hiromoto in his 1988 Harvard Business Review article ("Another Hidden-Japanese Management Accounting"), which has since become one of the most cited articles on the achievements of Japanese management accounting. It should be noted that earlier the term "target costing" was not used in English-language business and professional publications.

Target costing is a cost accounting system based on a target price. This method provides for the calculation of the target cost of production based on the sales price previously established based on marketing research, excluding the profit that the company plans to receive. Having received such a value, the developers of new products work on the design of its production, having a specific task on its cost price. And in the process of production of such products, accounting should provide managers with information on compliance with the target cost level⁷.

There are various definitions of target costing in the literature. We define the target costing method as a set of techniques and methods for generating and summarizing information about target costs (at the design stage), the calculation of which is based on the functional features of the product that create its value from the consumer's point of view, a set of cost reduction (optimization) techniques used with the purpose of creating a system of strategic cost management, as well as a system for accounting and analyzing deviations of actual costs from target ones in the context of product components (at the production stage). This definition, in our opinion, quite fully reveals the essence of target costing, which is being transformed from the concept of strategic cost management into a specific method of strategic management accounting, based on its own principles and having its own tools. The essence of the method is to determine the target cost of a new (improved) product even before the start of its production, based on forecast data on sales volumes, the price of the product and the level of profit required by the owners.

The classical pricing model based on the "costs plus" principle considers the price as the sum of a "technologically" justified cost and markup (formula (1)):

$$\text{Price} = \text{Cost} + \text{Profit.} \quad (1)$$

This approach works well in companies that produce unique, unparalleled products, or products for special orders.

In the target pricing model, the resulting factor is the cost, the upper limit (maximum) of which is set as its possible market price minus the desired profitability (profit) of the product (formula (2)):

⁶ Tanaka T. (1993). «Target costing at Toyota», p.4-11.

⁷ Царук В. (2017). Вітчизняні та зарубіжні методи обліку витрат: порівняльна характеристика, с.53.

$$\text{Target cost} = \text{Target price} - \text{Target profit} \quad (2)$$

To determine the target cost of the product, the amount of profit that the company wants to receive is subtracted from the expected market price determined by the results of marketing research based on the desired sales volumes. In this case, the market price within the framework of this concept is called the target price (target price), the desired difference between the cost and the selling price is called the target profit (target profit), and the cost at which the product should be manufactured is called the target cost (target cost).

It is important to note that the concept of "target cost" differs from the concept of "planned (normative) cost" used in domestic practice. The difference is that the planned cost is calculated on the basis of the norms and standards that exist at a particular enterprise. The standards, in turn, are focused on existing production technologies and traditional characteristics of products. In accordance with this, the planned cost will be nothing more than the average (in some cases the best) values of the costs of previous periods and are completely tied to the internal abilities of engineering and production. The target cost is the value of the cost, the maximum allowable (acceptable) market conditions.

Target costing is an effective and necessary tool in the innovation cost management system, which has more advantages that can be used for enterprise purposes than disadvantages that can be avoided in various ways with effective management. However, the use of the target costing method in the innovation management system can only become an effective tool when it is used in combination with methods such as kaizen costing, modern methods of distributing indirect (overhead) costs (for example, ABC), functional cost analysis, etc.

Thus, having studied the main ideas, essential characteristics, and principles of the "target costing" concept, evaluating its advantages and disadvantages, we have developed a sequence of stages of its practical implementation while implementing innovative activities to create a new product, which is shown in Figure 2.

At the first stage of the "target costing" cost accounting system, an analysis of the market for new products is carried out to determine the expected (target) sales volume, which will become the basis for planning the scale of production, and to establish the target sales price. An important role is assigned to the employees of the marketing department, on which, ultimately, the result of all the work done at subsequent stages depends.

The next two stages relate to the establishment of the level of profit and profitability necessary for top management and owners and the calculation of the target cost of a new product. At the fourth and fifth stages, based on the current and (or) developed norms and standards, the standard cost of the product is calculated, after which, by comparing it with the target cost, the amount of costs to be reduced (sequestered) is determined.

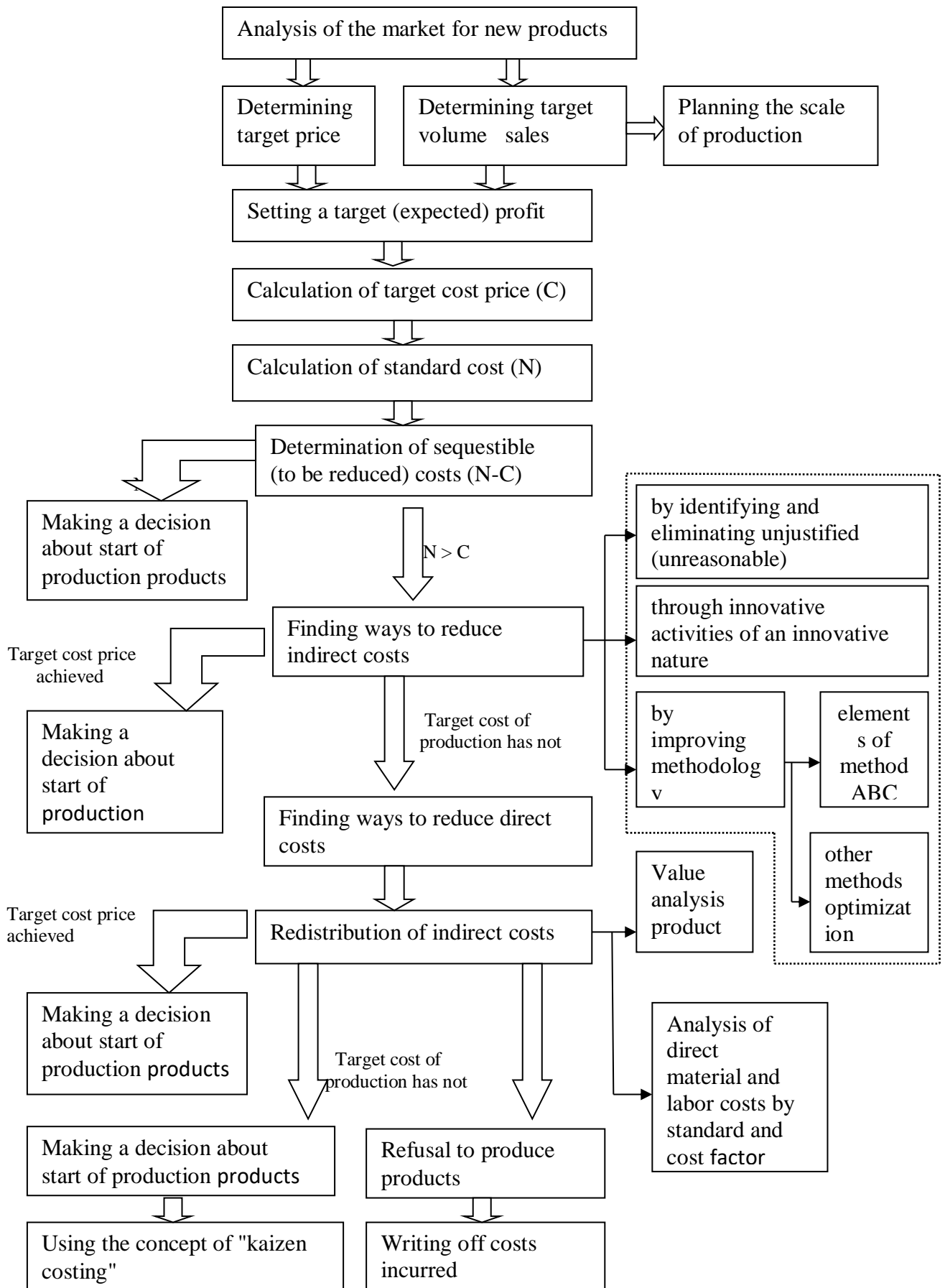


Fig. 2. Block diagram of the sequence of stages of the accounting system target-costing

Source: author's development

If at the fifth stage it turns out that the standard cost has been established at the target level or turned out to be less than it, which is quite rare in practice, then a decision is made to start production of a new product. The most common option is the situation when the standard cost exceeds the target, which is a prerequisite for the occurrence of sequesterable costs.

Considering cost reduction options within the framework of the target costing method, many specialists begin to look for reserves to reduce direct, as a rule, material costs by studying the functionality and properties of the product. In our opinion, first of all, it is necessary to investigate indirect costs, since, firstly, it is often in these items that reserves for reducing costs are hidden, and secondly, the traditional methods of distribution of indirect costs used at the enterprise do not allow one to reliably determine their amount attributable to individual types of products.

In market conditions of management, it became obvious that the most manageable from the standpoint of finding reserves of savings, profit growth and profitability at the enterprise that determined the production and marketing program, are gradually becoming not the main, but overhead costs. Overhead costs in most industries are constantly increasing both in absolute terms and relative to the total cost of an economic entity. In this regard, the sixth stage in our flowchart is the study of indirect costs in order to find ways to reduce them.

So, reducing indirect costs for new products can be due to:

- study of the total amount of indirect costs in order to eliminate unjustified (unreasonable) costs;
- search for opportunities to reduce indirect costs through innovative measures;
- study of the methodology used at the enterprise for the distribution of indirect costs in order to more accurately calculate the cost of new products;
- complex use of the above options.

At the next stage of the analysis, it is necessary to assess the possibilities for implementing innovative measures that will reduce indirect costs. These include, for example, the use of energy-saving technologies, automated control systems, non-waste production, improvement of machinery and equipment, the use of new technologies, etc. These activities may require certain investments, so their effectiveness needs to be assessed. At the same time, if successful, they are a real source of reducing indirect costs.

The study of the method of distribution of indirect costs is the final stage of their comprehensive study.

A lot of works of domestic and foreign authors are devoted to the study of the cost management system in the context of activities, including the ABC functional cost accounting method and the ABB activity-based cost budgeting method. At present, there is no doubt that it is the use of the ABC (Activity Based Costing)

method or the functional cost accounting method that makes it possible to calculate the cost of production and manage costs most accurately.

The main principle of the method is that products use activities rather than resources. These used resources, as well as their acquisition and use, are called costs. First, they are allocated to activities, and then, based on demand, they are redistributed to products. And the indicators used in this case are cost carriers, which include resource carriers and activity carriers, that is, the organization is examined here as a set of work operations (processes) that determine its specificity⁸.

The ABC method, or cost accounting by type of activity, assumes that the enterprise's activity is considered as a set of processes or work operations, and the amount of costs for the corresponding period or to produce a certain type of product is determined by adding all the incurred costs for each process and business operation.

The ABC method is currently considered one of the most promising methods of cost management. The disadvantages of this method are its complexity and time-consuming nature. The ABC method can be used most effectively at those enterprises where the specific weight of indirect overhead costs is high.

In our opinion, the integration of the ABC method into the target costing system will make it possible to manage the amount of sequestered costs more effectively through more accurate calculation of the cost of production, which is the main goal of the ABC method.

The essence of the ABC method is the grouping of overheads by activities, which are absorbed by specific products through the selected system of cost carriers. It should be noted that many different bases for the distribution of overhead costs, which were actively used in the theory and practice of traditional domestic accounting systems, can be useful as cost carriers.

The ABC method is not universal due to differences in the types of cost carriers at different enterprises, because of which its implementation and application at a particular enterprise requires quite laborious work to study the characteristics of the organization, its structure, production process and other parameters. In addition, it is not always necessary to use this method in its traditional sense with respect to the entire enterprise, which allows us to talk about the possibility of applying the elements of the ABC system in practice in combination with other methods of overhead distribution.

Thus, based on the results of the analysis of indirect costs and the search for ways to reduce them, it is necessary to determine whether the target cost level has been reached or whether further research is required. If the amount of the identified reserve for reducing indirect costs is greater than the amount of sequestered costs,

⁸ Зав'ялова Е.С. (2014). Облік витрат за центрами відповідальності, с.174-177.

then a decision is made to start the production of new products, otherwise direct costs, which consist of material and labor costs, are studied.

There are various options for reducing direct costs. We have identified 2 main approaches to this issue: analysis of direct material and labor costs by the normative and cost factor and analysis of the value of the product.

Reducing direct costs due to the regulatory factor involves a detailed study of the norms and standards used in calculating the standard cost of a new product, assessing their validity, compliance with advanced technologies used in the industry, as well as the possibility of improving production technology to reduce the consumption of material resources and the labor intensity of performed works.

The cost factor is preferable to apply in relation to direct material costs, since it involves the reduction of direct costs due to the cost of resources. At the same time, a decrease in wages for workers can lead not so much to cost savings as to negative consequences due to a decrease in product quality, an increase in staff turnover, and failures in the production process, because of which the enterprise may suffer losses many times greater than the savings received.

At the end of this stage, it is necessary to summarize the results of all stages aimed at reducing standard costs and identify the total amount of the identified reserve. The undoubted success of the work done is the achievement of the target cost of production, which indicates the possibility of introducing a new product into production. Otherwise, the value of the adjusted standard cost and target is subject to analysis. If the deviation is recognized as acceptable, then the product also begins to be produced, in the process of development, work is actively continuing to find ways to reduce its cost, which forms the basis of the "kaizen-costing" concept. At the same time, methods like those discussed above are used, and our own experience in the production of new products is also considered.

Thus, after considering the above methods of cost management at enterprises, we can state that all systems differ in implementation costs, reliability, focus on a certain type of costs, etc., and each of them has several advantages and disadvantages. Enterprises that use foreign methods of cost management direct their activities to find ways to reduce costs, introduce innovations in production, ensure greater accuracy of accounting and costing⁹.

The considered calculation methods are extremely progressive. However, the problem is that in the conditions of an unstable economic environment, most of the information about production costs, which is reflected in the accounting of domestic enterprises, is not used for their effective management, because there are no

⁹ Загарій В. К., Мельнік К. В. (2018). Особливості обліку та управління витратами на підприємствах: вітчизняний та зарубіжний досвід, с.157-163.

incentives to reduce the cost of production. That is why modern methods of cost accounting and product costing are not implemented in domestic practice¹⁰.

A study of the practical application of cost accounting methods shows that in practice it is extremely rare that each of the named methods and approaches is implemented in its pure form. The various goals pursued by enterprises and the peculiarities of their economic activity led to the emergence of many combinations of basic cost accounting methods within the framework of one classification form¹¹.

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¹⁰ Корольова О.І. (2015). Облік витрат виробництва: проблеми та перспективи розвитку.

¹¹ Царук В. (2017). Вітчизняні та зарубіжні методи обліку витрат: порівняльна характеристика, с.53.

CURRENT BUSINESS TRENDS AS THE BASIS OF THE COMPANY'S PHILOSOPHY

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Abstract. The article analyzes modern business trends and strategies. Considered issues of theoretical and practical meaningful filling of individual business directions in the field of strategic management. The tools and components of the presented strategies are elaborated, features and differences are outlined. The results of research on the possibilities of applied use of these strategies for various market situations and models are presented.

Keywords: business, business environment, market behavior, strategic management, strategies, company, efficiency.

Domestic business is specific in the field of marketing coverage of the activities of companies in various industries, which can be explained by the insufficient level of development of market relations, the imperfection of legislation in the spheres of management and economic reforms, the instability of the political environment, etc. Such circumstances require an analysis of the current practice of applying marketing concepts in domestic companies in accordance with the business orientations that are used and the determination of modern directions of relations between producers and consumers in the Ukrainian market.

Marketing as an instrument of market activity and business philosophy is the result of the theory and practice of different schools. The content and terminology of marketing is constantly updated under the influence of the development of the market environment and the relationships of its subjects. Concepts of marketing as an external and internal perspective of market activity develop in accordance with the

business orientations of the business environment. Numerous works of foreign and domestic scientists are devoted to the problem of development of marketing concepts. The main attention in such studies is paid to the essence and characteristics of traditional marketing concepts, in recent years there have been publications in which the development of marketing concepts is connected with the business orientations of market entities¹².

The evolution of marketing concepts as a philosophy and a toolkit of entrepreneurial activity in Ukraine took place in accordance with the development of business orientations of market entities. In the 90s of the last century, the involvement of marketing tools in the domestic business became more active in Ukraine, which was caused by the accelerated pace of development of the market economy, the democratization of the management system, the processes of demonopolization and the birth of the concept, the expansion of medium and small entrepreneurship, etc.

Modern marketing, as a special approach to company management, has become widespread in all countries with a developed market economy. Therefore, it is important to assess the real prerequisites for the emergence of marketing, as well as to summarize the trends of its development in the current economy of Ukraine. A detailed study of the patterns of development of business processes makes it possible to objectively assess the causes of the consequences of management and predict the prospects for the further development of marketing in business.

The concept of marketing is considered as a system of basic ideas, a general idea, an ideology of the organization of the company's activities, an integrated target management philosophy. Under this approach, the concept assumes a scientifically based interweaving of its components, such as idea, strategy, tools and purpose. So, in this context, the concept of marketing is a scientifically based idea of the organization of the company's activities in general or marketing activities in particular, which is based on a specific guiding idea, an effective strategy, the necessary operational tools for the implementation of entrepreneurship in order to achieve the results determined by the company's strategic plan.

The development of the marketing concept should be based on the principles of strategic analysis of the company's planned or current activities and should include the following stages¹³:

- carrying out a strategic analysis of the internal and external environment;

¹² Babko N., Mandych O., Mykytas A. (2021). Creating a brand as the initial stage of branding; Babko N., Mandych O., Mykytas A. (2021). Current trends in branding development; Babko N.M. et al. (2020). Povedinka spozhyvacha: navch. Posib; Kviatko T.M. et al. (2020), Marketynhovi doslidzhennia: navch. posib.

¹³ Babko N.M. (2022). Marketynh yak protses upravlinnia kompaniieu v umovakh konkurentsii. Rozwój systemu kształcenia w zakresie nauk rolniczych – od teorii do praktyki; Babko N., Mandych O., Duiunova T. (2022). Features of digital globalization in conditions of modern challenges.

- determination of the company's goals and the goals of marketing activities;
- justification of the marketing strategy;
- selection of tools for marketing activity in order to achieve the planned results.

Depending on the level of development of production and demand for the offered goods, the concept of marketing has evolved. Changes in the concept of marketing were mainly determined and are determined by the state and interaction in the market space of such subjects as the producer, consumer and the state.

The concept of marketing is a system of views that determine the orientation of entrepreneurial activity at certain stages of its development.

There are five alternative concepts on the basis of which a firm can carry out its marketing activities¹⁴:

1. The concept of improving production is aimed at consumers who prefer cheap and affordable goods. With the help of high production efficiency, the company has moderate costs and can offer consumers goods at low prices. This concept is appropriate in the following cases:

- when there is a shortage of goods on the market;
- when demand can be increased by reducing the price;
- when there is an opportunity to reduce costs by increasing the volume of product production.

2. The concept of product improvement – provides for constant and comprehensive improvement of product quality and is designed for consumers who are ready to pay a high price for high quality products.

3. The concept of intensification of sales efforts – assumes that consumers will not buy the company's goods in sufficient quantities if it does not make additional efforts in the field of sales promotion.

4. The concept of marketing – the key to achieving the company's goal is to determine the needs of target markets and ensure their desired satisfaction with more effective and productive methods than competitors. This is a modern concept of entrepreneurial activity, which is more perfect compared to the previous three.

If the main object of attention in the first of the concepts is the company's product, which is actively imposed on the consumer, then in the marketing concept the main object of attention is the needs of the target group of consumers, and the

¹⁴ Babko N.M. (2022). Marketynh yak protses upravlinnia kompaniieiu v umovakh konkurentsii. Rozwój systemu kształcenia w zakresie nauk rolniczych – od teorii do praktyki; Babko N., Mandych O., Duiunova T. (2022). Features of digital globalization in conditions of modern challenges; Hryenko A.O., Babko N.M. (2020). Atrybuty brendu yak skladova protsesu brendynhu. Suchasnyi marketynh: stratehichne upravlinnia ta innovatsiinyi rozvytok, p. 65-68; Mandych O., Babko N. (2022). Characteristic features of the digital transformation of the Ukrainian economy; Mandych O.V. et al (2020). Marketynhovyi menedzhment: navch. posib.

company earns profit thanks to the achievement and maintenance of consumer satisfaction.

In recent years, the concept of social and ethical marketing is gaining more and more popularity.

5. The concept of socio-ethical marketing involves determining the needs of consumers and satisfying them more effectively than competitors, taking into account the interests of all members of society. This concept arose under the influence of many external factors, including the deterioration of the quality of the environment, limited natural resources, rapid population growth, etc.

The concept requires balancing all three factors:

- the company's profit;
- consumer needs of the target group;
- the interests of society.

The concept of socio-ethical marketing assumes that the means of achieving the firm's goal is to identify the unsatisfied needs of target markets and ensure their desired satisfaction more productively than competitors, while simultaneously preserving or strengthening the welfare of the consumer and society as a whole.

By focusing on the concept of socio-ethical marketing, some foreign companies have already achieved a significant increase in sales and profitability, as they have won the trust of consumers.

In response to the existence of such social currents as consumerism and environmentalism, educated marketing arose. According to the philosophy of educated marketing, the company's marketing activity should be aimed at fulfilling the tasks of the entire marketing system in the long term.

At the same time, the main provisions of educated marketing are¹⁵:

- consumer-oriented marketing (according to which the firm must take into account the interests and wishes of consumers);
- innovative marketing (constant improvement of products and work methods);
- value marketing (constant increase in the value of products for the consumer, i.e. along with the direct satisfaction of a specific need, it is necessary to provide the consumer with additional profits);
- marketing with an understanding of its mission in society (the company should build its marketing activity not within narrow production boundaries, but in a broad social understanding);

¹⁵ Mandych O., Mykytas A., Babko N. (2021). Communication as the basis of business and marketing activities; Fiiier O. et al. (2019). Risk managment in the sphere of state economic security provision using the example of professionsl liability insurance, p.51-60; Pakhucha E. et al. (2021). Strategic Analysis of Export Activities of Enterprises to Ensure Sustainable Development. European Journal of Sustainable Development, p.251-270; Romaniuk I.A. et al. (2020). Reklamnyi menedzhment: navch. Posib; Sievidova I.O. et al. (2020). Konkurentospromozhnist pidpriemstva: navch. posib.

- social and ethical marketing. Ukrainian companies are prevented from comprehensively implementing the concept of marketing in their activities by certain features of the domestic market, which determine the specific features of marketing:
 - low level of solvency and awareness of the domestic consumer;
 - low level of domestic production competition, which makes it unnecessary to use the concept of marketing;
 - strong pressure from distribution structures, which leads to unjustified price increases;
 - formation of a layer of professional marketers is in the nascent stage;
 - the mentality of the domestic consumer gives rise to distrust in advertising promotions, sales promotion, etc;
 - unsettled legislative framework on issues of consumer rights protection, advertising, unfair competition, registration of patents and inventions, registration and protection of rights to signs for goods and services.

Today, various forms of wholesale and retail trade are developing in practically all regions of Ukraine thanks to the activation of producers' activities to stimulate intermediaries and the formation of indirect sales channels.

The end of the 20th and the beginning of the 21st centuries were marked by the development of the business orientation of "attraction of the product by the market", according to which the consumer at a specific moment in time and in a specific place wants to buy a product of a certain company or brand. The main goal of marketing activities for this business orientation is the stable growth of sales and profitability in the long term through the management of consumer behavior. The latter is implemented according to such stages as the formation of the consumer, the image and perception of the company by the market, the conquest of a certain share of the market. That is, such a business orientation creates market intangible capital of the company, which contributes to the implementation of repeated and constant sales. In this business orientation, marketing is considered as a type of investment activity and has an active importance in making market decisions¹⁶.

The concept of traditional marketing (customer orientation) corresponds to the Market in business orientation, which involves conducting a systematic study of consumer needs and expectations, defining target segments and focusing the company's market activities on them. Much attention is paid to the formation of consumer trust, satisfaction and preservation of their loyalty to the brand.

¹⁶ Babko N.M. (2022). Marketynh yak protses upravlinnia kompaniieiu v umovakh konkurentsii. Rozwój systemu kształcenia w zakresie nauk rolniczych – od teorii do praktyki; Babko N., Mandych O., Duiunova T. (2022). Features of digital globalization in conditions of modern challenges. Mechanisms for ensuring innovative development of entrepreneurship: monograph; Babko N., Mandych O., Mykytas A. (2021). Creating a brand as the initial stage of branding; Babko N., Mandych O., Mykytas A. (2021). Current trends in branding development; Babko N.M. et al. (2020). Povedinka spozhyvacha: navch. posib; Kviatko T.M. et al. (2020). Marketynhovi doslidzhennia: navch. posib; Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovykh komunikatsii v informatsiinykh merezhakh, p.297-303.

The concept of "customer orientation" refers not only to the behavior of employees who come into direct contact with the buyer. Often, this concept means directing all the company's activities to meet the expectations of consumers. Special management programs, a large number of which have been developed in recent years, are working to achieve the result, namely: "thin management", "concentration on clients", "care for regular clients", etc.

The "thin management" program is especially well-known, the purpose of which is flexible orientation to the consumer with minimal investment of resources and high quality of goods and services. At the heart of the program is an attempt to avoid any excessive use of resources. To do this, certain levels of management are eliminated in order to reduce the hierarchy and bureaucratic structure while giving employees freedom in decision-making. Then employees working in direct contact with buyers will be able to respond to their needs more quickly.

Along with such a broad reformation of the company, special programs for the organization of trade with consumer orientation have been developed: for example, "concentration on customers" or "care for regular customers".

Such programs influence the structure of the company so that it focuses on the wishes and needs of consumers.

Examples of the application of the concept of traditional marketing can mostly be found in developed countries, when it evolved from consumer-oriented marketing programs. The level of development of the market and consumers in Ukraine is low due to macroeconomic, social and political reasons. But development in this direction will go quickly enough, since the basic prerequisites (level of social awareness and education, development of public movements) are favorable. Already today in Ukraine there are examples of implementation of such programs, especially in commercial business.

Over the last decade, the business orientation of "attracting investments from the external business environment" has received active development, that is, the organization of the company's activities with the formation of investment attractiveness due to market factors of increasing business capitalization. Successful activity of market entities with such a business orientation is possible under the condition of constant use of special measures and marketing programs aimed at all groups of interests (owners of capital, employees, suppliers, consumers, partners, local authorities)¹⁷.

The implementation of marketing programs increases the amount of capital due to the tangible and especially intangible part and contributes to the attractiveness of the company to ensure the sustainability of its own capital and attract additional capital. Marketing is considered as an investment activity that realizes the strategic goals of the company's market development. The importance of marketing is

¹⁷ Babko N., Mandych O., Duiunova T. (2022). Features of digital globalization in conditions of modern challenges; Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovykh komunikatsii v informatsiinykh merezhakh; Romaniuk I.A. et al. (2020). Reklamnyi menedzhment : navch. posib.

intensified both in the direction of the formation of marketing programs aimed at investors, and in reducing the risk of losing the company's market value.

The business orientation of "attracting investments from the external business environment" corresponds to the concept of socially responsible marketing and its development in the concept of relationship marketing and customer retention. The concept of socially responsible marketing is based on the principles of traditional marketing, but taking into account universal public interests. The emergence of the concept of socially responsible marketing was facilitated by increased requirements for the impact of business on ecology, human habitat, limited natural resources and problems of social development.

The implementation of the concept of socially responsible marketing in domestic companies contributes to the formation of modern economic relations in Ukraine, which are based on the central ideas of marketing, namely: respect for various tastes and preferences of people, individual freedom, consumer priorities, etc.

Modern business trends related to the processes of globalization and internationalization of the world economy, the development of outsourcing, reengineering, electronic business and informatization of society, the creation of strategic alliances, etc., require the further development of social marketing in the concept of relations and retention of consumers.

Under the conditions of modern business trends, the basis of the concept in the market environment is the struggle for the attention of consumers. For many products, the most important development factor is the formation of long-term relationships with consumers, suppliers, intermediaries through the implementation of a loyalty program and the use of direct marketing tools. In Ukraine, the concept of relationship marketing is most actively developing in the service sector, in particular trade, the financial sector, education, some branches of the processing industry and various branches of non-commercial activity¹⁸.

However, the implementation of the marketing concept of consumer retention by domestic companies encounters reasons, including the presence of highly specialized marketing divisions, the mass nature of marketing communications, the absence of a loyalty program and address databases of regular customers, little attention to the establishment of cooperation with consumers, the inability to define the goals of loyalty programs and set the limit of the number contacts with consumers, insufficient level of qualification training of managers and marketers of all levels in working with partners and consumers. In order to eliminate the identified causes and ensure the conditions that contribute to the implementation of consumer retention marketing concepts, it is necessary to study the best practices of direct

¹⁸ Babko N., Mandych O., Mykytas A. (2021). Creating a brand as the initial stage of branding; Mandych O., Babko N. (2022). Characteristic features of the digital transformation of the Ukrainian economy; Pakhucha E. et al. (2021). Strategic Analysis of Export Activities of Enterprises to Ensure Sustainable Development, p.251-270; Romaniuk I.A. et al. (2020). Reklamnyi menedzhment: navch. posib.

marketing and adapt it to the specific conditions of the market activity of domestic companies.

Although the principles of marketing business management are successfully implemented both in Ukrainian and foreign companies, global and local challenges and problems of the 19th century made the concept of marketing policy, which was practiced earlier, ineffective. As a result, companies are forced to change their approaches to the use of marketing, and therefore it is necessary to determine the features of the modern concept of marketing and the main characteristics of the latest marketing complex.

The general characteristics of the domestic and global concept of marketing in 2022 had significant differences compared to the beginning of the century, and changes occurred in all components of the marketing complex. In our opinion, there are a number of prerequisites for such changes¹⁹:

- the availability of the Internet, the emergence of smartphones and high-speed mobile Internet, which made it possible for businesses and consumers to be online around the clock;

- the global economic crisis of 2007-2008, which forced even successful multinational companies to review and minimize marketing budgets;

- implementation of the principles of corporate social responsibility of corporations (primarily transnational companies) and the transformation of social and ethical marketing into a mandatory rule of business.

- the COVID-19 pandemic, as a result of which retail trade and the sales policy of enterprises have finally changed;

- military challenges related to Russia's invasion of Ukraine.

To justify the characteristics of the latest marketing concept of the domestic company, we will analyze the radical changes that have taken place in the marketing policy on the Ukrainian market. First of all, it should be emphasized that domestic marketing is relatively young. If in the world this science was born at the beginning of the 20th century, then in Ukraine marketing began to be born in the 80s of the last century with the emergence of cooperatives and shuttle trade in imported products. Classical marketing tools began to be implemented in business from the beginning of the 90s of the 20th century during the transformation of the economy from a command-administrative to a market economy. International companies that entered the Ukrainian market became legislators of marketing principles. The high level of inflation, low purchasing power, lack of specialists in the field of marketing and the

¹⁹ Babko N.M. (2022). Marketynh yak protses upravlinnia kompaniieiu v umovakh konkurentsii; Babko N., Mandych O., Duiunova T. (2022). Features of digital globalization in conditions of modern challenges.; Babko N., Mandych O., Mykytas A. (2021). Creating a brand as the initial stage of branding; Babko N., Mandych O., Mykytas A. (2021). Current trends in branding development; Babko N.M. et al. (2020). Povedinka spozhyvacha: navch. posib.; Kviatko T.M. et al. (2020). Marketynhovi doslidzhennia: navch. posib.; Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovyykh komunikatsii v informatsiinykh merezhakh, p.297-303; Hrynko A.O., Babko N.M. (2020). Atrybuty brendu yak skladova protsesu brendynhu, p.65-68.

unadaptability of domestic enterprises to market conditions slowed down the formation of the Ukrainian concept of marketing management. At a time when the system of socio-ethical marketing already prevailed in Western Europe, marketing approaches were formed in Ukraine in accordance with the concepts of intensification of commercial efforts and marketing itself. As a result, those subsystems of Western marketing, which remained relatively stable during the last 20 years, have significantly evolved in Ukraine²⁰.

Determining the features of modern marketing, we will analyze the latest characteristics of the classic marketing complex (4R) and the marketing information system and the changes that have taken place in recent times both in Ukraine and in the West. As you know, the classic marketing complex consists of four marketing policies (subsystems):

- merchandise (goods);
- price (price);
- sales (place);
- communication (promotion).

Among the mentioned subsystems, the commodity policy has undergone the least changes in the world during the last period. Commodity policy is a set of measures, with the help of which one or several goods are used as the main tools of the enterprise's production and sales activities. In a general sense, this is a set of activities related to the formation of competitive advantages and the creation of goods that satisfy the needs of customers and ensure the company receives the necessary profit.

Companies in product policy shift the emphasis to the concept of "unique product offering", proposed in the middle of the 20th century by Rosseter River, which in its modern form states that a product will be in high demand if it has unique characteristics that will make it excellent from competitors. As a result, during the last two decades, many studies have been conducted on the management of product competitiveness and the formation of significant competitive advantages. This approach integrates not only the product, but also other components of the marketing complex, as it involves the formation of price, communication, and sales competitive advantages, but the basis of sustainable competitiveness remains the product and its differences.

The product policy of individual industries has undergone changes. Thus, during the second half of the 20th century, Europe and North America were

²⁰ Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovykh komunikatsii v informatsiynykh merezhakh, p.297-303; Hrynko A.O., Babko N.M. (2020). Atrybuty brendu yak skladova protsesu brendynhu, p.65-68; Mandych O.V. et al. (2020). Marketynhovi menedzhment: navch. posib.; Mandych O., Mykytas A., Babko N. (2021). Communication as the basis of business and marketing activities; Fiier O. et al. (2019). Risk managment in the sphere of state economic security provision using the example of professionsl liability insurance, p.51-60; Pakhucha E. et al. (2021). Strategic Analysis of Export Activities of Enterprises to Ensure Sustainable Development, p.251-270; Romaniuk I.A. et al. (2020). Reklamnyi menedzhment: navch. posib.

dominated by the consumption economy. As a result, even durable goods such as cars or household appliances were quite quickly updated by consumers. As a result, at the beginning of the 2000s, the global automobile industry changed its approach to the production of cars, made them cheaper by replacing some of the metal structures with plastic and composite ones, counting on the consumer not needing to use this product for a long time.

The following changes were made to the product policy in 2007-2009, when, as a result of the economic crisis, the purchasing power of most consumers decreased and they revised their consumer behavior in the direction of extending the duration of use of industrial goods and clothing. These challenges have made adjustments to the process of product development and modification by manufacturers. However, in domestic marketing, the product policy has undergone significant changes²¹.

If the requirements for the safety of goods in Europe and the USA were formed already in the last century, in Ukraine the legislative regulation of quality began in 2000. First of all, we are talking about the labeling of goods, informing the consumer about the actual composition of products, warning about the harmfulness or danger of individual components. If in Europe such legislative regulation was carried out at the end of the last century, then in the first decade of the 21st century in Ukraine, this component of product policy was a sign of social and ethical marketing and social responsibility of business. Only in December 2018, the Law of Ukraine "On Information for Consumers Regarding Food Products" was adopted, which obliged manufacturers not only to inform buyers about the full composition of food products, but also prohibited misleading consumers with the names of individual products. In particular, in accordance with Art. 28 of the specified law, it was forbidden to call natural dairy products in which milk substitutes are used, and it became necessary to indicate the list of ingredients in full, in the order of decreasing their weight at the time of their use in the process of producing a food product, with the indication of substances or products that cause allergic reactions or intolerance.

Thus, starting from 2019, food manufacturers, when developing their product policy, must take into account not only their taste characteristics and appearance, but also the need to inform consumers about the components of products and their harmfulness. Pricing policy is the art of price management and pricing, the art of setting such prices and varying them depending on the position of the product and the firm on the market so that the set goals are achieved. Pricing policy is a behavioral philosophy or general operating principles that a company intends to adhere to in setting prices for its goods or services. In our opinion, significant changes in the pricing policy of global manufacturers took place in connection with the development of Internet technologies at the time of the appearance of online trading platforms for

²¹ Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovykh komunikatsii v informatsiynykh merezhakh, p.297-303; Mandych O., Babko N. (2022). Characteristic features of the digital transformation of the Ukrainian economy; Fiiier O. et al. (2019). Risk managment in the sphere of state economic security provision using the example of professionsl liability insurance, p.51-60.

the sale of consumer goods. This point is closely related to sales policy. Selling goods via the Internet implies a reduction in sales costs due to the absence of the need to maintain retail stores. As a result, the consumer got the opportunity to buy goods cheaper via the Internet, and the manufacturer – to choose the method of sale, offering simultaneously one or two methods of pricing – with and without the costs of maintaining the distribution network²².

The price policy involves not only the establishment of pricing principles, but also the formation of a system of price promotion of sales – price promotions, discounts, and sales. Although the global market economy has been using this toolkit for a long time, it is quite new for domestic enterprises, especially for retail trade. The first promotional price offers for consumers began to appear at the turn of the millennium with the formation of large chain retail. At first, the mechanism of price promotion of sales appeared in food retail. In addition, since 2000, adopting the experience of Western business, large retail chains have started implementing loyalty programs, which provide additional discounts to regular customers. At the moment, chain retailers specializing in the sale of household appliances and electronics, goods of daily demand, building materials, and medicines are massively implementing such loyalty programs in Ukraine. Loyalty programs are quite common among sellers of clothes and shoes, representatives of public catering. With the advent of smartphones, loyalty programs have evolved significantly and with the help of special applications have provided additional opportunities for both sellers and consumers. However, only large businesses can afford to develop such programs and software for them²³.

If non-food retail in the West implemented systems of seasonal and pre-holiday sales already in the last century, the trigger for the introduction of significant sales discounts in Ukraine was the COVID-19 pandemic and quarantine closures of non-food stores. For two decades, the mass media have actively discussed "sales" of domestic retail trade, which involved manipulations with inflated regular prices on the eve of promotions or the insignificance of discounts, as business owners expected to sell unsold goods during the following seasons. The drop in demand for non-food products and the expectation of another lockdown at the end of 2020 – the beginning of 2021 launched the mechanism of real discounts and sales.

Sales policy is the activity of the company regarding the planning, implementation and control of the movement of goods from the producer to the final

²² Fiier O. et al. (2019). Risk management in the sphere of state economic security provision using the example of professional liability insurance, p.51-60; Romaniuk I.A. et al. (2020). Reklamnyi menedzhment: navch. posib.

²³ Babko N.M. (2022). Marketynh yak protses upravlinnia kompaniieiu v umovakh konkurentsii; Babko N., Mandych O., Duiunova T. (2022). Features of digital globalization in conditions of modern challenges.; Babko N., Mandych O., Mykytas A. (2021). Creating a brand as the initial stage of branding; Babko N., Mandych O., Mykytas A. (2021). Current trends in branding development; Babko N.M. et al. (2020). Povedinka spozhyvacha: navch. posib.; Kviatko T.M. et al. (2020). Marketynhovi doslidzhennia: navch. posib.; Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovykh komunikatsii v informatsiinykh merezhakh, p.297-303; Hrynko A.O., Babko N.M. (2020). Atrybuty brendu yak skladova protsesu brendynhu, p.65-68.

consumer in order to satisfy the needs of consumers and obtain profit. The development and availability of Internet technologies changed the sales policy of many enterprises, and quarantine restrictions accelerated these changes and made them irreversible both in the whole world and in Ukraine. If at the end of the 20th century, retail stores were the main way of selling goods to the final consumer, and network marketing and direct sales were used for certain types of products, from the end of the 2000s, the emergence of online stores for consumer durables began. If the first online stores involved investments in the development and maintenance of sites, the emergence of online shopping sites (Joom, Amazon, Alibaba, AliExpress, Rozetka, OLX, etc.) during the last decade made it possible to make this sales method cheaper and make it accessible to small and micro businesses.

Moreover, the development of social networks made it possible for micro-businesses to organize Internet sales in such networks without creating their own pages and without additional costs. The main categories of goods sold over the Internet were durable goods and long-life goods. This type of sales was not typical for food products. However, the COVID-19 pandemic has caused significant changes in the distribution system of both retailers and manufacturers. Due to strict quarantine restrictions and the complete closure of non-product trade, most manufacturers and traders have started using Internet resources either in parallel or instead of traditional trade through stores. And restrictions on the free movement of people during virus outbreaks have created a need to buy groceries online with door-to-door delivery. Under such a situation, another type of participants (intermediaries) appeared in the sales systems of companies – delivery services²⁴.

The last type of marketing policy, which, at the same time, has undergone the greatest changes, is communication. It is well known that the marketing communication policy is a promising course of action of the company, aimed at ensuring interaction with all subjects of the marketing system in order to satisfy the needs of consumers and obtain profit, and marketing communications itself is a process of information exchange between the enterprise and the consumer. In the 20th century, advertising was considered the main communication, along with which others gradually appeared – public relations, merchandising, exhibitions, sales promotion, sponsorship, packaging, corporate style, etc.

For a long time, for most enterprises, advertising was the basis of the communication policy, and all other communications were ancillary. At the end of the 20th century – at the beginning of the 2000s, television advertising was considered the most effective form of advertising. As a result, the television airwaves were flooded with advertisements. If the world's advertising industry has flourished

²⁴ 1. Babko N.M. (2022). Marketynh yak protses upravlinnia kompaniieiu v umovakh konkurentsii; Babko N., Mandych O., Duiunova T. (2022). Features of digital globalization in conditions of modern challenges.; Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovykh komunikatsii v informatsiinykh merezhakh, p.297-303; Mandych O., Babko N. (2022). Characteristic features of the digital transformation of the Ukrainian economy; Romaniuk I.A. et al. (2020). Reklamnyi menedzhment: navch. posib.

for several decades, the domestic advertising market began to establish itself only in the 90s of the last century. Advertising studios and agencies began to be created, and advertising creation specialists appeared. At that time, international producers actively spread advertising on national television and began to use national ones. As a result, advertising broadcasting began to be limited in Ukraine at the legislative level. Trying to get the maximum effectiveness from advertising, both in the world in general and in Ukraine, large enterprises maximized advertising budgets, constantly updated advertising messages, tried to achieve maximum advertising creativity. The first changes in the marketing communication policy of enterprises took place during the global economic crisis of 2006-2009. Due to a sharp drop in sales, manufacturers began to review their costs and came to the conclusion of the need to reduce advertising costs in favor of more effective and cheaper communications. On the other hand, the cheaper access to the Internet provokes the emergence of various types of Internet advertising and its active use. The next and most significant impetus for changes in communication policy is the development of Internet technologies, the emergence of sites with media libraries. As a result, more progressive consumers began to prefer viewing media content on the Internet with fewer or no advertising messages. At the current stage, there are prepaid resources and services that make it possible to completely avoid viewing advertisements. For example – Youtube Premium, Netflix, paid viewing of media library content²⁵.

If we analyze merchandising in Ukraine, this type of communication was borrowed from the West and was actively used by both international and national companies in the markets of goods in mass demand. In the early 2000s, companies developed merchandising principles that included point-of-sale branding, product display rules, point-of-sale promotional materials, standards for compliance with company colors, etc. for specific products. However, at the moment, the possibilities of using this communication are limited. At the moment, the main market players have implemented a corporate style and do not place manufacturers' advertising materials in the sales halls. As for grocery stores, they even develop their own rules for the display of goods, which do not take into account the wishes of manufacturers and distributors. This can be observed in such network players as "Silpo", "ATB", etc. An exception to branded materials is refrigeration equipment. In chains of household chemicals stores (Prostor, Watson, Eva) you can find branded shelves of manufacturers of decorative cosmetics. On the other hand, over the last decade, the

²⁵ Babko N.M. (2022). Marketynh yak protses upravlinnia kompaniieiu v umovakh konkurentsii; Babko N., Mandych O., Duiunova T. (2022). Features of digital globalization in conditions of modern challenges; Babko N., Mandych O., Mykytas A. (2021). Creating a brand as the initial stage of branding; Babko N., Mandych O., Mykytas A. (2021). Current trends in branding development; Babko N.M. et al. (2020). Povedinka spozhyvacha: navch. posib.; Kviatko T.M. et al. (2020). Marketynhovi doslidzhennia: navch. posib.; Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovyykh komunikatsii v informatsiinykh merezhakh, p.297-303; Hryenko A.O., Babko N.M. (2020). Atrybuty brendu yak skladova protsesu brendynhu, p.65-68; Mandych O., Babko N. (2022). Characteristic features of the digital transformation of the Ukrainian economy; Mandych O.V. et al. (2020). Marketynhovyyi menedzhment: navch. posib.

newest forms of Internet communications have been actively used: blogs, discussions of products and enterprises in social networks. The main challenge for companies was the lack of controllability of such communications, as they can be generated by consumers, persons unfamiliar with the company's products, and competitors²⁶.

Thus, as a result of the virtualization of leisure time, changes in information consumption methods for companies, contact audiences are increasingly difficult to reach. In our opinion, in the near future there should be changes in the marketing communication policy of enterprises in the direction of personal communications, communications at points of sale, etc.

In addition, it should be noted that the marketing information system of companies is rapidly undergoing changes. Over the past decades, thanks to Internet technologies, they have gained access to large amounts of information, and the cost of obtaining such information has decreased. The toolkit for marketing research using modern technology has changed. However, such data arrays require the development of new methods of analysis and generalization of information. The conducted analysis makes it possible to claim about a radical change in the marketing of both domestic enterprises and the world since the beginning of this century. The development of information technology has caused a revolution in marketing tools, which continues. As a result, in the future, it is necessary to search for measures to manage such tools and to develop new methods of assessing its effectiveness.

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²⁶ Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovykh komunikatsii v informatsiinykh merezhakh, p.297-303; Mandych O., Babko N. (2022). Characteristic features of the digital transformation of the Ukrainian economy; Pakhucha E. et al. (2021). Strategic Analysis of Export Activities of Enterprises to Ensure Sustainable Development, p.251-270.

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THE REPRODUCTIVE ENVIRONMENT FOR UKRAINIAN SUSTAINABLE DEVELOPMENT' LABOR POTENTIAL: FACTORS, PROBLEMS, PERSPECTIVES OF FUNCTIONING

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Abstract. The purpose of the study is to identify and examine the factors and problems, substantiate the prospects for balancing the environment of Ukraine' labor potential reproduction according to the sustainable development challenges in the economy and the macro-social system as a whole, taking into account the main criteria for increasing their resilience and competitiveness, which results in improving the life' level and quality of the population, labor force, as well as the competitive properties' set of the national economy, territorial communities, producers and workers. The macro-social system (as the environment for labor potential reproduction) embodies the spectrum of socium institutions' interactions that implement formal (standardized) and informal approaches to reproducing and improving the parameters and results of the economic and non-economic life spheres' functioning, public goods' redistribution for the socio-economic dynamics' needs, which are recognized by the community. Balancing and increasing the resilience of the national macro-social system and its economy will be facilitated by the state policy regarding the capitalization of: advantages of the Ukraine' economic and geographical, as well as geopolitical position; parameters of the workforce' competitiveness and innovative potential, as well as the public institutions' spectrum for its reproduction; productive potential of regional specialization sectors (industrial, agro-processing, socio-cultural), including in the formation and activation of cross-border businesses', logistics' and transit systems. Civilization trends stimulate national civil society to actualize a number of requests to provide an average individual' decent opportunities to meet the needs for quality education services, profession acquirement, confirmation and increase of qualification regardless of the residence place, equalization of the appropriate starting conditions in local communities and regions, as well as to improve the efficiency of public and state control over the corresponding legislative and social-labor guarantees' implementation.

Keywords: labor potential, socio-economic environment, macro-social system, sustainable development, resilience, state policy' priorities.

Country's labor potential is an integral resource for its sustainable development in the conditions of increased anthropogenic pressure on the environment, recognition and spread of standards and practices for businesses and life activities in the globalized world that are similar in parameters and content. The characteristics of the reproductive environment of human resources and the labor force itself, which possess the features necessary for establishing the sustainable socio-economic

development' parameters and proportions, are determined by country's macro-social system, as well as by principles, priorities, mechanisms of its balancing and resilience' increasing.

The macro-social system as a category emerged at the intersection of macroeconomic and sociological research, embodying the ideas of a radical increase of the human potential' role as a productive force in the conditions of the scientific and technical progress' acceleration and the spread of technological modes based on the knowledge economy and systemic information technologies²⁷. Such increase in the human resources' importance led to an enhances in the standards of life' level and quality, work' remuneration and security, reproduction of the workforce' physiological, professional and qualification, creative potential, as well as in the civil society' demands and requests regarding the content and consistency of the population' social protection policy, accompanied by these indicators' statement as important cross-cutting criteria and benchmarks of socio-economic dynamics in the national and territorial dimensions.

Therefore, the macro-social system embodies the spectrum of socium institutions' interactions within a certain country or macro-region, which implement formal (standardized) and informal approaches to the reproduction and improvement of the economic and non-economic life spheres' parameters and functioning results, the public values' (goods') redistribution for the socio-economic dynamics' needs that are recognized by the communities of above-mentioned scale.

The variability of the natural, settlement, economic, socio-political characteristics of Ukraine' regions and communities causes objective and subjective territorial disproportions (last ones are arising from the conjuncture, processes' stagnation or crisis aggravation) in the functioning of the economy and the whole country's macro-social system that can exert a negative impact on the reproduction quality of human resources and labor force itself, implementation of sustainable socio-economic development' goals and guidelines. At the same time, the conditions and quality of the Ukrainian labor potential' reproduction have significantly worsened with a considerable expansion of the military operations' scale on its territory.

The destructions, damages, losses (direct, indirect ones), caused by them, as well as the pre-war problems' burden of unbalanced economy that was systematically over-consuming resources, while combining with increasingly clearly defined changes in the socio-political course and guidelines, determine the need to improve state policy, priorities and mechanisms of the spectrum of socium' life spheres in the directions of enhancing the balance, resilience, competitiveness of the national economy and macro-social system in the world.

The excessive raw-resource and semi-finished (with a small degree of raw materials' processing) national economy' export orientation, which has been increasingly strengthened almost in three decades covering the mining sectors,

²⁷ Хуткий Д.О. (2006). Сучасна глобальна соціальна система: макросоціологічний підхід та світ-системний аналіз, с.17-21; Кістол А.А. (2015). Соціальна система як об'єкт безпеки, с.75-78; Кремень В.Г. (2021). Українська школа як відкрита соціальна система, с.1-4.

agriculture and agro-processing, energy-carriers' transit, was sufficiently profitable for certain entrepreneurs, the state and regional budgets. So, there wasn't need in focusing the attention on the production' rapid reduction, the destruction of its closed cycles in machine- and instrument-building, light, partly food industry. At the same time, there was a weakening of attention for implementing the strategic priorities of the economy' innovative development and science-intensive diversification, forecasting and fulfilling programs for their personnel support, innovative activity' motivations for entrepreneurs, hired workers and self-employed.

These tendencies substantiate a radical revision of approaches to priorities, benchmarks, levers in the development of the economy and socium as a whole both in the near and long-term prospects, taking into account the cross-cutting guidelines of its acceleration, balanced diversification, as well as social orientation' strengthening, which constitute a criterion for ensuring the appropriate resilience level²⁸.

Starting from the comprehensive analysis and substantiation of measures to overcome pre-war systemic and territorially localized problems of businesses and non-economic life spheres' functioning, supplementing them with mechanisms for mitigating and leveling the damages and losses caused by the armed conflict that have been assessed as fully as possible, including their distant consequences, the strategy of Ukraine' social economic development post-war acceleration should be based on the main priorities of increasing its resilience' and self-sufficiency' level (in particular, on the basis of import substitution, closed production cycles' spread, the diversified local industry' revival), as well as improving the competitiveness of national entities (manufacturers, productions, workers) in the macro-regional and global scales²⁹.

The study of methodology and practical approaches to resilience in the life activities of countries, their groups and macro-regional sociums is a continuation of scientific research on the establishment of long-term controlled non-destructive interactions between the human community on a planetary scale, its economy and the environment with the necessary parameters of safety and reproduction' quality of each above-mentioned interacting spheres, which in 60-80s of the XX century were embodied in the sustainable development' paradigm and concept. Tendencies towards the globalization of economic and daily life' standards and practices, actively stimulated by the development of information and communication, logistics, transit technologies, as well as production transnational corporatization, with the beginning of the planetary geo-climatic changes' next period were already faced with threats

²⁸ Briguglio L., Cordina G., Farrugia N., Vella S. (2005). Conceptualizing and measuring economic resilience, p.26-49; Simmie J., Martin R. (2010). The economic resilience of regions: towards an evolutionary approach, p.27-43; Божок Є., Пирожков С., Хамітов Н. (2021). Резильєнтність: стратегія виживання в умовах гібридних загроз.

²⁹ Ledesma J. (2014). Conceptual frameworks and research models on resilience in leadership; Rodin J. (2014). The resilience dividend: being strong in a world where things go wrong; Southwick F.S. et al. (2017). Leadership and resilience, p.315-333; Shvindina H., Petrusenko Y., Balahurovska I. (2022). Resilient management as an effective management tool for transformational changes in society, p.54-59.

and challenges in the spheres of resource availability (starting from the basic ones – drinking water, fertile soils, fossil energy carriers, food products), so as sanitary and epidemiological safety.

These realities have significantly increased the demand for approaches' substantiation to ensuring resilience (crisis resistance, stability) of the spectrum of aspects and directions of communities' and countries' life activities ³⁰, i.e., to issues that have been widely studied previously by the human sciences (psychology, psychopathology, psychiatry, clinical and stress medicine, etc.), ergonomics in the “man – technology – environment” system, in particular, by sciences about complex adaptive systems (under the influence of both natural, and anthropogenic threats), such as ecology, landscape studies, engineering, urban planning, public health protection, sanitation and epidemiology.

While considering most generally, resilient socio-economic system should be characterized by awareness (in particular, normalization) of processes, diversity (variability of functioning mechanisms), self-regulating ability (including through the use of mechanisms of integration, adaptability and current priorities' actualization) that ensure the ability to resist the spectrum of challenges and crises due to the certain changes' implementation without harming the basic values of socium, its institutions and life spheres ³¹. Numerous approaches and methods for enhancing the resilience of the national economy and its territorial subsystems connect the corresponding effects' achievement with the stimulation of innovative processes, cycles, mechanisms, as well as with the increase in the professional education system' efficiency ³².

Modernization of socium approaches to the organization of professional education (higher and vocational), its institutional foundations, principles,

³⁰ Briguglio L. et al. (2005). Conceptualizing and measuring economic resilience. Pacific Islands Regional Integration and Governance, p.26-49; Simmie J., Martin R. (2010). The economic resilience of regions: towards an evolutionary approach, p.27-43; Божок Є., Пирожков С., Хамітов Н. (2010). Резильєнтність: стратегія виживання в умовах гібридних загроз; Leki R.S. (2019). Growing global resilience leadership: working with diplomats. Advances in global leadership, p.191-205; The Rockefeller Foundation. (2014). City resilience framework.

³¹ Simmie J., Martin R. (2010). The economic resilience of regions: towards an evolutionary approach, p.27-43; Божок Є., Пирожков С., Хамітов Н. (2010). Резильєнтність: стратегія виживання в умовах гібридних загроз; Rodin J. (2014). The resilience dividend: being strong in a world where things go wrong; Белинская М.Н., Корольчук О.Л. (2018). Роль национальной резильєнтности в формировании эффективного публичного управления; Касперович Ю.В. (2019). Фіскальна безпека держави в умовах гібридної війни: аналітична доповідь; Корольчук О. (2021). Безпекові аспекти соціогуманітарної й економічної стабільності у формуванні національної резильєнтності в Україні, с.114-118; Філіпчук В., Октисюк А., Поворозник В., Ярошенко Є. (2016). Моделі і ціна врегулювання конфлікту на Донбасі: міжнародний досвід та українські реалії, 28 с.; The Rockefeller Foundation. (2014). City resilience framework.

³² Кремень В.Г. (2021). Українська школа як відкрита соціальна система, с.1-4; Холявко Н.І. (2019). Конкурентоспроможність системи вищої освіти на основі формування її резильєнтності до викликів інформаційної економіки, с.53-58; Shvindina H., Petrusenko Y., Valahurovska I. (2022). Resilient management as an effective management tool for transformational changes in society, p.54-59; Бекер Т., Айхенгрін Б., Городніченко Ю. та ін. Нарис про відбудову України.

methodology of functioning at the national, regional and local levels is an important condition for improving the efficiency and results of the national economy, the spectrum of structures and mechanisms for its innovation and personnel provision, implementation of the population's basic constitutional rights regarding professional self-realization, comprehensive development and education throughout life, obtaining decent labor income, improving the level and quality of life of an average person by one's own efforts. These tasks' solution is the prerequisite for the effective response of the state, its economic system, and the whole society to the challenges of world-integration and globalization processes, first of all, regarding the competitiveness of both producers and workers, as well as the technological support of the business processes' set in the economy and non-economic life spheres.

The competitiveness of persons acquiring professional education, so as workers and specialists of various qualifications on the labor market directly depends on the modernity level of the comprehensive and professional training that they have received, which is ensured by the consistent updating of the content, methodology, technological base, methods of teaching professional knowledge, relevant academic disciplines, their materials, programs, practices, etc., as well as of the qualifications' and competencies' level of the scientific and pedagogical staff in the spectrum of professional education institutions (the establishments for career guidance, vocational diagnosis, vocational training, advanced training, career development). At the same time, educational cycles' and programs' saturation with the latest knowledge, means of their teaching and assimilation is not a sufficient condition for increasing the competitiveness of pupils, students and graduates; it should be supplemented by strengthening the focus on the relevant knowledge' practical application, assimilation of appropriate abilities, skills, competencies within the framework of seminars, laboratory classes, practice in production, etc.

An important task of the professional education' modernization is the consistent activity of the Ministry of Education and Science, supported by other executive and legislative power bodies, the broad scientific community and interested public institutions, regarding the consistent updating the scientific and worldview content of the set of theoretical and practical disciplines of the professional education links' spectrum, as well as improving their personnel, scientific and pedagogical, technical and technological support. A significant criterion for the relevant measures' competence is the constant communication of professional education institutions, this sphere' state management with employers' representatives, who are able to the quickest and effective assessment of the prospects and production value of the scientific and technical progress' achievements, relevant professional knowledge, abilities, skills of searchers in the labor market.

Among the main problems that are complicating the prospects of the Ukrainian socio-economic development' post-war revival and acceleration, first of all, we should note the following: significant territorial economic, demographic and ecological disparities; an outdated, insufficiently diversified economy' structure; an ineffective management system, including due to the consistent self-removal of the state (as an institute established to coordinate the entire socium institutions' spectrum), from performing a number of immanent functions in determining the

economic and social development' quantitative and qualitative benchmarks; a significant slowdown of the innovation process, associated with the shortcomings of social motivations for productive creative activity; systemic reproductive, social and labor, environmental risks.

Therefore, as full as possible, the strategy for increasing the socio-economic development' efficiency and resilience should capitalize: the advantages of the state' economic and geographical, geopolitical position; preserved parameters of the competitiveness, innovative, professional and qualification potential of the personnel provision for the domestic economy and social institutions of its reproduction; productive potential of regional specialization' sectors (industrial, agro-processing, socio-cultural ones), including through the formation and activation of businesses', logistics and transit' cross-border systems ³³.

Among the existing territorial economic disparities that will continue to affect Ukraine's post-war revival prospects, so as will determine the key benchmarks for its socio-economic development' balancing and resilience increasing, we should note the following:

- disparities in the economy' spatial organization, related to the functioning' peculiarities of: old resource-extracting and industrial regions; monospecialized settlements and business subsystems (in particular, those involved in resource extraction, intensive agriculture, recreation); territories that have acquired the depressed status due to man-made destabilization of the ecological situation; settlement systems and territorial economies involved in logistical, technical, household maintenance of transit, transport corridors and hubs;

- disparities in the accumulation and use of businesses' financial results (taxes, fees, certain contributions from profits, etc.), which determine the local budgets' amount, the territorial potential of reproduction and improvement of the living environment' quality, the fulfillment level of the population' socially necessary needs guaranteed by legislation;

- disparities of demand and supply in regional labor markets (primarily in mono- and highly specialized regions) that stimulate intra-state and cross-border labor migrations (including their negative consequences of "brain drain", reduction of the most highly educated workforce' segment), as well as lead to the marginalization of low-mobility groups, which are the least competitive due to the education', residence place', work experience' parameters.

The problems of Ukraine's post-war development will be exacerbated by

³³ Ledesma J. (2014). Conceptual frameworks and research models on resilience in leadership; Rodin J. (2014). The resilience dividend: being strong in a world where things go wrong; Southwick F.S. et al. (2017). Leadership and resilience, p.315-333; Белинская М.Н., Корольчук О.Л. (2018). Роль национальной резильентности в формировании эффективного публичного управления, p.24-45; Корольчук О. (2021). Безпекові аспекти соціогуманітарної й економічної стабільності у формуванні національної резильентності в Україні, p.114-118; Shvindina H., Petrushenko Y., Balahurovska I. (2022). Resilient management as an effective management tool for transformational changes in society, p.54-59; Бекеп Т. et al. (2022). Нарис про відбудову України; Leki R.S. (2019). Growing global resilience leadership: working with diplomats, p.191-205.

economic disparities generated by the armed conflict' large-scale negative consequences, including:

- production capacities' irreversible loss (from separate enterprises to entire specialization branches in a number of regions), forced delay in the restoration of city-forming economic entities and specialization branches due to the investment lack;

- narrowing, loss of access to usual production resources and logistics schemes, as well as to the domestic and foreign sales markets;

- worsening of general and structural unemployment' indicators, including unemployment caused by destabilization, the territorial economic subsystems' collapse, forced migration, a decrease in the workforce' living standard (and, therefore, a decrease in the professional reproduction' funding), physical destruction, disqualification of the working population' significant part.

Along with environmental features of living and economic conditions, ecological disparities in Ukraine will be determined by the negative anthropogenic and technogenic influence' strengthening both in the hostilities' former regions and in the front-line territories, so as in the rear areas. In particular, it should be emphasized the updating of the factors of the critical infrastructure' destruction, the dangerous substances' leakage, the destabilization of the large settlement systems' centralized communal maintaining, the growth of emissions into the air from the use of low-quality fuel and lubricant materials, including household solid fuel.

The problems' roots of the Ukrainian economy' outdated structure largely lie in:

- the exports' formation, primarily, from branches with a rapid turnover of funds and relatively small costs for material and technical base' updating (transit of energy carriers, resource-extracting or semi-finished enterprises, the production process of which involves a relatively small scale of raw materials' processing without manufacturing products for retail and small-wholesale consumer demand or components for a range of branches of the machine and instrumentation industries);

- fragmentation, inconsistency of strategies and measures of the national economy' science-intensive modernization and diversification that were manifested, particularly, in: the predominant orientation of free economic zones on the maintaining services for transit and infrastructure of transport corridors; the lack of substantiated forecasts of the personnel training' state and regional orders, intended for the implementation of short-term and distant priorities for territorial economic systems' modernization and diversification; the conservation of state and commercial banks' fairly high discount rate along with stimulating consumer lending, undeclared housing and public construction; the underestimation of the complex targeted scientific, as well as scientific and technical programs' importance; the limitations of regional programs for local industry' stimulating (branches of agro-processing, food, light industries);

- excessive promotion of entrepreneurship in the field of small wholesale trade and retail.

The strong social orientation on increasing income from foreign products'

transit and resale, which was formed in the pre-war period, creates a significant obstacle to the Ukrainian economy's post-war recovery, because it will inevitably face the limitation of such activities' internal and external investments due to a significant increase in commercial and insurance risks.

The significant potential of Ukraine's socio-economic development's resilient post-war revival and acceleration is associated with its economic and geographical position, so as geopolitical situation, characterized primarily by its location at numerous intersections of economically efficient trans-regional, transcontinental, and intercontinental routes (by land, rivers or sea). Another important component of the expected advantages, chances and bonuses of Ukraine's geopolitical position is the increasingly clearly outlined prospects of joining the EU, and also, through the mediation of this authoritative player of the international community, – other representative foreign political and economic associations ³⁴.

It's difficult to overestimate the role of Ukraine in revitalizing and increasing the economic efficiency of trans-regional, transcontinental, intercontinental cargo transit (in particular, energy carriers, mineral semi-finished products, rolled metal, products of agriculture and agro-processing, fertilizers and other products of the chemical and petrochemical industry from the critical exports' list of the leading countries in Europe and all over the world). These advantages of the economic and geographic position and geopolitical situation will obviously stimulate the strong pragmatic interest of large national and foreign investors, international financial donor organizations. On the other hand, the policy for ensuring the appropriate resilience level of the national socio-economic development in the conditions of Ukraine's further integration into the actively competing world community should focus on the areas of enhancing the life's level and quality, living and working conditions' safety, cultural and ideological tolerance to the recognized world values of human life and coexistence. Namely, such measures will include interactions with the international community's and foreign economy's subjects in comprehensive and professional education, entertainment, recreation, i.e. in areas, where Ukraine possesses and, despite the military actions' negative consequences, will retain a significant resource and potential for the competitive services' production.

International donor programs, as well as grants from other countries and leading international organizations for the critical infrastructure's restoration, the living environment safety's improvement, promotion of innovative start-ups, so as free economic zones' development and functioning will create a considerable share of the relevant strategies and measures' financial support at the initial stage of Ukraine's economic revival.

Strategies and measures to increase the of socio-economic development's resilience parameters primarily will retain the regional character. In addition to the specifics and scale of war losses, objective economic and environmental disparities, their content should take into account the short-term priorities, including:

- restoration of the living environment's safety (mining clearance, correction of

³⁴ Бекер Т. та ін. (2022). Нарис про відбудову України; Leki R.S. (2019). Growing global resilience leadership, p.191-205.

production' man-made hazard indicators according to their maximum permissible levels, the economic efficiency' increase of centralized and decentralized practices for urban environment' communal maintenance);

- rapid growth of the gross domestic and gross regional products, the state and local budgets' revenues due to promoting the development of industries and sectors with high competitive characteristics in foreign markets;

- diversification of territorial employment spheres and labor markets, taking into account the local population' educational, professional and qualification characteristics, as well as guidelines for the national economy' innovative modernization.

An important component of the Ukrainian economic structure' modernization is the priorities' determination according to the experience of promoting domestic innovative start-ups in international competitions. In particular, the Slush 2022 competition (an international start-up event held in Helsinki, Finland since 2008) has evidenced ³⁵ that the most demanded in the nowadays world are businesses for:

- processing secondary raw materials and various biological wastes, including for the purpose of manufacturing polystyrene', polyethylene' substitutes, etc.;

- producing devices for arranging ergonomic living environment in settlements, residential and public buildings (controllers, software, mobile applications for “smart home”, “smart office”, hospitals, nursing homes, people with special needs' purposes);

- implementing feedback technologies between businesses and customers; companies' management, their suppliers, structural units and network enterprises;

- developing certified and free software for payment tools and services, small business' promotion on the Internet and social networks, passenger transit' support.

The main goals of the Ukrainian professional education system' modernization ³⁶ should be grouped according to the direction areas on: spreading and affirming the standards and requests for quality education throughout life in society and business practices; improving the spatial organization of the higher and vocational institutions' network with a focus on increasing the crisis resilience parameters of both the territorial educational subsystems and their elements, as well as the totality of life spheres in the regions and the whole state. Both grouping directions of the professional education modernization' main goals are combined through a series of goals embodying the next direction – on rising the innovative potential of communities and the economy, broadcasting and increasing the creativity mechanisms' effectiveness as a source and incentives for competitive socio-economic development, business diversification.

Thus, the goals for dissemination and affirmation of standards and requests for quality education throughout life in society and business practices include:

³⁵ RaySpace Magazine (2022). Як українські стартапи підкорюють світ.

³⁶ Хуткий Д.О. (2006). Сучасна глобальна соціальна система: макросоціологічний підхід та світ-системний аналіз, с.17-21; Кремень В.Г. (2021). Українська школа як відкрита соціальна система, с.1-4; Холявко Н.І. (2019). Конкурентоспроможність системи вищої освіти на основі формування її резильєнтності до викликів інформаційної економіки, с.53-58.

– ensuring the scientific capacity and practical orientation of professional education at all stages of its organization and in the range of institutions that provide career guidance, vocational diagnosis, vocational, advanced training and professional development for various categories of the population throughout life, in accordance with modern achievements of world science and economics, in particular, in the field of production technologies, management, public informing and enlightenment, worldview formation;

– balancing the state standards of professional education and the criteria for the functioning of non-state, including informal, systems and institutions for its provision and recognition, certification of job seekers on the labor market and hired workers at enterprises of various ownership forms;

– further increasing the autonomy of professional education institutions (higher, vocational) in determining their own specialization, the content and teaching technologies of the general and proper vocational training' optional component, the funding sources' structure, bases for the pupils' and students' production practices, management and marketing strategies on the educational services' market and in the spheres of public relations, cooperation with employers;

– rising up the availability of professional education, retraining, advanced training and development throughout the life for the population' vulnerable groups and categories at the expense of educational vouchers, state and non-profit institutions' loans, as well as through the personnel training' targeted order for depressed areas and settlement systems;

– stimulating the consistent growth of the Ukrainian population' solvent demand for the professional education', retraining', advanced training' services within the framework of a long-term strategy for raising the life' level and quality of the economically active population, equalizing the initial conditions of the younger generation' living.

In turn, the goals for improving the higher and vocational institutions network' spatial organization with a focus on increasing the crisis resilience parameters of educational subsystems and the totality of life spheres involve:

– intensifying the formation processes of regional scientific, educational and industrial clusters integrated into territorial, including cross-border, business systems (in particular, the spectrum of free economic zones) and their innovative infrastructure;

– optimizing the cycle of vocational and career guidance, professional education and training of various specializations' personnel for national territorial economic systems, coordinated in the structure of professional education branches (higher, vocational, state, communal and non-state institutions of professional development and employment promotion);

– increasing the socio-economic efficiency of vocational education institutions in conditions of funding shortages, which threatens their viability in spite of the national economy' growing needs for qualified workers;

- equalizing a socially and economically active life' initial conditions, regardless of the individual's origin, psycho-physiological characteristics, and residence' place;

- balancing the regulatory support and mechanisms for the formation and financing of the state and regional segments of the personnel training order in accordance with the long-term strategy of the Ukrainian economy' specialization and diversification.

Among the important tasks, the solution of which will contribute to the above-mentioned goals' achievement, in particular regarding the improvement of the educational process' structure, material support and content, the following should be highlighted:

- improving the standards and programs of professional education, teachers' training programs, promoting the diversification of the personnel training', professional development' and retraining' system in the context of the urgent and strategic needs for increasing the goods' and services' national production, balancing its specialization and territorial organization (primarily, in accordance with the current situation and prospects of the production and technological base' modernization, the realities and orientations of the national manufacturers' positioning on internal and foreign sales' markets);

- further large-scale implementing of information and communication technologies, corresponded with EU standards and best examples of other world-wide developed countries (including such technologies in the field of: distance learning; development of electronic software for education, knowledge' and skills' quality testing, textbooks and methodological literature), in the professional education institutions of various ownership forms;

- increasing the level of educational, methodological and financial autonomy of higher and vocational education institutions, simplifying their procedures for revenues' using from profile activities (including ones from paid educational services) for the needs of the educational process' modernizing, arranging the pupils' and students' living conditions;

- activating constructive dialogue of three-partial institutions (i.e., mechanism for regulation of labor and kindred economic and political relations based on equal interaction and cooperation of the employees', employers', state' representatives) and public-private partnership regarding the implementation of workers' and specialists' integrated specialties standards, non-formal education' recognition, qualifications' acquisition and confirmation in non-state institutions and within the framework of on-the-job training.

A significant progress in achieving the goals of strengthening the professional education' practical orientation, implementing its innovative functions, producing modern competitive abilities and skills of pupils, students, graduates, developing the workforce' creative potential will stimulate the solution of tasks, such as:

- restoring the large-scale practice of on-the-job professional training as an effective tool for: improving the employees' qualifications and remuneration level; modernizing professional education' standards and programs in accordance with the

employers' requests; diversifying funding sources of professional education institutions (higher, vocational); forming industrial and innovative territorial clusters of various specializations with the active participation of universities and vocational schools;

- encouraging employers to fund personnel professional education, retraining and advanced training by optimizing the taxation practice of economic entities that carry out and increase such expenses;

- further progressing of the system of continuous professional education throughout life, including on the basis of the appropriate services' provision at employment centers (in the form of courses for registered unemployed and additional employment' seekers), as well as at state and non-state social protection structures that take care for pensioners, disabled people, the population' marginal categories;

- substantiating, providing effective financing mechanisms for the state and regional personnel training orders to meet the Ukrainian economy' urgent needs, in particular, the staffing needs for the territories' post-war development through: the restoration of the living environment' safety and acceptable quality (mine clearance, development of critical infrastructure – facilities and networks of electricity and heat generation, water supply, transport communications of freight and passenger transit, their logistics, etc.); revitalization of the country's specialization branches and export-oriented industries that have been preserved (from mining to instrument and machine building, from agro-processing to recreational); specialists' and support staff' provision for regional systems of health care, social protection, education, local construction and food enterprises;

- optimizing mechanisms for recognizing national documents on obtaining professional education (diplomas, attestations, certificates) in EU countries.

A significant role in fulfilling the needs of modernized national and territorial economic complexes and labor markets for qualified personnel (workers, specialists) is played by measures for implementing the Strategy of the vocational (vocational and technical) education development until 2023, approved by the collegium of the Ministry of education and science in 2020. The measures carried out in recent years within the framework of above-mentioned Strategy are primarily aimed at the:

- consolidation of vocational education institutions' management at local level, their transfer to communal ownership, plans' presentation for the developing regional networks of such institutions, including through their consolidation;

- modernization of the professional education infrastructure through the educational and practical centers' establishment – i.e., these are institutions with new equipment and technique that provide services for students to acquire practical skills, improve qualifications or retrain adults with the funds of the state budget, local budgets, professional education institutions' special funds, as well as with the business companies' support;

- professional education standards' establishment and improvement, educational programs' updating, improvement of teachers' qualifications in active

cooperation with employers' institutions within the framework of implementation of the National qualifications' system subordinated to state professional standards.

Improving the training of Ukrainian universities' and vocational schools' pupils and students for professional activities should be carried out by:

- implementing the vocational institutions' rights to independent educational programs' composition taking into account the results of territorial labor markets' studies, the interdisciplinary principle, as well as to this programs' supplementation with a segment formed from disciplines chosen by the students themselves;

- stimulating connections between vocational education institutions and employers to conduct students' industrial practice, to acquire their necessary professional skills and initial qualification level;

- fulfilling applied scientific research programs in higher educational institutions; obtaining by these institutions the status of resource educational, methodical and research centers for priority economy sectors of the regions and the whole country; stimulation of vocational institutions to participate in the activities of such centers, territorial educational, scientific and production complexes, as well as in activities of a range of innovative structures (industrial parks, technological parks, scientific and research consortia, innovative and technological clusters, etc.);

- establishing administrative and fiscal measures that ensure: first jobs for graduates, their early adaptation in primary workplace positions; the encouragement of enterprises and organizations that provide practice bases and first jobs for graduates, conclude contracts with educational institutions for the goods' and services' production (including services for personnel professional development and retraining), as well as for scientific research.

Therefore, among the main goals of the sustainable resilient functioning of the national economy, macro-social system as a whole and their territorial subsystems, we should note:

- the maintenance of a safety' guaranteed level for settlement systems, working and non-working environment;

- the diversification of territorial economic systems, spheres of employment, personnel' training, career development and retraining in the context of urgent and strategic needs for increasing goods' and services' domestic production, balancing its specialization and territorial organization (first of all, in accordance with the current situation and prospects for the productive and technological base' modernization, the realities of the raw materials' and consumables' availability, their transit and logistics schemes, as well as real vision of internal and external markets for finished products);

- the expansion of domestic products (goods, services – from agricultural and agro-processing products, minerals and products of their processing, electricity to services of freight and passenger transit, recreation, entertainment, higher and professional education) in foreign markets, including through lobbying the national businesses' interests, stimulating foreign investors, joining cross-border schemes of productions and sales;

– the consistent increase in the wages’ and social protection’ level of the employed, unemployed and their family members according to the developed countries’ standards.

These goals’ achievement is based on:

– the contributing to the accelerated development of Ukrainian economic specialization’ branches, so as the local industry and the service sector, including within the framework of targeted measures for their diversification, technological modernization, logistics schemes’ optimization for material supply, personnel support and products’ sales;

– the personnel’ providing for: the critical infrastructure’ development and logistics (facilities and networks of electricity and heat generation, water supply, transport communications of cargo and passenger transit); invigorating the country’s specialization branches and export-oriented industries (from mining to instrumentation and machine building, from agro-processing to recreational); staffing (main, additional) of health care’, social protection’, education’ regional systems, local construction and food enterprises;

– the increasing of personnel training’ amount, necessary for the economic modernization strategy’ implementation (in particular, in the directions of expanding its science-intensive, agricultural and agro-processing, mineral-processing, metallurgical, machine- and instrument-building specialization), as well as for attraction of relevant transnational investors and industries;

– the promoting of the industrial cooperation’ cross-border regions, including through the establishing domestic regional and local educational institutions for the necessary personnel’ training;

– the stimulating of the economically active population’ labor mobility and entrepreneurial initiative within the framework of nation-wide and local programs, relevant measures of large economic entities of various ownership forms;

– the implementing of the social protection strategy for working age’ citizens who lost their jobs, incomes, health due to certain crisis circumstances (including military operations), which aggregate compensations, promotion of their qualification improvement, employment and entrepreneurial activity, involvement (if necessary) in housing programs;

– the guaranteeing of a socially acceptable level (in the context of meeting vital and basic social needs) of labor remuneration and working conditions’ security, as well as implementing effective control over these norms’ compliance.

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SOCIO-ETHICAL PROBLEMS OF THE POLITICAL BRANDS FORMATION IN THE DIGITAL ECONOMY CONDITIONS

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Abstract. The article examines the socio-ethical problems of the formation of political brands in the conditions of the digital economy. An analysis of the stages of the formation of the digital economy and approaches to the interpretation of the concept of "digital economy" was carried out. It has been identified the main segments of the digital economy, which are the triggers of development. The degree of cyberization in different countries of the world was analyzed, as a result of which groups of countries were distinguished according to the level of development of the digital economy. The socio-ethical aspects of the digital economy were considered. Formed ethical principles of economic, social and public relations in the digital economy. It was analyzed the ethical aspects of the formation of the political image and its features in the conditions of the digital economy, as an example of the problematic of ethical principles in this direction. Generalized theoretical and methodological principles of imagiology in the political sphere in the conditions of digitalization.

Keywords: digital economy, social and ethical principles, political image.

The conditions for the development of digitization and the digital economy have affected all spheres of social, socio-economic and political life. Digitization contributed to the acceleration of information and communication processes, the spread of digital technologies for the promotion of ideas, goods, services, political parties, and the formation of the image of individuals. Digital tools have influenced the formation of branding strategies and the creation of political brands and the introduction of mechanisms for their ongoing support. Informational support in the formation of political brands and the choice of communication channels for their distribution creates the concept of a successful political brand. In the conditions of

"information wars" and the formation of support from the broad masses of the population for political ideas and parties, the problem of socio-ethical principles of the formation of political brands in the conditions of digitalization becomes especially relevant.

The purpose of the article is a generalization of the theoretical and methodological foundations of imagiology in the political sphere in the conditions of digitalization.

For the effective formation of the digital economy, it is necessary to create suitable conditions for its effective development. There are three main components:

1. A legal framework that would control all economic processes between its various representatives, promote the development of healthy competition in the market and create opportunities for the use of digital technologies in various spheres of society as a whole.

2. Development of skills and necessary knowledge of employees, for more efficient work at the enterprise and more skillful use of digital technologies.

3. Creation of institutions that use the Internet, with the help of which all representatives of society will be able to receive protection from various types of suppressing the activities of persons connected with the digital economy.

In the period of the digital economy development, information technologies and human capital are important entities in ensuring stable growth. Therefore, it is necessary to train highly qualified specialists for its effective application in relation to economic dynamics, taking into account market requirements and modern trends in the development of digital technologies. Therefore, growth, increasing the number of jobs and improving the quality of services are particularly important³⁷.

Analyzing all of the above, it is clear that the digital economy, like the traditional economy, depends on a set of factors that can differently affect the progress and development of new technologies not only inside the enterprise, but also outside it. One of the main aspects is the possibility of developing this specialization, which forms progress and provides opportunities to use these benefits to one's advantage. The second aspect is the society as a whole. It is very important that the developing technologies are useful not only for enterprises, but also for the ordinary consumer, so that they can be synergistic and complement each other. The third aspect is the development of the legal framework and support of the state by various methods. The formation of the legal framework is the basis for the development and further distribution of various forms of digital technologies that can qualitatively affect the quality of life of the entire society. The development of the legal framework by the state will provide reliable protection and understanding by society that they can legally and safely develop and use these technologies. And the fourth aspect is the development of scientific institutes to improve the skills of labor personnel with the use of new technologies, for more appropriate development. A well-informed society that understands what time they live in will provide opportunities for the inflow of more intellectual resources not only for business, but also for the state as a whole.

³⁷ General characteristics of the clothing market in Ukraine. Analysis of current trends.

The development of digital technologies is our present and future, therefore the appropriate development of these technologies, in synergy with all its participants, will lead to the maximum results of the development of the whole world at the global level.

Along with this, the development of the digital economy is accompanied by certain problems in terms of social and ethical relations in the digital environment. It is necessary to form ethical principles and parts of the implementation of economic, social and public relations in the digital economy.

In this aspect, when forming the image of brands, including political ones, it is necessary to define and form the basic provisions of socio-ethical relations. For this purpose, we will consider the basic principles of image formation and its features in the conditions of the digital economy. First, let's turn to the historical sources of the concept of "image".

The foundations and primary ideas about the concept of "image", which became its original sources, were laid already with the beginning of the formation of statehood in the history of mankind. Ancient countries such as Mesopotamia, Ancient China, Persia, and Ancient Egypt are of primary importance in the development of this definition. "Image" was formed as a political concept, which is what connects it with the development of statehood. This definition was also formed separately for the individual.

In the states that arose later, namely in Ancient Greece, and later in Ancient Rome, the emphasis is gradually shifting to the formation of the state image. The worldwide spread of the state's influence on neighboring countries becomes important. It is only necessary to recall the «Great Greek colonization». The image of the individual gradually fits into the image of the society, an individual person becomes a representative of the entire state. Completely new ways of forming and spreading the image of a person are being formed: from a social person to a concrete person. Not only an honorable person, but also an ordinary citizen is responsible for the image of the entire country, which leads him to a special perception of his own actions and appearance³⁸.

Against the background of a similar attitude to the image of the state, the image of the ruler, formed in Ancient Greece and Ancient Rome, stands out. Each ruler sought to create his own, individual image, respected by all citizens of the country. The mechanisms of creating the image of the personality of the emperor of the country are becoming more and more diverse: from direct pressure on the opinion of the population, to indirect influence through artistic works of the art world (the flourishing of sculptural portraits and architectural monuments aimed at glorifying the emperor). Analyzing ancient literature, namely the heroic epic of the legendary singer Homer – the epic poems "Iliad" and "Odyssey". They describe the events of the Trojan War and the return of its participants home, the main character of Virgil's

³⁸ Kutsova O. M. (2010). Strategies for forming the image of a political leader: the regional dimension.

"Aeneid" Aeneas. Only a few examples are the visual formation of the so-called heroic "image", which is worth talking about as a prototype of the era³⁹.

On the example of Egypt, it is possible to single out the fact that the basis of the royal portrait was an image that was deliberately magnified, devoid of everything random and insignificant, with clearly selected and carefully worked out features. In the ceremonial clothes of the pharaoh, every detail, symbol, color works to create the idea of divine power. Here everything is thought out to the smallest detail. Anyone who looks at the pharaoh should not doubt that a living god, the son of Osiris, was in front of him. The golden mask of the pharaoh, which has features of a portrait likeness, the royal coat inlaid with inlays made of a mixture of blue glass and lapis lazuli, a breast ornament in the form of a falcon with open wings and a golden diadem in the form of a snake – all these are signs of royal distinction, identification with contemporaries. The «Pyramid Texts» and «Sarcophagus Texts», which have preserved the description of the most complex palace etiquette and coronation celebrations, leave no doubt that the importance of the image of the emperor was clearly understood and the creation of the image was a purposeful process. Already at that time, there were generally accepted canons of beauty, which ordinary citizens strove to follow. To emphasize their natural talent, Egyptian women tinted their eyebrows and the tips of their eyelids with paint and ivory needles, used blush and bleach, used blue paint to make the veins on the skin brighter⁶.

Mythologizing as a technological process of creating an image, which took place in ancient Egypt, acquires new distinctive features. From the blood relation with the gods and religious worship, the image of the individual changes in the direction of artificial overgrowth with elements of the divine. So, popular actors and singers create a legend for themselves, within the framework of which a myth was created. The mythologizing of the image was based on all the parameters of creating a myth. The image had to be formulated in such a way that no one doubts the plausibility of the existence of such a mythologized image. After applying a secondary layer to the created image, the image should have had a layer of third surreality – that was the type of reaction in the target audience, which was expected when laying the foundations of the simulated image. The tertiary layer was able to spread spontaneously, regardless of the image makers' wishes, creating one or another image. This quality of mythologizing technology made the image more real and "alive". The spread and further development of the image depended on its relevance for this target audience, and on the ability to reflect the culture of this community. Spontaneous, multi-layered spread from "word of mouth" helped to create advertising of a person's image, which was one of the most effective forms of existing advertising (the so-called "word of mouth")⁴⁰.

Myths can have different content and informational basis, are aimed at a certain target audience and emphasize certain features of the simulated image, which becomes a special form of advertising and information dissemination.

³⁹ Palekha Yu. I. (2005). Imidzhologiya: navch. posib.

⁴⁰ Logunova M. (2004). Political imageology.

The formation of the social self-identification of chivalry was influenced by several factors. One of them is medieval military customs that require loyalty to the king, personal courage, and obedience to duty. At the same time, customs did not exclusively regulate the military aspects of knightly life. The duties of a true knight also included intercession for the weak, poor, widows and orphans. Another factor that influenced military morale was Christian values and traditions. The Catholic Church continued to educate the military elite in the same way, trying to soften the brutal customs of chivalry and its influence, when the weakening of royal power revealed the fact that armed knights, who usually had castles and large land plots, were not under control.

The ethical experience of chivalry was important at the stage of socio-political development, as it could be considered in connection with current issues of modern military ethics, as well as in connection with the philosophical understanding of the principles of "just war". In this sense, it was the examination of chivalric ethics through ethos – on the border of the real-proper and the ideal-proper – that showed the typical processes of formation of cultural and value orientations, ideas about what was proper, codification of ethical principles and the relationship of the normative-value component of society with its real customs⁴¹.

Similar image characteristics were a sign of representatives of the military state, but the analysis of these signs of the higher state of managers was no less important. Perhaps, one of the most striking examples was the French king Louis XIV.

From a historical perspective, Louis XIV was certainly one of those personalities around whom many mysteries, stories and legends have formed. He was a truly outstanding figure, whose reign was marked by an era of fierce wars and the strengthening of the role of France among the European powers. The period of his reign was called the century of absolutism, the "Great Century" and the flourishing of art and culture. At that time, painters especially liked allegorical images of monarchs, who also liked comparisons with heroes, gods, and great conquerors⁴².

Charles Lebrun, the chief court painter, created a series of pictures from the life of Louis XIV in Versailles in the Gallery of Mirrors, with a combination of allegorical and real figures, reminiscent of Rubens' series on the life of Maria de' Medici. Then cycles dedicated to one ruler were common.

The leading role of Louis in the history is emphasized by the fact that his decision to rule alone (1661) became the main theme of the ceiling images of the Mirror Gallery. There he is depicted in Roman armor as Alexander the Great. The choice of the character can be explained by the fact that at this time classicism was firmly established in French painting, when interest in antiquity, which had its origins in the Renaissance, especially grew. In addition, Louis XIV admired the great general

⁴¹ Vegesh M., Ostapets Yu. (2009). Characteristic features of the development of the political thought of the Middle Ages (V-XV centuries), p.20-31.

⁴² Shurko O. B. (2018). Injecting a political image into the public opinion of the citizens, p.261-266.

and tried to imitate him. A similar image of him also showed the king as a powerful ruler and conqueror, pleased his ambitions to conquer the world⁴³.

The king tried to return to the former ancient formation of the image of the manager, the crowning phrase confirming this statement is the famous: "The state is me." The ruler, who, according to legend, nicknamed himself "the sun" as a child is a classic embodiment of the understanding of the ruler's image as the personification of the country, so his image is quite symbolic.

With the development of human history, the phenomenon of complication of the mechanism of creating a personality image becomes characteristic. In medieval Europe, there is a deepening of the religious aspect of the emperor image, despite the dual position of the nobleman, forced to combine secular and religious elements to form his own image. Society's requirements for the personality of a nobleman and a knight were more than specific. A real knight was obliged to know and be able to: read poems; own a spear, sword and other types of weapons; be an excellent rider of a horse; to worship a beautiful lady; faithfully serve the suzerain; to be brave in battle; read prayers and observe church rites, etc. Gradually, a special image of the personality of a nobleman is formed, which should automatically be a knight in essence and external manifestations. The image of the knight becomes a certain image characteristic, with a specific set of elements that are still active (for example, the cult of worshipping a beautiful lady, which is directly connected to the culture of chivalry): "The knight performs his role, not for a moment forgetting about the audience before whom he "plays," whether the king or his direct seigneur, a lady, or a knight like himself. Ideas about honor had a specific character: honor is not so much the inner consciousness of one's own dignity, the self-awareness of a person who feels his individual qualities that distinguish him from others, like fame among others"⁴⁴.

The concept of "chivalric ethos" or "code of knightly honor" can be considered a separate phenomenon of the formation of the image system of the individual, which acted as a basis for considering the normative and value components of the culture and lifestyle of the knightly state. In the ancient tradition, ethos meant a calm, balanced, intelligent character. Included in this concept are the norms of morality presented in the moral codes of chivalry, and non-codified values and virtues, and even the cultural orientation and lifestyle of chivalry. The understanding of courage by chivalry included extreme manifestations of this quality. For example, when a certain number of knights swore not to retreat from the battlefield and not to leave it further than a certain distance – all of them could die in battle.

In this sense, the virtue of love in the knightly ethos was also related to the value of faith: the ideal of courtly love was formed on the basis of the cult of the Virgin Mary, which defined the ideal of the "Beautiful Lady" as a physically inaccessible, non-sexual image, as an object of disinterested worship. The content of the virtue of justice was determined by the value of faith in the context of the

⁴³ Meenaghan T. (1995). The role of advertising in brand image development, p.23-34.

⁴⁴ Emmison M. (2007). Researching the Visual: Images, Objects, Contexts and Interactions in Social and Cultural Inquiry, p.9.

appointment of the knight as the guardian of justice and honor in society. The basics of the image can be distinguished:

- courage (to fulfill the duty of loyalty to God and the suzerain);
- justice (protection and assistance to the weak, loyalty to one's promises, oaths and obligations);
- love (the cult of the Beautiful Lady, the ideal of chaste love)⁴⁵.

Knights, as representatives of the military state, had to adhere to the ethical rules of their state not only in war, but also in everyday life. It was in this way that the knight could prove that he was truly a noble and worthy person, despite the fact that in practice the ideals of knightly morality were implemented with variable success, forming special knightly customs.

By itself, the moral code as a systematized set of rules for the conduct of chivalry comes from purely military ideas about bravery. During the era of the Crusades, the code was supplemented with Christian concepts of duty to God and the Church. However, the most important features of the moral code of chivalry, which gave it a truly original character, were feudal and courtly concepts, which served to strengthen the social position of the knight and contributed to his social openness⁴⁶.

During the Renaissance, the knowledge about the formation of the individual image and the image of the state, developed in previous cultural eras, is structured and acquires further development. Not only the rulers of countries, but also ordinary people begin to understand the importance of presenting their own image, the principles of work on the image of the individual are being formed. Various works of art that have survived to this day (Donatello's "Equestrian Statue of Gattamelata", Francesca's "Portrait of the Duke of Montefeltro", Botticelli's "Portrait of Julian Medici", Raphael's "Portrait of Baldassare Castiglione", Titian's "Portrait of Charles V", etc.) are indicators of such work.). The transformation that took place in the consciousness of a person, which broke out of the dogmatism of medieval culture, leads to a powerful explosion of all spheres of social and cultural life of a person. Of course, it is still quite early to talk about the modern understanding of image, but the central components of image culture are not only developing rapidly, but also acquiring new additional structural elements. First of all, only the local image of the emperor was important, which refers specifically to his image and the time of his reign: each pharaoh sought to reflect his image in various sacred buildings, often destroying the achievements of the previous emperor; in Ancient Greece and Ancient Rome, the image of a just ruler who takes care of his state is actualized; in the Middle Ages, the main task of a landowner (vassal, noble, king, etc.) became the search for a strong image capable of conquering and holding new lands⁴⁷. In the Renaissance era, not only a specific person, on whose image all the means of art work (support of the arts by the Medici dynasty), but also the image of the state itself, a certain court,

⁴⁵ Vegesh M., Ostapets Yu. (2009). Characteristic features of the development of the political thought of the Middle Ages (V-XV centuries), p.20-31.

⁴⁶ Goyan V.V. (2001). Coloring and visual aesthetics of television programs: methodical recommendations.

⁴⁷ Bennett W. L. (2012). The personalization of politics: Political identity, social media, and changing patterns of participation, p.20-39.

house, etc., becomes important. Landscape art is developing, which includes natural space in the general image of a house, manor, palace, which, in turn, show the status, well-being, spiritual aspirations, position in the owner's yard. Thus, a significant component of the image that is actively used in society is formed: the context. Thus, even before the Renaissance, the main toolkit of imageology was developed, such as: mythologizing; materialization of the image; context; visualization; detailing⁴⁸.

N. Machiavelli is considered one of the first «theorists» of image, who was characterized by developed «image» thinking. The specificity of such thinking is the ability to think and act in the interpersonal space, predicting the reactions of other people and correlating one's actions with these reactions. In its best forms, it is based on deep human sociality and includes the ability to establish friendly relationships with people.

N. Machiavelli in his work «The Sovereign» convincingly showed the importance of possessing a suitable «gut» (mask) for a public figure. The psychological justification of impersonation has become the object and subject of research by social and political psychologists. Possessing knowledge of the laws of the process of social perception and subjective awareness of the external image, they gave this problem a theoretical and applied justification⁴⁹.

Imageology, as a relatively young science that emerged in the 20th century, includes the entire range of technologies and tools developed in previous eras and allows for the purposeful creation of a certain, specific, sometimes intentionally invented image. The historical conditioning of image formation contributed to the rapid spread of imageology as a science in modern humanitarian knowledge. Image creation technologies (individuals, enterprises, firms, countries, etc.) are actively used in political, legal, social, industrial, etc. spheres of life of modern society. A certain type of image – the image of a person, which most often becomes the main form of a communicative message, for example, a political or commercial figure, receives special actualization⁵⁰.

The essence of the concept of image should be considered from the spread of this concept in the modern understanding. In the 90s of the last century, the new word "image" firmly entered our lexicon, which literally means image in English. However, it is worth understanding that this word has not one, but at least five meanings ("image", "statue (idol)", "likeness", "metaphor", "icon"), while the most common meaning in the English language, the word "image" is used precisely in the sense of "image".

In foreign literature on the problems of sociology and psychology, the term "image" is usually used to denote a special kind of images – representations that are widely used by various social institutions that form attitudes in the mass consciousness. In the psychological literature, an idea of the image as a phenomenon close to the concept of a social stereotype has developed. In psychology, a social

⁴⁸ Barna N.V. (2006). Image-making as a variety of militia activities in the aspects of mass culture: mystical studies notes.

⁴⁹ Palekha Yu. I. (2005). Imidzhologiya: navch. posib.

⁵⁰ Clisovenko Yu.P. (1998). Image, science and art, p.94-96.

stereotype is defined as "a relatively stable and simplified image of a social object, which can be represented by a person, group, event, phenomenon, formed in conditions of a lack of information about the object, as a result of the generalization of personal experience and ideas accepted in society»⁵¹.

An image is a certain image that lives steadily and is reproduced in mass or individual consciousness. Three important blocks can be distinguished in the structure of the image. The first are related to the personality of the image bearer and are a complex characterizing his qualities. The second block characterizes the position and behavior of the individual in the social environment. And the third block shows the refraction of these qualities in the professional activity of a specialist. At the same time, the determinant of its formation is the type of activity that makes demands on the bearer of the image. Depending on its specifics, one of the components of the image structure becomes the most essential (bearing the main informational load). What is important is the perception of the social environment about the activity itself and the criteria it uses to evaluate it. The social environment selectively approaches the assessment of the process of interpersonal relations itself, but also of each of the parties participating in this process⁵².

At present, the image is owned by persons and organizations whose activities are within the limits of all major spheres of social life: politics, business, social activities, culture, sports, charitable channels, etc. Over time, there was an expansion of the field of the image category potential application – with a design for the socialization and functioning of representatives of "ordinary", non-public professions. Attention to the image has become relevant in recent years due to the aggravation of the problem of choice facing people (choice of goods and services, political parties and public organizations, leaders and managers), as well as competition in various markets: consumer, political, etc.

At this time, sociologists, psychologists, political scientists, marketing and advertising specialists from all over the world conduct unsystematic studies of the image mainly for practical purposes without theoretical and methodological justification for its selection as an independent social phenomenon of modern social life⁵³.

Image is also a central concept of imageology and a common definition among many humanities and social and humanitarian sciences that study the problems of image formation, preservation, and change. In modern humanitarian knowledge, it is no longer possible to do without the concept of image, applied to social groups, organizations, and things. The image and its formation are important components of the life activity of a person, organization, and society. In modern humanitarian knowledge, a stable idea of image has developed as a certain value, the existence of

⁵¹ Khavkina L. M. (2013). Imidzhelogiya: scientific method. posibnik for students zi spec. "Journalism".

⁵² Grachevska T.O. (2012). Unofficial diplomacy as nevid'emna warehouses of modern international money, p.157-160.

⁵³ Gutsal S. A. (2010). Public diplomacy as a current priority of the state's current policy: Strategic priorities, p.106-113.

which depends on the life success of an individual, as well as the success of any activity of social subjects.

The image of a person at the modern stage is built and distributed according to all the laws of the multi-stage action of advertising, formed by the advertising theorist Elmer Lewis back in 1896. The so-called AIDA rule can become one of the mechanisms for creating a personality image. When developing a personal image, it is necessary to structure the image according to the following elements in the same sequence as in the advertising message:

1. Attention – to ensure attention to the object; the image of the individual should attract attention to himself, attract views, create a special atmosphere around him;

2. Interest – the image of a person should create interest in his existence, interest can be formed by both verbal and non-verbal means; maintaining interest in the image of the individual using various means (adding new fragments, elements and qualities);

3. Desire – the target audience, taking into account the psychographic portrait of which the personal image is formed, should develop a desire to "consume" this image, admire, deal with the created image;

4. Action – the target audience, faced with a specific image of a person, should direct communication with him to owning a common socio-cultural space with this image⁵⁴.

The manifestation of the image as an advertisement of the personality is increasingly actualized among famous people, political leaders and top executives. The awareness that the image can influence a large number of factors that stimulate the number of appeals to the goods, products and services of the enterprise that has created an effective personal image, increasingly leads to the fact that when forming and establishing the personal image, image makers turn to advertising technologies and processes. The joint use of the toolkit of imageology, practice and theory of advertising is a promising direction for the formation and dissemination of the image of a person in modern culture.

The problem of the leader's image and its formation arises in the history of mankind almost simultaneously with the emergence of politics itself, relations in society regarding the distribution and exercise of political power.

A political image emerges only when it becomes "public" and begins to relate to various aspects of political practice. To create an image, for example, of a deputy, it is necessary to have at least one voter, and to create a corporate image – a political group or organization as a carrier of individual, group, mass consciousness. Although the political image is universal, it is characterized, to a certain extent, by abstractness, schematicity, simplification and dynamism in comparison with its carrier. For example, the dynamism of the political image consists in the fact that it quickly changes according to the new political, social, economic or other situation, which has an impact on the "unconscious" requirements of the subjects of perception. In general, the image is always something like a "half-truth": it sets certain directions for

⁵⁴ Palekha Yu. I. (2005). Imidzhologiya: navch. posib.

"guessing" according to the subject's social experience. In its formation, an important role is played by stereotypes and associations, with the help of which people identify the object of perception, albeit with already perceived qualities, but which often do not correspond to reality⁵⁵.

Any political image is a special kind of image. It includes political and psychological characteristics inherent in the image in general, as well as features inherent only in its specific variety. Specialists often define political image as a purposefully formed and promoted image of a candidate, party, social or political movement, forgetting that image in the political sphere exists as a phenomenon of mass consciousness regardless of the implementation of pre-election technologies, and sometimes in opposition to them. Political image is a complex, multifactorial phenomenon, the specifics of its construction are related to the specifics of politics as a type of activity, its place in people's lives, and the nature of the activity of a political leader or organization. The role of an effective political image is manifested both in the high popularity rating of its bearer and in the possibilities of influencing public opinion, in the possibilities of actively shaping the political activity of the state and society as a whole⁵⁶.

In modern studies of the political image, three main directions can be distinguished: the first reveals the psychological problems of the individual image of a political leader, a public figure; the second is the image of political movements, organizations, the political system and the state as a whole; the third reveals the relationship between them.

According to many authors, there are three groups of components of the image of a political leader.

Personal characteristics: physical, psychophysiological features, character, personality type, individual decision-making style, etc. Social characteristics: belonging to a certain social group – party, nationality, professional group, social status. Symbolic characteristics: leaders become signs of certain ideologies, this or that possible future, a certain course of action⁵⁷

From the point of view of political theory, there is a problem of forming the foreign policy image of the state leader at the junction of several branches of political knowledge. The theories of political leadership, political communication, political psychology and culture should be attributed to these fields. This list must be supplemented with the theory of international relations, the main paradigms of which interpret the role of the state leader in world politics and, therefore, his image⁵⁸ on various philosophical-political, socio-philosophical, ideological and historical grounds.

In the context of understanding a positive image, theorists also use the concept of "effective image". An effective image is a positive image of a political actor, the

⁵⁵ Kravets R.B. (2013). Information technologies for organizing business: navch.posibnik.

⁵⁶ Krivosheyn V.V. (1999). Political image in the axiological structure of the political mentality of the Ukrainian people, p.47.

⁵⁷ Pocheptsov G.G. (1998). Imagology: theory and practice.

⁵⁸ Lewis M. A. (2005). Self-determination and the use of self-presentational strategies, p.469-489.

components of which (external, internal and procedural) are aimed at increasing the number of supporters from the population, demonstrating socially satisfactory behavior aimed at increasing welfare. population of the city, region and country as a whole. An effective image should have the following characteristics of these components:

1. External component: the appearance of a politician, his face, hairstyle, posture, clothes and accessories should not cost millions, but they should correspond to a serious status, expressing it in an official business style; gestures and speech should be clear, restrained; politicians should show their competence and professionalism, a good understanding of the matter by the tone and features of their speech;

2. Internal component: the opinion of the politician should be clearly oriented towards the development of the country's well-being, raising the standard of living of the population, revealing patriotism and striving for radical changes that will improve the political situation in the country. the country must be tracked; intellectual and professional skills must be at a high level, in accordance with the specifics of the field of work; The political idea of the policy should be aimed, first of all, at improving the life of the population, not its own⁵⁹.

3. The procedural component is very important, and image makers are very difficult to work with. An effective procedural component of the politician's image has been formed, namely: activity in political initiatives; quickly navigates in any situation; establishes external relations; leadership and organizational qualities; purposeful in their actions; persistent in work; stable in his behavior and emotions; persistent in the performance of official duties; energetic in doing things⁶⁰.

The formation of a positive (effective) image must be realistic. It should correspond to the character of a politician whose goal is to come to power. The demand is one of its main features. In this context, this means that the image must meet the expectations, needs and demands of the constituent groups.

One of the integral elements of the image is memorability, which includes brightness and simplicity. The image should evoke positive emotions, should be simple and informative in terms of structure and a number of characteristics.

The image of a politician should evoke a limited and at the same time sufficient set of associations that reflect the main purpose of the party in society, state, and politics. In order to determine which elements should be included in the filling of the image, it is necessary to understand how it is formed and what structure the image has. The formation of a politician's image is related to the influence of a number of factors, which can be represented in the form of four image components⁶¹.

⁵⁹ Caprara G. V. (2007). The personalization of modern politics, p.151-164.

⁶⁰ Viler K. (2002). There is no effective management without effective communication.

⁶¹ Zuykovska A. A. (2014). Social media as a medium of political communication, p.272-280.

1. Program and ideological component. Many voters perceive elections as a way to express their attitude towards politicians and political parties. Thus, the electoral behavior of voters is related to the desire to demonstrate solidarity with one or another development program presented in ideological positions. The formation and promotion of the image of a politician includes the following stages:

- development of integral program documents with an appendix for individual electoral groups and regions;
- development of applied forms of party programs – manifestos, declarations, open letters, programmatic and ideological principles;
- preparation of the texts of program speeches and interviews of the leader.

2. A step-by-step component of a politician's activity. Meaningful filling of the activities of political parties should include the initiation of political events and information events, the development of measures aimed at both the potential electorate and the party organization. The use of a step series, which are scenarios for image promotion, is one of the most effective methods of forming and promoting a politician's image⁶².

3. Personal component. To form a more comprehensive image, it is important to actualize the personality of a politician as a leader of public opinion. It is important to form a high level of trust among the public⁶³.

To create a positive strategic image of a politician, it is very important to implement the following programs:

- carry out a separate program of meetings with voters, representatives of mass media, cultural and political elite, visits to regions;
- conduct public speaking trainings;
- provide psychological support to politicians during election campaigns.

The construction of a positive image of a political leader is determined by the following points: knowledge and understanding of the moods, demands and instructions of one's future or real followers and the ability to show that the politician is the one who fully meets the needs of the public. One of the most effective strategies for gaining the public's trust is to show the politician that he is like them, that he has the same problems and concerns as them.

The external component involves a certain set of visual methods for the public environment to form an effective image. A unified image is necessary, which involves the development of campaigning and informational materials and other printed products of political parties with similar stylistic solutions, the presence of their own emblem, color scheme, allow to distinguish their difference from other political, public and national organizations.

⁶² Lavrentiy A. S. (2017). The main approaches to identifying the image, structural warehouse and functional space of implementation, p.123-128.

⁶³ Bennett W. L. (2012). The personalization of politics, p.20-39.

The mass media play an important role in the implementation of public relations tasks, as they have enormous potential in shaping public opinion. Mass media is the mainstay of most PR programs. Mass media have the maximum "shocking effect" and provide information with a certain status of objectivity. That is why the party needs to establish good contact with the media and understand how to better communicate with them. When the basic principles and key points of interaction with the mass media are developed, the assimilation of the candidate's message by mass media is improved. And this always gives excellent results. An election campaign is a system of campaigning activities carried out by political parties and independent candidates in order to secure maximum voter support in the upcoming elections⁶⁴.

Some political technologists claim that the following principles are extremely important when a politician thinks about creating a positive political image:

- Appearance, namely the right clothes. A politician is a public person and an adequate appearance is very important, because at any moment he (she) can get into the media, which will either emphasize correctness or debunk the formed image. Modern political technologists recommend dark shades of suits and contrasting ties.

- be ready for unexpected public statements. It is important to be aware of exactly what speech a representative of a political party will give under the most unexpected circumstances. The ability to spontaneously respond to questions and consistency in answers and interviews will add popularity.

Based on the understanding of the psychological essence of the political image, it is important to note the distinctive features that must be taken into account when creating it. First, the political image must necessarily be formed for a specific task. Secondly, in scientific studies, it was repeatedly noted that the image should mostly meet the social expectations of the masses. Social expectations are the expectations and requirements of the norms of the leader's performance of social roles and activities corresponding to them. This is a type of social sanctions that regulate the system of relations. Social expectations are formed taking into account the discrepancy between "what is and how one would like it." Inconsistency usually concerns the activities of leaders, managers. The greater this discrepancy, the stronger the desire to have another leader⁶⁵.

Technologies for the formation of a politician's image are based on the following points:

- image formation based on the «ideal image» of the candidate;
- formation of the «unwinding» scenario;

⁶⁴ Stewart P. A., Bucy E. P., Mehu M. (2015). Strengthening bonds and connecting with followers, p.73-92.

⁶⁵ Woo S. E., Keith M., Thornton M. A. (2015). Amazon Mechanical Turk for industrial and organizational psychology, p.171-179.

- use of the socio-psychological phenomenon of «contrast» and «similarity» (contrast or striving to be similar in something);
- use of factors of social attraction (the process of preference of some people over others, mutual sympathy) such as physical attractiveness, individual characteristics, spatial proximity, etc.;
- the use of verbal and linguistic techniques: the use of nominalization – creating the effect of a completed action,
- projection of information, use of uncertainty, which characterizes understanding of the essence, interest, hyperbolization of information about personal qualities, creation of a halo of exclusivity;
- use of psychological connections (some qualities are connected with others)⁶⁶.

In other words, a candidate's positive image is the public side of his personality addressed to voters. In today's economic and socio-political conditions, when the majority of voters are in a state of political apathy, the competition is mainly not political programs and political structures, but personalities, or rather skillfully created images of politicians.

Today, in the era of the development of the digital economy, continuous and sometimes rapid changes in technology, it is important for a political, state or business actor to build his activities in accordance with the challenges of the surrounding reality, to skillfully shape and promote his image using the opportunities available today, current technologies and, above all, information, the reflection of which is the Internet environment and the system of its interactive services. The Internet today performs one of the most important functions for society – communicative. The desire to communicate consolidates a wide audience to a certain resource⁶⁷.

A growing trend in political communication research associates changes in the information activities of politicians with the increasingly central role of mediatization in modern societies. As an analytical concept, mediatization has been a term that highlights important changes in the relationship between the realms of politics and the media. A common view was to understand media and politics as composed of different logics, and this media logic gradually became more dominant in relation to what is described as political logic or sometimes more specifically party logic. When the logic of mass media prevails, it is necessary for politicians to adapt their strategies in such a way that they correspond to mass media, in particular to narrative conventions, professional expectations and technological and distribution characteristics that characterize large media institutions⁶⁸.

⁶⁶ Bebik V. M. (2005). Information and communication management in the global sector: psychology, technology, public relations technique: monograph, p.432-437.

⁶⁷ Matychik A. V. (2016). Self-organization of the community society as an official of the democratic modernization of the political system of Ukraine society.

⁶⁸ Golovaty M.F. (2010). Political management: navch. posib.

Currently, social networks are one of the most common forms of language interaction between communicators in the information space. A social network is an interactive website designed for many users, the content of which is filled by the participants themselves. An automated social environment allows a group of users united by common interests to communicate: thematic forums, especially industry ones, have been actively developing recently. Communication is carried out through the internal mail web service or instant messaging.

The Internet is a reflection of the real world. The same laws apply in it, as in a real society. It is not surprising that all over the world, opinion leaders are increasingly active in virtual social networks. Most politicians, pop stars, many writers, scientists, and journalists have blogs. It becomes almost obscene for members of the world's elite not to have their own blog. One of the latest and most striking examples is US President Barack Obama, who was even nicknamed "candidate 2.0" by journalists during the election campaign. Obama owes much of his victory to an unprecedented Internet promotion campaign, primarily through his own personal leadership network⁶⁹.

Social networks are gaining particular popularity in each country, which allow you to create a profile with information about yourself, produce and distribute content, interact with other users privately (through personal messages) and publicly (using microblog entries, as well as through the mechanism of groups and meetings), monitor the activity of friends and communities through the news feed. The user has the right not only to write messages, but also to leave comments under already published content. You can "attach" photos, audio and video recordings to your messages, and here Instagram is the leader among social networks. International social networks have similar functions, but are distributed worldwide. They also include the world-famous sites Facebook and Twitter, which facilitate the public exchange of short messages⁷⁰.

Politics inevitably comes where there is a mass audience. The presence of political actors in social networks and the blogosphere of the Internet is a unique opportunity to combine the promotion of a politician and party and the main feature of the image of any political entity – universal accessibility. A politician should be unique, but at the same time similar to his voter. In social networks, this side is fully revealed when the user sees that the politician has filled out the questionnaire and posted photos, regularly updates the event feed on his page, promptly and substantively answers the questions that are added, trust in him increases. Internet communication services in this sense are the most favorable environment for political activity at various levels. It is not for nothing that representatives of the authorities or those who seek to take their place on the political Olympus, as well as simply

⁶⁹ Sakhan O. M. (2014). About promoting the social media of the Internet as a way of creating the image of political power in Ukraine, p.143-154.

⁷⁰ Caprara G. V. (2007). The personalization of modern politics, p.151-164.

increase their popularity and influence on the Internet, go to social networks and the blogosphere⁷¹.

One of the most popular social networks today is Instagram – a social network for sharing and rating photos and short videos. Many famous foreign and domestic politicians have their own account on Instagram and regularly "fill it with new information", publishing relevant content for their audience by posting photos and videos, as well as through online broadcasts. In studies of the political role of Instagram, attention is often focused both on various data formats (photos, videos, text and graphic materials), and on the subject of posts posted on Instagram. At the same time, despite the composition of scientific works, which consists of the topic of studying the political role of Instagram, the analysis of the use of this Internet platform in the current activities of political leaders has not yet received sufficient attention from the scientific community⁷².

Today, the Instagram social network is one of the most popular in Ukraine. In addition, this is the most dynamic web resource, because its developers regularly optimize all functions. If once it was used only as a platform for the distribution of photos and small descriptions to them, today it is a resource that also plays an important role in the creation and distribution of informational reasons and messages. This is a social network that has won the favor of a large audience, particularly among young people. That is why it also affects the formation of public opinion and the image of the country and its power structures.

Instagram is a particularly valuable resource in the work of a journalist, because today it plays the role of a primary source. Because here you can find the freshest and most interesting information directly from the participants of information drives.

Instagram is a free application for sharing photos and videos with elements of a social network, which allows you to take photos and videos, apply filters to them, and also distribute them through your service and a number of other social networks. In April 2012, Instagram was acquired by Facebook⁷³.

Five main advantages of Instagram can be distinguished:

1. Helps to form a positive image on the network. By registering an account on Instagram, you will not only increase brand recognition, but you will also be able to find out what users think about the quality of the presented products. What they like, what needs to be improved or eliminated.

2. Thanks to the spread of smartphones and tablets, Instagram makes it possible to constantly maintain contact with subscribers. If necessary, you can calculate how

⁷¹ Semyon N. (2019). The role of Instagram Stories in the promotion of journalistic content, p.97-98.

⁷² Semen N., Kazimova Yu. (2019). Social network Instagram as a modern platform for popularizing journalistic content, p.95-98.

⁷³ What is Instagram's mission and vision statement.

often and at what time users are online, when they open new posts that correspond to their interests. By encouraging your audience with bright, interesting photos, you automatically increase brand recall.

3. Instagram allows you to easily enter messages, influence the opinion of users and gradually change the advertising campaign. This opportunity is especially useful when you need to rebrand. By communicating with your audience and gradually adding new information, you unobtrusively prepare fans for the upcoming changes.

4. Communication with subscribers affects their perception and helps create a favorable image of the company. Depending on the theme of the selected photos, users will get the impression that this brand is created for ordinary people and everyday life. So, it is available to everyone, and they need to use it in order to keep up with fashion. By tweaking the theme slightly, you can create an image suitable for hipsters, advanced gadget lovers or serious, business people

5. Instagram is a convenient platform not only for engaging the target audience in interaction with the brand, but also for attracting investors. This resource is used by representatives of medium and small businesses, reflecting the life of their company in photographs. Therefore, visual contact can be an important step in increasing sales⁷⁴.

The image, both real and virtual, in addition to the main vector of development, for integral formation must take into account the need for the context in which positioning is carried out. A number of factors can be distinguished: the past, family, sports, pets, hobbies. These factors can change, increase or decrease depending on the needs of the image and the target audience. Individuals as a potential electorate and politicians have a political image as a line of communication. Actuality have symbolic and iconic signs in their artificial origin, in the case of their translation into the digital environment of social networks, in the form of photographs and the Emoji language. Thus, due to the use of not single signs in the image, but their complex use, it will be possible to call the image a symbolic structure perceived by the target audience.

Several stages can be distinguished in the campaign for the formation and promotion of one's image in social networks. Stage one: choosing a network for development. One of the profitable options for forming a politician's image is Instagram. At the first stage, it is necessary to determine the format of presence: personal and/or public page.

At the second stage, the design of the page is developed, the necessary content is formed and placed. The peculiarity of material narrows the space for placing information. A large social network provides a wide range of opportunities, each of which should be involved, based on the principle of practical utility and a specific

⁷⁴ Smirnova L. D. (2012). Discursive aspects of the newly elected president's speech, p.207-209.

goal. Photo materials and the ability to publish videos are a huge advantage of Instagram⁷⁵.

At the third stage, the page is promoted – subscribers are attracted to it, communication with them is organized. A smart development strategy is to strictly remove spam and combat trolling, as well as treat every visitor with courtesy. People should feel comfortable here and know that they are welcome, this is the key to success.

When such work is already done, it is very important to observe people's reactions – their constructive suggestions, emotions, criticism, etc. In other words, feel the pulse of what's happening on the page. It should be noted that on the Internet, as in "reality", people are interested only where they observe a live and non-trivial reaction to what is happening. Therefore, the development strategy and new content may undergo significant changes both in the form and substance. It is important to understand: "what reaction from subscribers do you expect?" The format of a monologue and lack of feedback is doomed to failure. People want to be heard and most value two things that complement each other: constructiveness and humor. There are great difficulties in choosing the right ratio from among them. Because even the most constructive and useful information, presented in an excessively large volume and excessively serious form, will inevitably cause a wave of poisonous skepticism and rejection in its addresses.

The article considers the theoretical aspects of the formation of a political brand in the conditions of the digital economy. The technologies and principles of the formation of a politician's image will be considered. Grounded digital channels for the promotion of political brands as the main communication technology. A conclusion is made regarding the use of mass communication technologies in the creation and promotion of a political brand. Emphasis is placed on social networks as the most popular communication tools.

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⁷⁵ Stewart P. A., Bucy E. P., Mehu M. (2015). Strengthening bonds and connecting with followers: A biobehavioral inventory of political smiles, p.73-92.

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FEATURES OF A TRADE ORGANIZATION ACTIVITY IN THE CONDITIONS OF THE MODERN ECONOMY

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Abstract. The article examines the issue of market activity of companies with different vectors of strategic management. Special attention is paid to market policies, sales, market competition and opportunities to create market competitive advantages for business. The results of research on the analysis of the market behavior of companies are presented. Factors affecting various areas of activity are outlined. The most successful models of marketing response to the challenges of the surplus economy, especially in crisis conditions, are highlighted, which consist of four elements: an organizational strategy that determines the level of integration; strategy of communicative interaction of channel participants; strategy of business interaction; customer service strategy. Elaborated recommendations on strengthening the market activity of companies in the field of trade.

Keywords: market activity, trade activity, strategic management, development vectors, market strategies, business.

The economic success of trade organizations in the conditions of the modern economy in its Western European and North American versions led to the desire to imitate the prevailing stereotype of management by the economies of other countries. As you know, economic growth and success in the business activity of firms, as a rule, is and is in direct connection with the use of effective marketing technologies.

Economic globalization, which in many respects determines the realities of the modern world economy, increases the openness of national markets and practically removes obstacles to the incorporation of marketing not only through imitation and borrowing, but also through the direct transfer of skills and abilities when involving leading employees in trade organizations and training own personnel⁷⁶.

The complexity of the situation lies in the fact that the national economy, copying the advanced and most successful options for marketing in the activities of firms, aimed both at innovations in production and at customers within the

⁷⁶ Aaker D. A. (2009). Managing brand equity; Ansoff H. I. (1957). Strategies for diversification.

framework of trade marketing, are forced to deviate from the models due to the inconsistency of local economic realities with reference economies. Such inconsistencies consist, first of all, in different resource availability, lower overall solvent demand and the attitude of the population to the quality and quantity of services related to trade and marketing activities. As a result, it can be stated that marketing itself (primarily commercial) as the sum of the economic efforts of the staff of a trade organization, which brings goods or services to the market, reacts differently to the challenges of the emerging new economy⁷⁷.

One of the challenges of the modern economy are crises (financial, financial and economic, overproduction, etc.). Regarding the formation of crisis phenomena, the processes of their generation as a result of the implementation of marketing strategies by companies seem obvious both in Ukraine and in developed economies. Among them should be attributed the stereotype of intensification of individual consumption, which is reinforced by the growth of lending volumes of the consumer sector and the situation on the mortgage lending market. These processes are actively influenced by the banking and financial and credit policies of investment companies, whose efforts are implemented with the help of marketing communications and positioning of the offered product (service) as desirable and available with the help of borrowed funds⁷⁸.

In our opinion, it is interesting to find out the reaction of marketing of trading companies to the challenges of the new economy, in particular to crises. In this context, it should be noted that in the economic literature there is widespread evidence that many companies and corporations have reduced marketing expenses and marketing departments have experienced reductions in order to optimize the budget.

The intuitive reaction of the business environment can be considered to be the idea that instead of the systemic cause of the decrease in efficiency due to the conditions of existence of the national economy, primary causes are put forward: incorrectly chosen strategy for the development of the organization, inefficient management, conflicting interests of top management and shareholders, as well as the mismatch of professional skills of top management with the current situation. As a result of the crisis phenomena, there was a decrease in financial reserves in many organizations, which reduced the overall budget and, as a result, marketing costs. These are costs caused by the lack of success in bringing new products to the market, the high cost of advertising campaigns with unproven effectiveness due to the lack of

⁷⁷ Babko N.M. (2022). Marketynh yak protses upravlinnia kompaniieiu v umovakh konkurentsii. Rozwój systemu kształcenia w zakresie nauk rolniczych – od teorii do praktyki; Babko N., Mandych O., Duiunova T. (2022). Features of digital globalization in conditions of modern challenges; Babko N.M. et al. (2020). Povedinka spozhyvacha: navch. posib.

⁷⁸ Kviatko T.M. et al. (2020). Marketynhovi doslidzhennia: navch. posib.; Babko N.M., Naumenko I.V., Spivak S.I. (2020). Osoblyvosti marketynhovykh komunikatsii v informatsiinykh merezhakh, p.297-303; Kotler P. (2009). Marketing management: A south Asian perspective. Pearson Education India; Mandych O., Babko N. (2022). Characteristic features of the digital transformation of the Ukrainian economy; Mandych O.V. et al. (2020). Marketynhovyi menedzhment: navch. posib.

sales growth. This mediates the reduction of marketing budgets and control over their direct spending. The measures carried out in marketing during the crisis are determined by such parameters as the size of the company, the profile of its activities, the availability of reserves and opportunities for diversification, as well as the specific situation on the market. In any case, it should be remembered that marketing makes it possible to assess the prospects of the studied market and potential directions of the company's activities, which can contribute to the exit from the crisis with smaller losses⁷⁹.

According to P. Kotler, "...the role of marketing in crisis situations is growing more than ever: it is marketers who help the company to survive by finding new niches, restructuring product policy, finding new reserves and new points of effort. Marketing helps the company to survive. It is the marketing approach to solving the main problems of the company during the crisis that will help it not only to soften the blow, but also to continue active commercial activity. The task of marketing is to identify both external and internal causes of the crisis situation and propose measures to overcome it"⁸⁰.

Traditionally, one of the possible responses of the company's marketing to crisis phenomena in the economy is to build long-term relationships on a consensual basis with permanent business partners, which, along with suppliers, wholesale and retail chains and other organizations, include corporate and individual consumers.

It should be noted that such long-term relations within the framework of marketing as partnerships are built with a limited number of the above-mentioned business partners, on the basis of which the company's existing business relations are selected. In this context, horizontal integration of the procurement process with other trade organizations, including competing ones, can be implemented, if this entails a reduction in the cost of the purchases made and an increase in the market stability of the parties involved in this integration. Moreover, this kind of arrangement with competitors, especially at the level of large companies, has come to be called new competitive relations, which are used to confront other players in the global market⁸¹.

Another possible response of marketing companies to the challenges of the new economy and the crisis, in particular, is the possibility of outsourcing a number of areas of the company's activities. Here, first of all, we mean the possibility of transferring part of specialized marketing activities to highly professional marketing companies. For example, ordering specialized marketing research in the field of

⁷⁹ Mandych O., Mykytas A., Babko N. (2021). Communication as the basis of business and marketing activities; Fiiier O. et al. (2019). Risk management in the sphere of state economic security provision using the example of professional liability insurance, p.51-60; Pakhucha E. et al. (2021). Strategic Analysis of Export Activities of Enterprises to Ensure Sustainable Development, p.251-270; Porter M.E. (2011). Competitive advantage of nations: creating and sustaining superior performance; Romaniuk I.A. et al. (2020). Reklamnyi menedzhment: navch. posib.; Sievidova I.O. et al (2020). Konkurentospromozhnist pidpriemstva: navch. posib.

⁸⁰ Kotler P. (2009). Marketing management: A south Asian perspective.

⁸¹ Fiiier O. et al. (2019). Risk management in the sphere of state economic security provision using the example of professional liability insurance, p.51-60; Romaniuk I.A. et al. (2020). Reklamnyi menedzhment: navch. Posib.

repositioning products and extending their life cycle, analysis of foreign markets on the eve of entering them, etc.

It should be noted that recently the most common marketing response to the challenges of the global economy is the widespread growth of the role of the formation of strategic long-term alliances, which is implemented as the development of horizontal and vertical marketing systems, and even the transformation of the latter into vertically integrated company management systems. In modern business, including the work of trade organizations, these changes are manifested in mergers and acquisitions that take place on the ideological platform of partnership marketing.

A number of marketing responses to these challenges are included in the changes in the fairway of the standard marketing complex of the enterprise in the field of trade and affect decisions in the field of product, price, sales and communication policy. Usually, there is a reassessment of the company's product policy, in which it is desirable to take into account the deviation of consumer behavior⁸².

In turn, product differentiation is closely related to price regulation and cost reduction of the company. The revision of the organization's price policy in crisis conditions is usually carried out in the direction of a decrease in the rate of profit, as well as in the direction of a decrease in costs. In terms of price management in the fairway of partnership marketing, the organization should completely abandon the sale of products under the guarantees of reliable business partners.

Sales policy is adjusted in the direction of reducing sales costs, and in modern conditions this process is implemented most often within the limits of horizontal or vertical integration of the construction of sales channels. The communication policy is subject to adjustment in the audit plan in order to identify the most effective methods of communication and concentrate the company's efforts on them, rejecting less effective ones. In this, it is desirable to maintain a favorable image of the organization in the eyes of the target audience.

Returning to the responses of the company's marketing to the challenges of the modern economy, we note that the most important of the directions is the synergy of the companies' activities in the field of distribution and then their further integration, if there is an opportunity and a need. The leading motive for the organization of integrated activities of companies in the field of distribution is the possibility of obtaining an additional positive effect compared to the one that could be obtained by each company separately⁸³.

From a theoretical and methodological point of view, the phenomenon of synergy in the activities of corporations was analyzed by D. Aaker, I. Ansoff, R. Bazzel, W. Gale, W. Kelin, R. Koch, M. Porter, R. Kanter, and others researchers.

According to W. Kelin and K. Moth, trade corporations practice certain cooperation in order to create additional resources. The task of the mentioned

⁸² Romaniuk I.A. et al. (2020). Reklamnyi menedzhment: navch. posib.; Sievidova I.O. et al. (2020). Konkurentospromozhnist pidpriemstva: navch. posib.

⁸³ Mandych O.V. et al. (2020). Marketynhovyi menedzhment: navch. posib.; Mandych O., Mykytas A., Babko N. (2021). Communication as the basis of business and marketing activities.

cooperation is to accelerate the adaptation capabilities of the company to the external environment. In their opinion, the synergistic effect directly depends on the degree of cooperation between the companies. According to I. Ansoff, "...the potential return on investment in an "integrated" company is greater than the combined return on investment from independent companies"⁸⁴.

According to D. Aaker, the phenomenon of synergism is not so much related to goods as it is to the organization's resources. The synergy of integrated systems will take place when the actions of all participants are coordinated with regard to the distribution of various tangible and intangible resources of integrated enterprises⁸⁵.

Returning to the view of I. Ansoff, we note that synergy will take place when cooperation between units is managed and coordinated from one common center, that is, it is about the possibility of vertical integration⁸⁶. Following this logic, it can be concluded that the benefits of integration participants will be higher in cases where the marketing channel belongs to one owner of the trading organization than if it belongs to several owners.

However, M. Porter calls for caution regarding the transfer of managerial experience, because in the event of the collapse of the alliance, a stronger competitor can be obtained⁸⁷.

According to the aggregated opinion of the presented experts, the most successful model of marketing response to the challenges of a surplus economy, especially in crisis conditions, consists of four elements connecting the participants of the integrated chain "manufacturer – distributor – dealer":

- 1) organizational strategy that determines the level of integration;
- 2) strategy of communicative interaction of channel participants;
- 3) business interaction strategy;
- 4) customer service strategy.

In terms of organizational strategy, it should be noted that the most highly integrated structure is one where the distribution channel is owned by one owner.

The development of the strategy of communicative interaction between the integrating companies involves the joint use of a trademark, the holding of a joint advertising campaign, the formation of a single inter-corporate culture in terms of internal and external interaction.

The strategy of business interaction involves the participation of the involved structures in general purchases and in the joint use of transport facilities and storage facilities.

Defining a customer service strategy involves choosing a common service center and developing an effective feedback mechanism both between partner companies and sellers and consumers of an integrated structure.

Thus, organizations and their marketing services must quickly respond to consumer demand, which rapidly narrows during a crisis period, while the supply

⁸⁴ Ansoff H. I. (1957). Strategies for diversification.

⁸⁵ Aaker D. A. (2009). Managing brand equity.

⁸⁶ Ansoff H. I. (1957). Strategies for diversification.

⁸⁷ Porter M.E. (2011). Competitive advantage of nations: creating and sustaining superior performance.

becomes redundant. In this context, a proven business solution is the need to integrate the efforts of marketing services of different companies and the companies themselves to reduce costs when using marketing channels and focus more on customer needs.

Accordingly, in order to minimize costs and time without losing the quality of customer service in the conditions of the new economy and crisis phenomena, the importance of building vertical and horizontal integrated marketing systems is increasing dramatically.

Currently, the formation of vertical marketing systems is the most promising direction, which has been tested many times. This practice involves coordinating the efforts of producers and intermediaries (wholesalers and retailers). Savings, as already noted, occur as a result of combining the efforts of individual participants of such a system, which allows to slightly reduce the number of jointly employed personnel. In addition, marketing activities of integrated participants are tightly coordinated, which not only reduces duplication and costs, but also increases clarity in making management and business decisions regarding specific business processes⁸⁸.

Therefore, vertical marketing systems are an integral part of a vertically integrated management system of a company or a group of enterprises that have already proven their effectiveness in the developed economies of the world. They help reduce costs in order to maximize marginal profit while simultaneously eliminating competitors throughout the supply chain of goods to the end consumer. In the conditions of the global economy, the processes of forming vertically integrated marketing systems are increasingly manifested in Ukrainian practice. This contributes to the fact that the newly created vertically integrated marketing systems become more and more focused on the needs of the consumer.

In this regard, the possibilities of integrating marketing in response to the global challenges of the new economy in Ukraine flow in the fairway of global processes and are realized mainly through the formation of vertically integrated marketing systems, including in the field of practice of trade organizations.

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⁸⁸ Kviatko T.M. et al. (2020). *Marketynhovi doslidzhennia: navch. posib.*; Kotler P. (2009). *Marketing management: A south Asian perspective*; Fier O. et al. (2019). *Risk managment in the sphere of state economic security provision using the example of professionsl liability insurance*, 51-60.

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RESEARCH OF THE ENTREPRENEURIAL ACTIVITY AS THE BASIS FOR THE FORMATION OF ECONOMIC GROWTH OF THE COUNTRY

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Abstract. Sustainable development of the economy is laid down in the achievement of the Sustainable Development Goals, where, its essential condition, effective entrepreneurial activity is provided. The analysis of the economic sphere of the SDGs proves the importance of gross domestic product growth as one of the indicators of sustainable development. GDP is also a generalizing national indicator, which is revealed through a set of regional gross products, which will determine the study of factors that affect its size and growth. The paper also analyzes the dynamics of the structure of GDP by type of economic activity. It is determined that the peculiarity during the formation of the GRP is the significant impact of the number of enterprises. The main consequences of the influence of russian aggression and the sustainability of entrepreneurship development in Ukraine are noted.

Keywords: entrepreneurship, sustainability, gross domestic product, economic growth.

The Millennium Goals and their final achievement is scheduled for 2030 were announced and approved in 2015 on the UN Summit. The final document of the Summit was "Transforming Our World: The 2030 Agenda for Sustainable Development"⁸⁹. Considering the principle of "leave no one behind" and using a wide range of information, statistical and analytical materials, it was the national system of the Sustainable Development Goals (SDGs) that was developed, which included 17 SDGs and 169 tasks.⁹⁰

Progress on Ukraine's SDG achievements is covered on the official website of the State Statistics Service together with VoxUkraine with the support of the United Nations Development Program in Ukraine because of the Voluntary National Review on Sustainable Development Goals according to the methodology of the United Nations Economic and Social Commission for Asia and the Pacific (⁹¹UNESCAP)⁹².

Such a progress is carried out in the context of indicators, starting from 2015, indicating the institutions responsible for calculating and providing data to the State Statistics Service.

⁸⁹Transforming Our World: The 2030 Agenda for Sustainable Development.

⁹⁰Sustainable Development Goals in Ukraine. Official site of the United Nations in Ukraine.

⁹¹Sustainable Development Goals: Ukraine. National Report 2017.

⁹²UNESCAP.

Thus, the SDGs are systemic and complex, and it is possible to identify goals that relate to the economic sector in the concept of sustainable development. Accordingly, they directly affect the development of entrepreneurship and demonstrate its development through a set of indicators: Goal 8 – “Decent work and economic growth”; Goal 9 – “Industry, innovation and infrastructure”; Goal 10 – “Reducing inequality”; Goal 12 – “Responsible consumption and production”.

Ukraine sets the task of sustainable development of entrepreneurship, which can be traced to certain indicators of the SDGs, among which the GDP indicator should be highlighted: 8.1. Index of physical volume of gross domestic product (GDP) and 8.2. Share of gross fixed capital accumulation in GDP.

The calculation of GDP is an indicator that characterizes not only sustainable development, but also demonstrates the general state of the national economy. It is also a generalizing indicator of the economic development of the state, which reflects the results of the activities of residents of the country producing goods and services. Negative GDP growth reflects a bad signal for the economy. Economists analyze GDP to find out if the economy is in a state of recession, depression, or boom. Gross domestic product is a good measure for the economy, statistics and governments are trying to figure out measures to strengthen GDP and make it a comprehensive indicator of national profit⁹³.

Growing GDP means that the population of the state every year receives more and more opportunities for work, earnings, and satisfaction of their needs. The decrease in GDP signals that the economy and the production sector of the country should pay close attention, since, most likely, we are talking about a drop in production, a reduction in jobs, and incomes of the population.

Figure 1 clearly shows the value of Ukraine's nominal GDP from 2002 to 2021 and its changes according to the Ministry of Finance of Ukraine⁹⁴. Nominal GDP characterizes the total volume of production, which is measured in current prices, that is, in prices that exist at the time of production. This indicator has a constant upward trend. However, when analyzing changes in the dynamics of nominal GDP, it is also worth determining why these changes occurred: due to changes in prices or production.

Figure 1 shows that the largest changes in GDP growth are observed in 2004 +29.1%, in 2005 +27.9%, in 2007 +32.5, in 2008 +31.5%, and in 2021 +30.2%. Such positive dynamics indicates a significant growth of Ukraine's economy in the general sense. According to statistics, Ukraine's nominal GDP had a constant upward trend – except for the period of the financial and economic crisis that occurred in 2008, because of which in 2009 we see a significant drop in GDP of 3.7%. And the level of GDP of a country is influenced by many factors, both internal and external. These are inflationary processes, the amount of available supply on the market, external conflicts between states, as well as hostilities that are currently taking place on the territory of Ukraine because of the Russian invasion.

⁹³Tkach M. J. (2019). Opportunities and threats for Ukraine in the context of globalization of their processes, p.69-81.

⁹⁴ Ministry of Finance of Ukraine. <https://minfin.com.ua/>

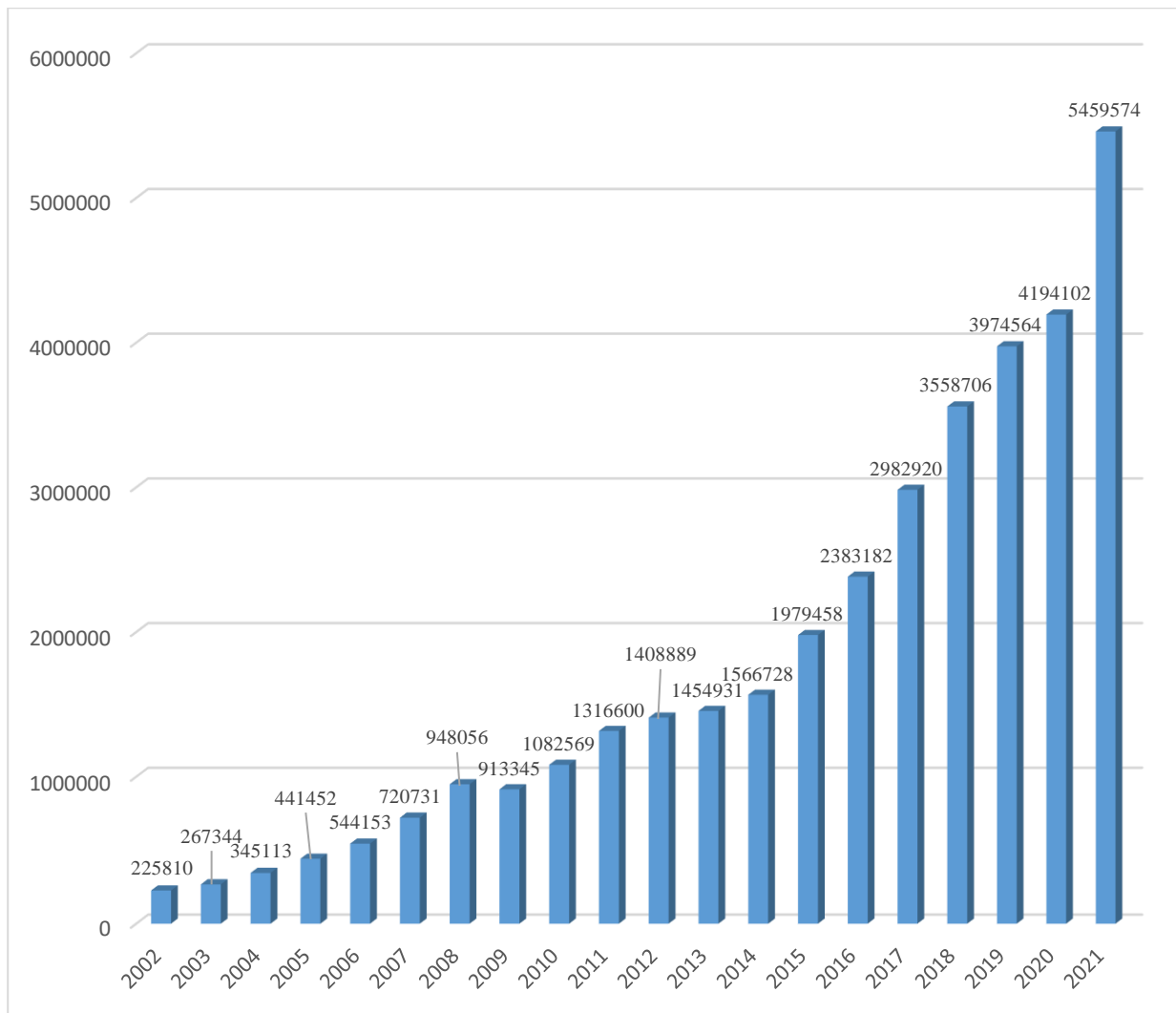


Fig. 1. Nominal GDP of Ukraine from 2002 to 2021 years, mln. UAH

When analyzing GDP, it is also worth paying attention to the dynamics of the structure of its formation, which is presented in Table 1 according to the State Statistics Service of Ukraine in 2020⁹⁵.

The largest percentage in the formation of GDP (46.1%) is occupied by agriculture, forestry and fisheries, agricultural industry, poultry and retail trade, repair of motor vehicles and motorcycles, operations with real estate, as well as transport, warehousing, postal and courier activities.

Thus, the basis of the formation of gross domestic product at the country level is an indicator – gross regional product (GRP) at the regional level. The indicators of gross regional product are considered and the share of each of the regions in the formation of GDP is established (Figure 2)⁹⁶.

⁹⁵ State Statistics Service of Ukraine. <https://www.ukrstat.gov.ua/>

⁹⁶ Dymchenko O. et al. (2022). Entrepreneurial component in the formation of financial capacity of territorial communities of the Kharkiv region, 31-35.

Table 1 – Dynamics of the structure of GDP in 2020

Type of economic activity		Specific gravity, %
Agriculture, forestry and fisheries		9,3
Mining and quarrying		4,5
Processing industry		10,1
Supply of electricity, gas, steam and air conditioning		2,9
	Water supply, sewerage, waste management	0,4
Construction		2,9
	Wholesale and retail trade, repair of motor vehicles and motorcycles	14
Tra	Transport, warehousing, postal and courier activities	6,3
	Temporary accommodation and catering	0,6
Information and telecommunications		5
Financial and insurance activities		3,2
Real estate transactions		6,4
Professional, scientific and technical activities		3,3
Activities in the field of administrative and support services		1,4
	Public administration and defense, compulsory social insurance	7,2
Education		4,3
Health care and social assistance		2,7
Arts, sports, entertainment and recreation		0,5
Other types of services		0,8

Among the values presented in Figure 2, the largest percentage in the formation of gross domestic product in terms of gross regional product are Dnipropetrovsk, Donetsk, Kyiv, Lviv, Odessa and Kharkiv regions – 48.69%. The smallest percentage of total GDP is occupied by Zakarpattia, Chernivtsi, Luhansk and Ternopil regions – 6.64%.

It is worth noting that the effective development of the economy of any country is impossible without the development of entrepreneurship, since it contributes to the expansion of the structure of offers in the domestic market of goods and services, creates an effective competitive environment, increases the number of jobs, etc. Also, considering the dynamics of GDP formation (Table 1), it can be concluded that the entrepreneurship is a significant factor in the structural restructuring of the economy⁹⁷. However, to date, the study of the impact of entrepreneurship development indicators on the country's GDP and GRP is not sufficiently disclosed, which makes the study particularly relevant.

⁹⁷ Babaev V.M. et al. (2022). Regional features of the development of the startup ecosystem: the entrepreneurial aspect, p.58-63.

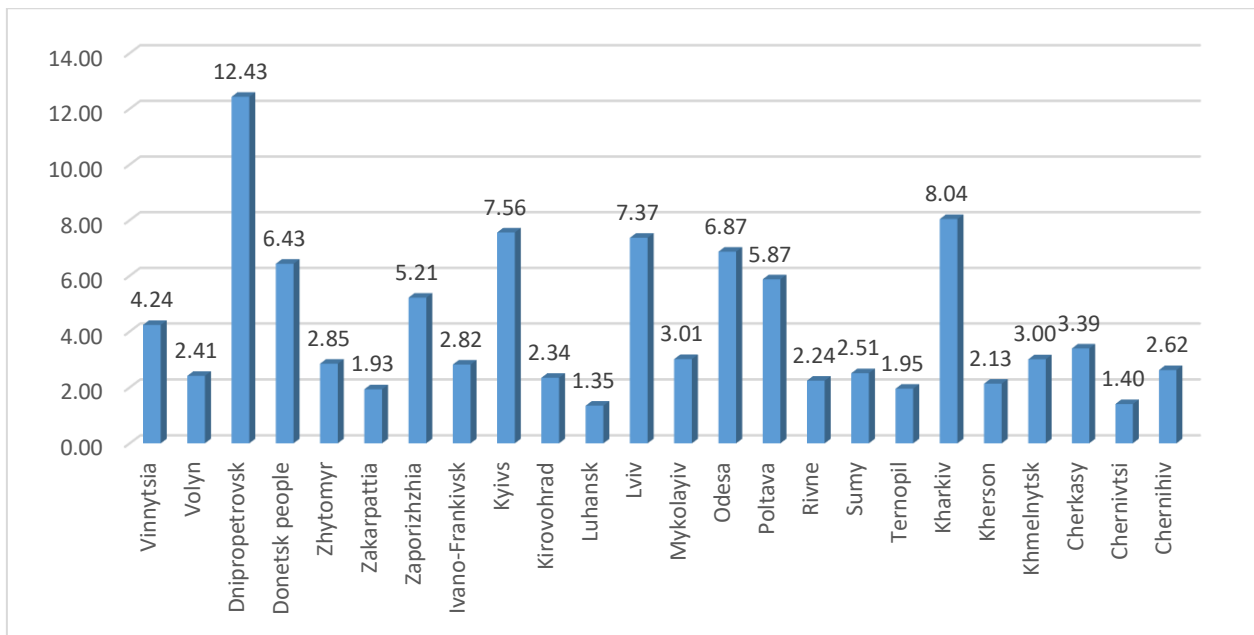


Fig. 2. The structure of the regions in the formation of the country's GDP in 2020, %

The current political and economic situation in Ukraine indicates insufficient support for the development of entrepreneurial activity. Accordingly, we believe that in this case it is worth exploring the current state of entrepreneurial activity, analyzing its components, exploring problems and solutions in the field of entrepreneurship.

Thus, one of the indicators of sustainable economic development is precisely the entrepreneurial activity, which is a stimulator of the country's GDP growth and depends on a combination of factors. To do this, we consider in more detail the location of enterprises with their distribution (large, medium, small and micro enterprises) by regions of Ukraine and on the basis of data from the State Statistics Service of Ukraine for 2020 is clearly presented in Figure 3⁹⁸.

It is worth noting that entrepreneurial activity acquires the greatest importance in regions where large investment projects are effectively implemented, or there is a relatively better system of public administration, which allows providing local enterprises with additional state orders, taking measures to expand housing construction, intensifying social policy, thereby affecting the quality of life of the population, etc.

The number of private enterprises (micro, small and medium-sized) is the most important indicator of the development of small and medium-sized businesses. However, it is worth noting that labor efficiency in big business is much higher. It forms the majority of GDP, according to the State Statistics Service of Ukraine, which is also confirmed by the results of the study⁹⁹. However, in big business, only

⁹⁸ State Statistics Service of Ukraine. <https://www.ukrstat.gov.ua/>

⁹⁹Smachylo V. V. et al. (2022). Problems and potential for the restoration of construction enterprises in the aspect of Russia's military aggression.

one in five employed Ukrainian, but micro enterprises, although a large group, are unproductive, but it employs as much as 35% of workers who generate a small part of GDP. In Europe, this gap is much smaller¹⁰⁰.

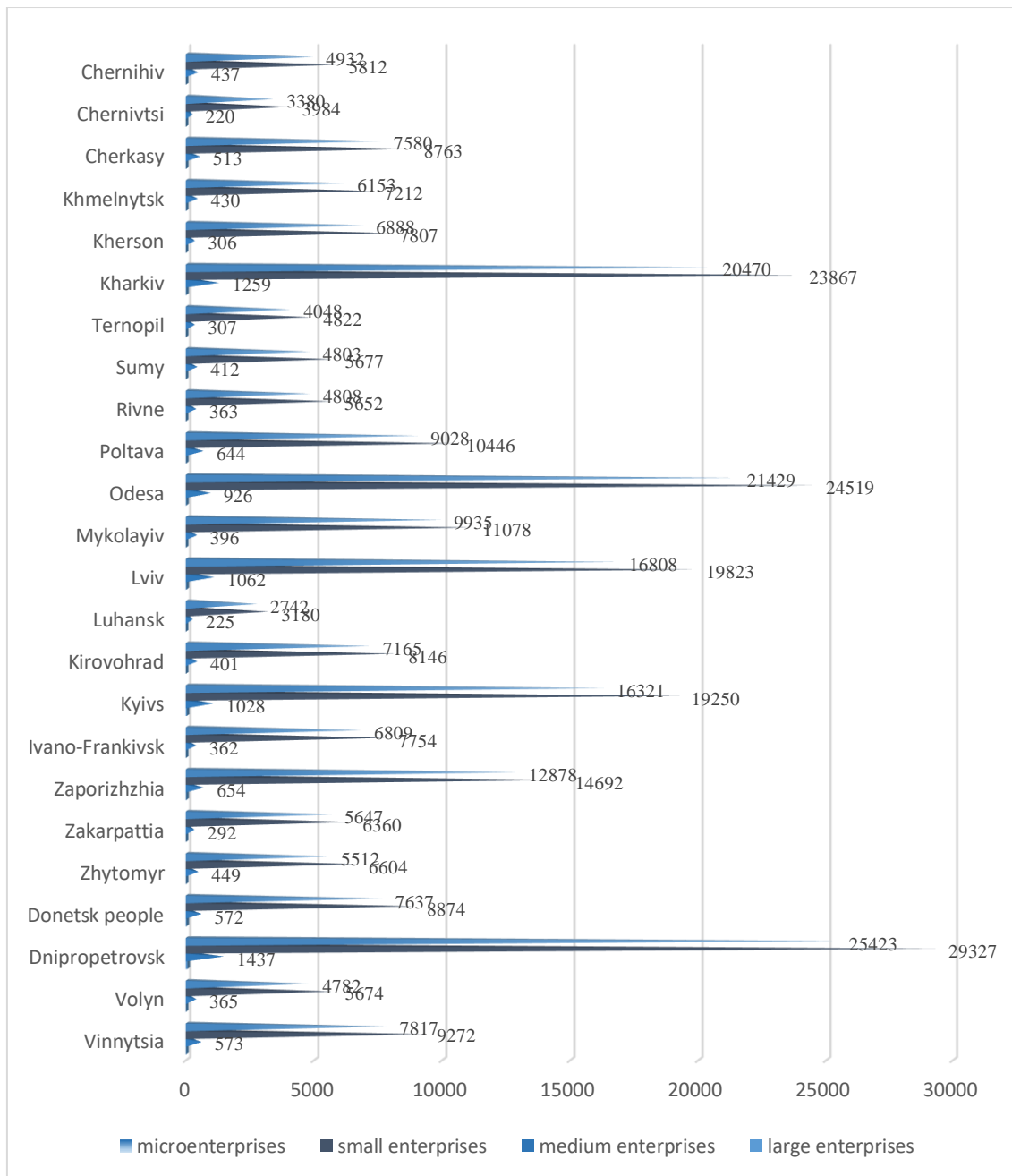


Fig. 3. Distribution of enterprises by regions of Ukraine in 2020, units

The sphere of entrepreneurial activity provides many jobs for the population of Ukraine, about 85% of which are provided by enterprises. According to the Employment Center, according to the results of management in 2020, the largest

¹⁰⁰Konstantinova T. A., Savchenko T.V. (2020). Features of small business management in Ukraine, p.233-235.

share of employees falls on medium-sized enterprises – ¹⁰¹ 44.6%, the second place is occupied by small enterprises of the country – 28.5%. In 2020, compared to 2019, the number of employees in medium-sized enterprises decreased by 31.7 thousand persons, in large ones – by 23,2 th. persons. Such changes lead to a reduction in the number of employees in enterprises to reduce costs, or the introduction of certain technological innovations that reduce the need for employees.

It's also important to draw attention to the financial results of enterprises by their size and consider net profit (loss). The data shown in Figure 4 are presented by the State Statistics Service of Ukraine¹⁰².

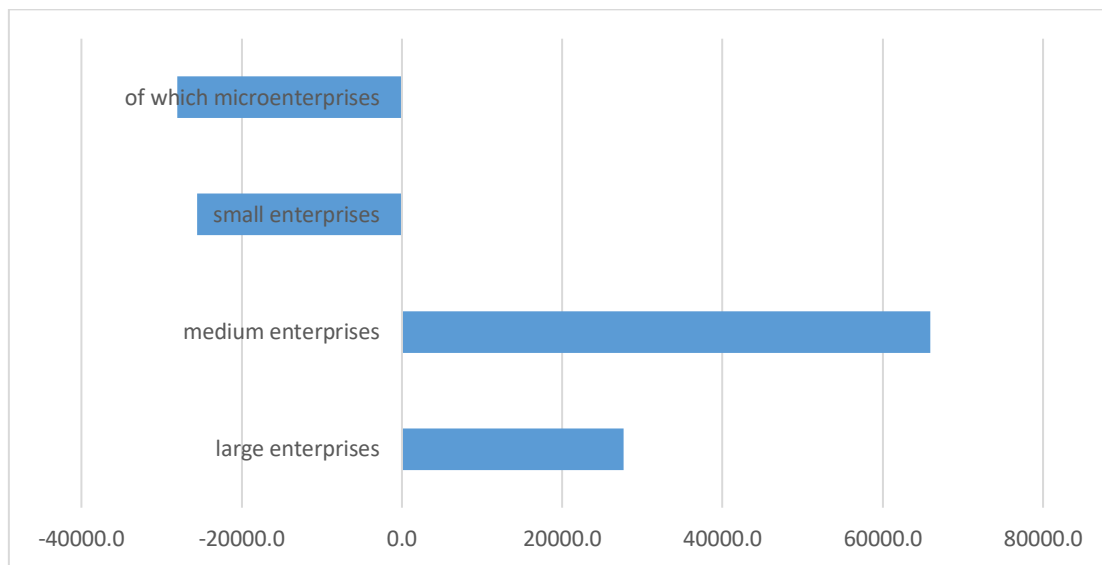


Fig. 4. Net profit (loss) of enterprises divided into large, medium, small and micro enterprises by regions in 2020

The results of the study showed that most of the enterprises were profitable, but it was small enterprises and microenterprises that received losses for 2020. If we analyze the situation in Ukraine as a whole, then in 2020 the net profit amounted to 68054.9 million UAH, which is 455724.1 million UAH more than in 2019. Such an increase indicates the intensification of entrepreneurial activity in 2020. Also, for further intensification of entrepreneurial activity, it is worth effectively solving problems related to state and regional support. It is also important to strengthen competitiveability. It is necessary to get acquainted with the needs of consumers, about the analysis of competitors, to create new products and services, to improve as well as the old one, to develop advertising in, to conduct marketing activities, etc. To enhance the activities of employees, improve the productivity of their work, it is necessary to carry out certain motivational activities. To pay great attention and

¹⁰¹ State Employment Center.

¹⁰² State Statistics Service of Ukraine.

advanced training torsional, which will allow introducing new scientific, technical, and economic ideas into the activities of enterprises.

According to our opinion, to form the sustainability of entrepreneurial activity, state and local authorities should pay attention to the following problems that currently exist in business activities:

1. the lack of a systematic policy on the regulation of entrepreneurship and coordination of the subordination of the activities of business structures at the state and regional levels;
2. the taxation system of entrepreneurship;
3. the problem of the administrative barriers;
4. the stability of providing financial services;
5. the staff shortage;
6. the high state of complete deterioration of fixed assets;
7. the excessive regulation of entrepreneurial activity;
8. the violation of antitrust legislation and attempts to legislatively redistribute industry markets;
9. the improving the legislative support for the activities of business entities.

As well, to introduce effective business activities, the following principles must be observed:

1. Creating an environment in which entrepreneurs can thrive and entrepreneurship is encouraged and rewarded.
2. Providing an opportunity for honest entrepreneurs who have gone bankrupt to quickly get a second chance.
3. Development of rules in accordance with the principle of "Think about the small first."
4. Ensuring the response of state administrative bodies to the needs of small and medium-sized businesses.

Each entrepreneur chooses a priority principle for himself, because of which he builds an appropriate entrepreneurial strategy. This is important because each has its own conditions, current state, and goals for the development of entrepreneurial activity.

The following algorithm of actions should also be introduced in the field of intensification of entrepreneurial activity in Ukraine:

- strengthening the possibilities of interaction and cooperation of enterprises of different sizes within the framework of production cooperation;
- expanding the opportunities for the cooperation between enterprises, authorities and scientific and educational institutions;
- compliance with financial support and entrepreneurs;
- provision of consulting and mentoring services, taking into account modern challenges of the external environment;
- increasing the attention and studying social and gender entrepreneurship;

- support of the entrepreneurs through information and consulting technological support;
- simplification of the system of regulation of enterprise development and its adaptation to the conditions of modernity.

If we gradually adhere to the following algorithm and implement these measures, we can hope for an increase in interest in entrepreneurship and intensify its development in the future.

Also, taking into the account, the hostilities on the territory of Ukraine, it is worth noting that there is currently no exact data on economic activity in Ukraine. It is known that the war caused the destruction and closure of many enterprises, as well as their location in the temporarily occupied territories. If some companies faced only a rupture in supply chains, a shortage of fuel or a decrease in demand, others suffered property damage or were forced to begin a long process of relocation of production facilities.

A significant number of large enterprises, including industrial ones, reduced production volumes, or completely closed. In June, almost 8% of businesses reported that they had ceased operations during the war. Microbusiness also suffers the most, among which the largest share of non-performing businesses. At the same time, among large enterprises that have more opportunities to overcome crisis situations, only 1% are "inactive".

Likewise, for example, according to the European Business Association, as of the end of April, only up to a third of pre-war enterprises worked in the pre-war regime. At the same time, the majority – 68% – work part-time or with some restrictions. Almost the half of the enterprises (47%) limited the geography of their activities, every fifth (21%) came out at on the Internet, slightly fewer (19%) were forced to close some offices or branches¹⁰³.

Thus, in the work: 1. The main Sustainable Development Goals are investigated, where effective entrepreneurial activity is provided for an essential condition. 2. The GDP index is analyzed as one of the indicators of sustainable development, which is also a generalizing national indicator. 3. The dynamics of the structure of GDP by type of economic activity is analyzed. 4. It was established that in the regional structure of the country's GDP, the largest percentage in terms of gross regional product are Dnipropetrovsk, Donetsk, Kiev, Lviv, Odessa and Kharkiv regions. 5. The entrepreneurial activity is defined as one of the indicators of sustainable development of the economy, which is a stimulator of GDP growth in the country and depends on a combination of factors. 6. The main consequences of the influence of russian aggression on the sustainability of entrepreneurship development in Ukraine are noted.

¹⁰³ Unian. <https://www.unian.ua/>

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THEORETICAL AND METHODOLOGICAL BASES OF THE STUDY OF THE IMPACT OF DIGITAL ECONOMY ON WORLD POLICY

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Abstract. The processes of globalization are developing based on spatial and territorial sovereignty, which is inherent in the still-current Westphalian world order. They express the economic and political interests of a sovereign state as the main actor in international relations, defending its strategic interests, which are often embedded in the economic aspect, therefore, considering globalization specifically from the point of view of the influence of the economy argues the main prerequisites for the policies of countries. The globalization of the world economy is represented by the process of transforming the world space, turning it into a single zone, and opening it for the unimpeded movement of goods, services, information, and capital. Consequently, the result of the globalization of the world system is the emergence of a single cultural, informational, legal, and economic space at the international level. In other words, the phenomenon of globalization in the world is not limited to the sphere of economics but has a great impact on all the main spheres of society: ideology, culture, and politics. Undoubtedly, this phenomenon has released the central role of the world economy in the new century.

Keywords: digital economy, innovative development, world policy.

Over the centuries, the world economy has turned into an integral system only at the borders (20th and 21st). However, in the process of globalization of the world economy, several stages of its development have passed. The first stage of the modern world economy's formation fell in the late 14-19 centuries (Adelman, 1996; Mahutga & Smith, 2011).

The world economy arises at the pre-industrial stage of production with the emergence of international trade and took shape until the end of the 17th century. Then, from the beginning of the 18th to the middle of the 19th centuries, there is a further development of the production of goods, a growing mass of which went into the regular exchange between countries. Foreign trade becomes part of the activities of the national economy; because of the development of the world economy, the world market appears as the highest achievement of capitalism.

The second phase of world economic development (late 19th – early 20th centuries) can be characterized as the transition from early capitalism to the stage of production monopoly. The forms of economic relations between countries are diversifying, and in addition to the exchange of goods, the movement of certain elements of production between states becomes possible. At this stage, the foundation of the international division of labor was laid and the future globalization of world trade was realized (Mahutga & Smith, 2011).

The third stage of the path to globalizing the world (between the First and Second World Wars) was devastating to past successes in establishing global economic ties. Although economic development accelerated significantly during this period (the first international companies appeared), the cross-border financial system was extremely unstable, leaving long-term capital in the industrialized countries.

The fourth stage (from the end of World War II to the early 1990s) is a period of a new restructuring of economic relations between peoples, striving to find a new order in the world economy. The main influence on the international economy is exerted by the liberalization of foreign trade policy, the growth of labor productivity, the acceleration of progress in the field of science and technology, and, as a result, unprecedented rates of economic growth. At this stage, the foundations for the globalization of world finance are laid and a macrosystem is being built that regulates the global economic development of international financial and economic organizations (the United Nations (UN), the International Monetary Foundation (IMF), the World Bank (WB) and the World Trade Organization (WTO)). By the 1950s, the colonial system that regulated interactions between large cities and colonies had collapsed (Drainville, 2004).

The fifth stage (since the early 1990s) is the current development of the world economy. The main factors are the failed socialist regime and the subsequent transition of the former socialist bloc states and the rest of the colonies to market economies in Central and Eastern Europe, as well as the openness of markets in these countries. In the context of globalization, the current level of development of the world economy is characterized by several aspects: liberalization of foreign economic relations; internationalization of capital and production; regional economic integration; internationalization of economic life; unification of the rules of economic life and the creation of a system of interstate regulation of world economic relations. In this regard, a serious contradiction has matured between the national sovereignty of many countries and globalization as a global trend, especially in the economic sphere. In the context of the globalization of the world economy, the efficiency of using traditional means of macro-regulation of the economy at the national level, such as export subsidies and import barriers, refinancing rates of central banks, and exchange rates of national currencies, has increased significantly (Pourmokhtari, 2013).

In the context of the globalization of the world economy, different levels of economic growth and income inequality between countries are explained by different levels of technological equipment. Countries, developing scientific and technological potential, are aimed at providing economies at the micro and macro levels with the opportunity to apply technologies more efficiently, thereby reducing costs and increasing productivity. The use of technological innovations makes it possible to produce goods with fewer costs and accumulate national capital, which, accordingly, leads to an increase in the international competitiveness of individual countries, an increase in the quality of research institutions, and at the same time contributing to the cultural and political development of societies.

Scientific and technological progress is characterized using science and scientific methods to achieve industrial and commercial goals, as well as the

introduction of innovative developments in production machines, production methods, and final products to increase production and efficiency, which leads to competitive advantages and increased profit. The nature of the use of technological advances can have a significant positive or negative impact on a sector of the economy or a nation, therefore, technological transformation plays a key role in economic growth (Müller et al., 2021).

Globalization is driven by objective aspects of development, the deepening of the international division of labor, as well as scientific and technological advances in the field of transport and telecommunications, which reduce the so-called economic distance between countries. Today's highly efficient communications systems enable users to get real-time information from wherever they are, make quick and easy decisions, manage international capital expenditures, and collaborate on marketing and manufacturing. With the current level of globalization and information integration, the speed of transfer of business experience and technology from abroad has increased significantly. Conditions have emerged for the globalization of processes in the world, which previously retained locality due to internal characteristics. The leading position in this system is occupied by MNCs – multinational corporations acting at the same time as the main players in internationalization as well as its results.

The globalization of the world economy affects all countries and determines the development and diffusion of technology between countries, the use of labor, the production of goods and the provision of services, and investment. As a result, parameters such as competitiveness, labor productivity, and production efficiency usually change. Thus, the globalization of the world economy is one of the main factors in the growth of international competition (Li & Deng, 2017).

The acceleration of the process of globalization of the world economy has occurred in the last 20-30 years, during this time the global market was integrated into the network of MNCs, and the relationship between companies and markets for goods, technologies, services, and even labor. Even though some MNCs limit their activities only to trade, most of them are modernizing old industries (food, textiles) and new ones (electronics, petrochemicals, mechanical engineering), as they need industrial restructuring in developing countries. Next-generation MNCs (known as global companies) operate primarily in the financial and information markets and differ from previous manufacturing MNCs. Consequently, these markets will be integrated on a planetary scale, and the global financial and information space will be integrated. As a result, MNCs and related international economic organizations and structures (IMF, IFC, IBRD) are becoming increasingly important.

Innovative development is an important factor driving the growth of the economy at the macro level, profits, and market share of firms at the micro level. At the same time, social development takes place if society can master technical progress and incorporate it into its socio-cultural life. The economy drives technological progress because the innovations brought to the world are inseparable from economic relations. Countries that can effectively apply the latest technologies in all spheres of society can create new areas of employment in their countries. Thus, the necessary changes in education policy should be made to ensure the development

of human resources with the skills required for technological growth that supports economic growth.

Economic growth is defined as the increase in the number of tools and products produced that will be used to meet human needs in any country or region. The method of measuring the rate of economic growth includes finding out whether there has been a real increase (excluding price increases) in the gross domestic product (GDP) from one year to the next since GDP is the market equivalent of all measurable quantities produced by one economy.

Today, most of the new technologies (80%) are produced by multinational companies (MNCs), and the latter's revenues have already exceeded the gross national product (GNI) of some countries. It is worth noting that most of these companies are working to create meta technologies (or hypertechnologies) such as modern computer programs, networked computers, organizational technologies, public awareness, and public opinion (Brynjolfsson & McAfee, 2014). At the same time, some aspects of the impact of the globalization of the world economy on national indicators require a separate discussion.

First, the rate of growth of foreign direct investment today is incredibly high, well above the indicators of world trade. And these investments are causing changes that have a direct impact on the country's economy: industry recovery, technology transfer, and the formation of a global company.

Secondly, globalization affects technological innovation, which is associated with increasing competition, as technology is the driving force behind the globalization of the world economy.

Third, due to the impact of globalization on the global market, trade in services (administration, law, information, finance, etc.) is becoming an important factor in trade relations between countries. The most important product in a globalized market is intellectual capital.

As a result of deeper internationalization, there has been an increase in interaction and interdependence between national economies. Thus, there is a globalization of the world, some integration, and the formation of a single international economic system as a new structure. Although most of the world's goods are consumed in the country of origin, countries' national development increasingly depends on the global structure.

The globalization of the world can be characterized as a great polarization. This is especially true for the distribution of opportunities and economic power in the global system. This situation can lead to conflicts, problems, and additional risks. Consequently, in the context of globalization, only a few large states of the world economy can control most of their consumption and production without economic or political pressure. The internal values and priorities of such a country must leave their mark in the main areas of internationalization. Most MNCs (85–90%) are in developed countries but can now be based in developing countries. In the world of the 20th century, there were already 4.2 thousand MNCs of East Asian or Latin American origin and a hundred TNCs from Central and Eastern Europe (with an economy in transition):

Korea - 8;
China - 8
Mexico - 7;
Brazil - 6;
Taiwan - 4;
Singapore - 4
Hong Kong - 4
Malaysia - 3;
Chile - 1;
Thailand - 1
Philippines - 1.

The main three indicators of economic growth are capital accumulation, technological progress, and population and labor force growth. Capital accumulation is seen as the main dynamic of economic growth. The most important condition for ensuring development is the availability of sufficient investments, the implementation of these investments depends on the increase in savings that will be obtained from income. As a second indicator of economic growth, technological progress can be defined as the entire system of information and technology required in production processes. With the help of the application of technological developments, there is an increase in production efficiency. The endpoint is an increase in population and labor force, population growth leading to a similar increase in the labor force will create an important motivator for economic growth (Antonio & Brulle, 2011).

According to the growth principle in neoclassical theory, technological transformation causes an increase in per capita income and motivates savings and investment, which, as a result, leads to an increase in real GDP. Joseph Alois Schumpeter is known as the first economist to prove that technological development will have a positive impact on economic growth. J. Schumpeter, within the framework of his concept, puts forward the concept of "an evolutionary process developing with the creative destruction of weakening sectors and involving the development of new technologies and new sectors of the economy." J. Schumpeter expanded the concept of technological novelty and defined it not only as the use of new technologies in the production process but also as the inclusion of other processes, such as the production of a new product, the opening of new markets, the creation of new market organizations and the search for new sources of raw materials. Modern society is aimed at ensuring economic and social development to further improve the level of well-being, which requires an increase in the volume of goods and services produced. Now, the source of an increase in the production of goods and services can be considered an increase in production capacity. Technological transformation is one of the main determinants of rapid growth in output and income and is essential for achieving international competitiveness. The competitive race takes place exclusively between innovative firms and getting the opportunity to create technological innovations in these firms leads both to an increase in labor productivity and guarantees a competitive advantage in international markets.

For countries producing highly intelligent products, technology brings economic and military superiority over other countries. Thus, countries with more advanced technological equipment can put pressure on other countries. The speed of technological development is causing economic uncertainty and difficulties in predicting the future. Therefore, countries must maximize the benefits (growth) of technological progress by supporting and disseminating the positive aspects of this process and minimizing its negative consequences.

Ongoing technological transformations can boost more inclusive and sustainable economic growth in nations by spurring innovation, efficiency gains, and improved services. Countries with sufficient scientific and technological resources are moving to a post-industrial level of structure and are beginning a large-scale digitalization of the economy, intending to get ahead and gain a competitive advantage. It seems expedient to study the dynamics and development prospects of several states with different economic, political, cultural, historical, and social components, introducing a digital economy.

Japan is one of the leaders in the digitalization of the economy with the help of developments in technological progress. In ancient times and the Middle Ages, the country, separated from the rest of the world because of its geographic location, developed under the influence of neighboring China and Korea. In the middle of the 16th century, with the development of trade with Europeans, firearms and Christianity came to Japan. For this reason, the Tokugawa shogunate (the Edo shogunate), adhering to the Sakoku isolationist policy (鎖国, literally “closed country”), closed the country to the entry of foreigners and the penetration of alien concepts until 1853. In 1868, Emperor Mutsuhito (明治天皇), who took the name Meiji (“enlightened rule” in Japanese), reopened Japan's borders for Europeans, and previously unknown achievements of Western civilization penetrated the country, prompting the Japanese to master new knowledge, technologies, and goods. From the point of view of world history, the Japanese studied the information received so well that they used it for independent development. It was thanks to the Meiji “enlightened government” that Japan's first colossal industrial leap was made (Saigner, 2018).

After Japan's defeat in World War II, the unprecedented economic boom, called the “Japanese economic miracle of the 1950s and 1960s” was largely due to the development of science. Thanks to the developments of Japanese scientists, and purchases of patents from abroad, Japan soon became one of the most influential figures in the world market, and the growth of domestic economic indicators reached more than 10% per year. The strategy of the Meiji era applied again, not only contributed to a rapid recovery from the devastating consequences of World War II but also created a scientific and technical potential for the country in the shortest possible time. The effectiveness of such a strategy is estimated at 400% in general, and in some industries – at 1800%. At the turn of the 1960s-1970s, Western countries stopped providing scientific and technological support to Japan, seeing the country as a competitor, but by that time Japan had already created its R&D base.

Japan, having become one of the scientific and technological leaders back in the 1970s, is still among them today. It was during this period that the country took

up the development and production of robotics as a tool to increase productivity. In 2019, the number of robot installations in Japan was 49,908. The 11% Compound Annual Growth Rate (CAGR) since 2014 has been remarkable for a country that already has a high level of industrial automation. It is estimated that 16% of the world's gold and 22% of silver is contained in Japan's electronic technology, compared to the number of known reserves still in the ground. Japan is one of the leaders in the digitalization and automation of production. In particular, the country is one of the five leaders in the implementation of industrial robots, ranking second in the world after China in terms of the number of machines installed in 2017. Since 2015, a unified system of technical standards has been created in Japan for using the so-called Industrial Internet of Things (IIoT) and equipping factories with cyber-physical systems technology (combining the real world of equipment and products with a virtual space to solve technological problems) (Cahyadi & Magda, 2021).

Japan's 5th Science and Technology Basic Plan, published in 2016, focuses on the development of the most important strategic resource – human capital and the creation of Super Smart Society 5.0 (“super-intelligent society”, or “Society 5.0”). The concept of “Society 5.0” is intended to solve such problems in Japan as population decline and an increase in the proportion of older people in its structure. One of the main objectives of Society 5.0 is to create a society in which all people can receive high-quality services, where any disempowerment or violation of rights based on age, gender, region, and language will be overcome and everyone can live an energetic and comfortable life. Japan has an advantage in physical space, that is, in manufacturing sectors from which very valuable data can be collected. The country tries to store and analyze them as close as possible to their place of origin. This is their competitive advantage in approaches to digitalization. Therefore, Japan was the first to launch the concept of edge computing in the digitalization hierarchy. A significant part of the strategic plan is devoted to the development of the national system of innovation and education reform, having mastered the art of sustainable innovative development, Japan has secured a reliable position among the world's scientific and technological leaders (Fukuyama, 2018; Onda, 2019).

Moreover, it is worth considering the development and impact of technology and the digital economy in the United States and Germany. The rise in labor productivity and the use of technology occurred in these countries after the Industrial Revolution that came from Britain in the 1750s-1780s. During this period, the transition to an industrial society took place with the replacement of manual labor and handicraft production by machine production.

Technological progress during German industrialization occurred in four waves: the railway wave (1877-1886), the dye wave (1887-1896), the chemical wave (1897-1902), and the electrical engineering wave (1903-1918) (Streb et al., 2006).

The pre-war level of industrial production in the Federal Republic of Germany was restored somewhat later than in other European countries only in 1951. And not only because of the great military destruction. The restoration of the economy was delayed by the reforms carried out in the country to liquidate the military industry and break up the monopolies, delayed the financial depletion of the country, and the reparations imposed on Germany. The main feature of the post-war economy was

Ludwig Erhard's reforms, which quickly yielded positive results. By the end of 1949, the industry had reached the 1936 level, and by the end of the 1950s, it exceeded it by 14.4%.

Since the beginning of the 1960s, the economic growth rate has slowed down, and as a result, West Germany's global capitalist industrial production has also shrunk. In 1966-1967, the internal contradictions of capitalist reproduction led to the first cyclical crisis after the war. The deepest overproduction crisis in the history of the Federal Republic of Germany occurred in 1974-1975. This crisis hit all sectors of the West German economy, increasing the number of bankruptcies and inflation rates. The cyclical decline in production was accompanied by a global energy crisis and structural crises in several industries. In 1980-1982, the German economy experienced the third cyclical crisis of overproduction in its history. After the unification of Germany in 1990, despite some negative tendencies, the Federal Republic of Germany has steadily occupied the place of one of the leading countries of the EU. The main reasons for economic development are an increase in wages and employment of the population, expansion of the territory of the domestic market, development of export-oriented industries, high level of consumer demand, and dynamic development of scientific and technological progress (Tilly, 1996).

Germany is one of the leading industrial regions in the world and therefore holds a leading position in the development competitiveness of Industry 4.0. Manufacturing and services adjacent to manufacturing sites generate more than half of Germany's total GDP. Germany is leading the way in many digital innovations related to manufacturing technology.

Germany is the fifth largest robot market in the world. Digitalization is the engine of the market for many industries, primarily for information and communication technologies (ICT), more than half of German companies have digitalization strategies, which defines Germany as one of the leaders among international developers of the digital economy. These companies are actively driving global change in manufacturing processes and value chains through the use of innovative digital technologies such as cloud computing and big data analytics (Makedon et al., 2021).

The industrial and technological history of the United States characterizes the development and formation of one of the most powerful and technologically advanced countries in the world. The dynamic industrialization of America in the 19th century was due to the availability of land and labor, climate diversity, the presence of rivers and seacoasts, an abundance of natural resources, transport development, and the availability of capital. In the nineteenth century, a powerful industry developed within this state, and by the middle of the twentieth century, America produced almost a third of all industrial goods. Before the outbreak of the civil war, under the influence of technological innovation and the development of transport in America, the first industrial revolution took place, and after the war – the second one. By the beginning of the twentieth century, the United States surpassed European countries in economic development and was building up its army and navy (Wright, 1990; Izushi & Aoyama, 2006).

Even though during the Great Depression, technological development slowed down somewhat, after World War II, the United States remained one of the two superpowers. America competed with the Soviet Union for economic, political, and military domination, investing heavily in science and technology, and making progress in spacecraft, biotechnology, and computer innovation. After the end of the first decade of the 21st century, the United States began the process of automating production processes and digitalizing the economy. By 2019, the number of robots in the United States was estimated at 33,339. In the period up to 2022, the American government was allocating over a billion US dollars for strategic development and industrial innovation. The US strategy identified by the Big Four is called GAFA (Google, Amazon, Facebook, Apple) and focuses on cloud computing. The United States is significantly inferior in physical space, that is, in manufacturing sectors where practical data exchange takes place, so the country is trying to gain control over the cloud technology market.

The main advantage of the digital economy over the traditional one is the realization of the potential for automatic control of individual components and the system. Digital economy can be scaled practically without restrictions and without loss of the achieved efficiency, this opens access to improving the efficiency of resource management and economic activities of the country in various sectors of the economy at the micro and macro levels. From the above statement, it can be concluded that the digital economy is not limited to individual industries or IT companies that are digital. First of all, this is a modification of the existing economy: its traditional companies and industries (i.e. transport, agriculture, construction, manufacturing industry, etc.), are being influenced by digital transformation, due to technological evolution, revolutionizing their inherent production and business processes (Garnov et al., 2020).

The effects of “digitalization of the economy” on the scale of individual countries are directly proportional to the level of development of traditional industries and business structures, service sector, and chain of cooperation ties between them. Thus, in the process of digitalization, the greatest advantage will be for those states in which there is a healthy production and effective reproduction system, in addition to the social sphere and the service sector. In the case of a weak reproduction system and import-dependent production, the predominance of low-technology sectors in the economy or the digitalization of its fragmented segments (such as public procurement, public services, education, medicine, finance, retail, and other items) will not have a significant healing effect on the stagnating economy. Also, there will be no tangible economic effect when compared with the effects that can provide a fundamental and consistent transformation of segments of the economy under the influence of elements of the Fourth Industrial Revolution.

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PROFESSIONAL COMPETENCE OF THE HEAD OF THE MANAGEMENT OF THE COMPETITIVENESS OF THE EDUCATIONAL INSTITUTION

ПРОФЕСІЙНА КОМПЕТЕНТНІСТЬ КЕРІВНИКА З УПРАВЛІННЯ КОНКУРЕНТОСПРОМОЖНІСТЮ ЗАКЛАДУ ОСВІТИ

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Abstract. The main modern requirements for the professional competencies of educational institutions heads, peculiarities of the functioning of the education system, the ability to exit on the market are considered in this article. The concept of professional development, professional competitiveness management is also revealed. The components of the competitiveness content, the main directions, and levels of ensuring competitiveness content, functioning and developing of industry in the conditions of transformational changes are formulated.

As a result of the study, the necessity of systematically improving the professional competence of the head of the educational institution was proven, in order to create such a management system that would ensure the development of the educational institution in accordance with the requirements of long-term maintenance of its competitive positions in today's market.

Keywords: competence, management system, manager, educational institution, competitiveness.

Анотація. В статті розглядається основні сучасні вимоги до професійних компетентностей керівників навчальних закладів. Особливості функціонування системи освіти, здатність до існування на ринку. Розкрито поняття професійний розвиток, фахова компетентність, управління конкурентоспроможністю. Сформульовано складові змісту компетентностей, основні напрями та рівні забезпечення конкурентоспроможності, функціонування і розвиток галузі в умовах трансформаційних змін.

В результаті дослідження доведено необхідність систематичного підвищення фахової компетентності керівника навчального закладу, для створення такої управлінської системи, яка забезпечить розвиток закладу освіти відповідно до вимог довгострокового забезпечення його конкурентних позицій на ринку сьогодення.

Ключові слова: компетентність, система управління, керівник, заклад освіти, конкурентоспроможність.

Одним з основних завдань Національної стратегії розвитку освіти в Україні на сьогодні є забезпечення випереджального характеру підвищення кваліфікації керівних, науково-педагогічних і педагогічних кадрів відповідно до потреб реформування системи освіти, викликів сучасного суспільного розвитку¹⁰⁴. Тому сучасним закладам освіти потрібні не просто старанні і сумлінні, а компетентні і творчі керівники, які володіють інноваційними технологіями та здатні творчо підходити до організації освітнього процесу з метою досягати високих якісних результатів з управління конкурентоспроможністю закладу освіти.

Ефективність функціонування системи освіти та зростання соціальних вимог до закладів освіти має потребу у висококваліфікованих спеціалістах. Підвищення якості професійної підготовки обумовлене можливістю мобільного реагування освітнього процесу на потреби особистості та суспільства. Забезпечити таку можливість покликана система управління якістю підготовки фахівця, одним з основних принципів побудови якої є спрямованість на формування необхідних фахівцеві компетенцій, що забезпечують його конкурентоспроможність¹⁰⁵. Чинна освіта стає способом інформаційного обміну, що здійснюється на кожному етапі життєдіяльності особистості протягом усього життя. При цьому важливо оволодіти навичками прогнозування, планування, проектування, що є одним із важливих професійно значущих умінь сучасного керівника.

Вищевикладене має стати підґрунтям для здійснення науково обґрунтованого управління конкурентоспроможністю та розвитку професійних компетенцій керівника, що є не лише педагогічною, а й соціальною проблемою, від розв'язання якої залежить реалізація освітньої політики України¹⁰⁶.

Сучасна освіта потребує підготовки керівників нового типу, які в умовах інноваційного освітнього середовища не тільки передають на інформаційному рівні знання, а й сприяють розвитку креативності мислення. Особливості функціонування системи освіти значною мірою залежить від наявності кваліфікованих керівників. Вирішенню цих питань сприяє організована належним чином робота на всіх рівнях – складових частин єдиної системи підвищення професійної компетентності керівника¹⁰⁷.

Про компетентність керівника закладу освіти свідчать показники ефективності його управлінської діяльності. Під критерієм ефективності процесу управління розуміють систему умов, які можуть задовольняти цей процес. Вагомим показником управлінської діяльності керівника є створення оптимальних можливостей для досягнення поставленої мети навчального

¹⁰⁴ Олійник В. В. (2011). Безперервний професійний розвиток педагога в умовах реалізації Національної стратегії розвитку освіти в Україні на 2012 – 2021 роки, с.3.

¹⁰⁵ Клокар Н. І. (2007). Методика вивчення професійних запитів педагогів у між атестаційний період, с.36.

¹⁰⁶ Овчарук О. В. (2004). Компетентісний підхід у сучасній освіті: світовий досвід та українські перспективи : бібліотека з освітньої політики, с.56

¹⁰⁷ Маркова А. К. (1996). Психологія професіоналізму, с.77.

закладу, реалізації прав людини, на здобуття освіти, яка відповідає її інтересам, здібностям та можливостям.

Теорія підвищення кваліфікації керівних кадрів, мотивів професійного розвитку, яка спонукає людину до досягнення вершин професійної зрілості, розглядається в багатьох роботах психолого-педагогічного напрямку, оскільки мотивація в різних видах діяльності – різна.

Теоретичні основи вивчення професіоналізму закладені в працях Б. Г. Ананьєва, А. О. Деркача, Н. В. Кузьміної, Б. Ф. Ломова, К. К. Платонова, В. А. Пономаренко, В. Д. Шадрікова. Виявлені аспекти взаємозв'язку професіоналізму і компетентності кадрів розглядали науковці А. О. Деркач, О. С. Анісимов, А. К. Маркова, І. Н. Семенов, Ю. В. Синягин та ін.. Ними було доведено, що ефективний професійний розвиток і досягнення професійної компетентності можуть бути здійснені за наявності достатньо високого рівня мотивації керівника. У ряді досліджень С. О. Сисоевої, Т. Є. Кристопчук було розкрито характеристики мотивів трудової діяльності та професійного розвитку, ставлення людини до праці взагалі.

Розробці наукових засад у сфері управління конкурентоспроможності присвячені роботи великої кількості вітчизняних і закордонних вчених, серед яких Є. О. Діденко, А. Г. Ткаченко, Горинь Я. О., Сенішин О. С., Горинь М. О., Корчагова Л. А. та інші. Формування нового конкурентного середовища серед закладів освіти де зростають вимоги до послуг якості процесу навчання, підвищення привабливості закладу, функціонування та розвитку освітньої сфери, переходу до європейських стандартів оцінки результатів освіти, виникає жорстка конкуренція на національному ринку освітніх послуг. Обумовлена цими реаліями необхідність відповідати особливостям розвитку ринкової економіки та світового ринку освітніх послуг підкреслює важливість інноваційного розвитку всієї системи освіти, що має забезпечити певний рівень її конкурентоспроможності.

Сучасні вимоги до керівника навчального закладу сформульовані в Законі України «Про загальну середню освіту»: «Посаду керівника загальноосвітнього навчального закладу незалежно від підпорядкування, типу і форм власності може займати особа, яка є громадянином України, має вищу педагогічну освіту на рівні спеціаліста або магістра, стаж педагогічної роботи не менше трьох років, успішно пройшла атестацію керівних кадрів освіти у порядку, встановленому Міністерством освіти і науки України» (ст. 24, п. 2).

У Національній доктрині розвитку освіти (затвердженої Указом Президента України від 17 квітня 2002 року, №347/2002) компетентність тлумачиться як «система теоретико-методологічних, нормативних положень, спеціальних наукових знань, організаційно-методичних, технологічних умінь, які об'єктивно необхідні особистості для виконання посадово-функціональних обов'язків, відповідних моральних і психологічних якостей».

В умовах орієнтації освіти на професійно-особистісний розвиток суб'єктів педагогічних систем найбільш затребуваними в освітньому закладі є фахівці, які здатні досліджувати навчально-виховний процес, планувати стратегії й тактики розвитку освітнього закладу та шляхи особистісно-

професійного розвитку тих, хто навчається, ухвалювати самостійні рішення, здійснювати корегувальну і контрольну-оцінюючу діяльність.

Підвищення фахової компетентності керівників навчальних закладів відбувається в системі післядипломної педагогічної освіти. Післядипломна освіта функціонує відповідно до Конституції України, Законів України «Про освіту», «Про вищу освіту», «Про загальну середню освіту» Державної національної програми «Освіта: Україна XXI століття», Національної доктрини розвитку освіти в XXI сторіччі та інших нормативно-правових актів, що забезпечують прогностичну та законодавчо-правову базу підвищення кваліфікації кадрів.

Сучасний керівник навчального закладу повинен мати такі якості особистості, як готовність до безперервного розвитку, креативність, здібність до взаємодії, мобільність, аналітичні, прогностичні та інші здібності. Компетентність керівника з управління конкурентоспроможністю закладу освіти має інтегративну природу, адже її джерелом є різні сфери культури (духовної, громадської, соціальної, педагогічної, управлінської, правової, етичної, екологічної тощо), вона вимагає значного інтелектуального розвитку, включає аналітичні, комунікативні, прогностичні та інші розумові процеси. Компетентність включає екологічну, мотиваційну, рефлексивну, когнітивну, операційно-технологічну, етичну та інші складові змісту підготовки та передбачає нарощування знань, умінь, досвіду професійно-особистісного саморозвитку творчої діяльності, емоційно-ціннісного ставлення. Так, прикладом ключових компетентностей є здатність працювати в команді, розв'язувати конфлікти, застосовувати інформаційні й комунікаційні технології, творчість і винахідливість, здатність застосовувати знання й технології тощо.

Аналіз наукового доробку вітчизняних і зарубіжних учених дає нам змогу зробити висновок про те, що провідні ідеї, які становлять основу феномену управління конкурентоспроможністю де: професійний розвиток є процесом набуття нових знань, умінь, компетентностей; процес професійного розвитку детермінується постійною переробкою та рефлексією нового досвіду, а його ефективність визначається успішністю подолання суперечностей та психологічних бар'єрів; комплексність професійного розвитку (орієнтованість як на розвиток професійно орієнтованих підструктур особистості, так і на розвиток професійно значущих якостей та ціннісних орієнтацій); наявність індикаторів, за допомогою яких можна вимірювати результативність процесу професійного розвитку; процес професійного розвитку керівників, детермінується актуальною стратегією розвитку підприємства (доцільність); педагогічні впливи у процесі професійного розвитку породжують не тільки зміни у поведінці керівника, але й зміни у ставленні до професійної діяльності, готовності до її здійснення, рівня вмотивованості; кінцевою метою професійного розвитку керівників зміни в індивідуальній результативності та результативності діяльності підпорядкованого структурного підрозділу (орієнтація на результат); відповідальність індивіда за результати власного

професійного розвитку (усвідомленість); процес професійного розвитку є безперервним і передбачає визначення потреби в розвитку за допомогою аналізу відхилень реального рівня розвитку професійної компетентності від бажаного, педагогічні впливи на педагогічний персонал, аналіз ефективності педагогічних впливів, конструювання індивідуальної траєкторії розвитку (безперервність); професійний розвиток керівника має спрямовуватися на підвищення його здатності до управління індивідуальною результативністю та результативністю діяльності підпорядкованого структурного підрозділу, ефективного управління в умовах, що швидко змінюються, ретрансляції педагогічному персоналу стратегії закладу та декомпозиції стратегічних цілей установи на рівень структурного підрозділу; наближеність процесу професійного розвитку керівника до контексту його професійної діяльності (контекстність). Отже, ознаками поняття професійний розвиток є комплексність, систематичність, безперервність, усвідомленість, доцільність, орієнтація на результат.

Здійснений аналіз дає змогу запропонувати власне визначення поняття «професійний розвиток компетентностей керівників», під яким розуміємо систематичний, неперервний, свідомий, доцільний процес поглиблення та розширення знань, умінь, навичок, досвіду для орієнтованої на результат ефективної управлінської діяльності. Що стосується категорії «професійний розвиток компетентностей керівників структурних підрозділів закладів освіти», то для її визначення доцільно звернути увагу на те, що процес управлінської діяльності зазначеної категорії керівників (і відповідно на процес їх професійного розвитку) визначальний вплив мають такі чинники: особливості сфери освіти (значна конкуренція, необхідність орієнтації на параметри якості послуг, якості надання освітніх продуктів і т. і.); особливості роботи в сфері освіти (швидка зміна технологій, генерування нових продуктів і послуг, що визначає необхідність у частому й оперативному опануванні великих масивів нової інформації, формуванні нехарактерних для керівників структурних підрозділів умінь і навичок); інтенсивність праці категорії керівників, небезпека їх професійного вигорання; актуальна необхідність у швидкій мультиплікації знань для педагогічних кадрів з продажу послуг освіти (це визначає актуальність безперервного професійного розвитку й особистісного вдосконалення керівників як джерела кращих практик і стандартів діяльності для конкурентоспроможності закладу).

Тому, сутнісними характеристиками професійного розвитку керівників структурних підрозділів сфери освіти, крім зазначених вище, є: усвідомлення результатів діяльності та їх впливу на діяльність освітнього закладу загалом; переконання в необхідності задоволення потреб внутрішніх та зовнішніх; постійна підтримка та спонукання педагогів до професійного розвитку й особистісного вдосконалення; постійне прагнення до вдосконалення власної професійної компетентності; цілеспрямовані й доцільні дії щодо планування, реалізації, аналізу власної траєкторії професійного розвитку.

Отже, професійний розвиток керівників, керівників структурних підрозділів закладів освіти систематичний, неперервний, свідомий, доцільний процес підтримки, поглиблення та розширення знань, умінь, навичок, досвіду для орієнтованої на результат ефективної діяльності з управління конкурентоспроможністю закладу.

Саме тому керівники закладів освіти повинні бути компетентними у вирішенні актуальних питань конкурентоспроможності, функціонування і розвитку галузі в умовах трансформаційних змін. Модернізація управління закладом вимагає висококваліфікованого керівника, який досконало володіє організаційними, комунікативними, професійними здібностями.

Відповідно до Національної рамки кваліфікацій, у системі підвищення кваліфікації виділяють такі компетентності керівника навчального закладу:

- нормативно-правова компетентність – здатність реалізовувати освітню політику навчального закладу відповідно до вимог і стандартів державної політики в сфері освіти;

- управлінська компетентність – здатність ефективно здійснювати управлінську діяльність в умовах навчального закладу;

- психологічна компетентність – здатність створювати сприятливий психологічний клімат у колективі, формувати атмосферу відданості справі, ініціативи та відповідальності;

- комунікативна компетентність – здатність забезпечувати ефективні комунікації в колективі;

- інформаційна компетентність – здатність ефективно працювати з інформацією;

- лідерська компетентність – здатність впливати на людей і формувати команду своїх послідовників;

Про компетентність керівника закладу освіти свідчать показники ефективності його управлінської діяльності. Під критерієм ефективності процесу управління розуміють систему умов, які можуть задовольняти цей процес. Вагомим показником управлінської діяльності керівника є створення оптимальних можливостей для досягнення поставленої мети навчального закладу, реалізації прав людини, на здобуття освіти, яка відповідає її інтересам, здібностям та можливостям¹⁰⁸.

Освіта є необхідним потужним елементом формування демократичної держави, становлення громадянського суспільства. Тому без суттєвих змін в освіті неможливий позитивний розвиток країни в цілому. Одним з провідних аспектів реформування галузі освіти в світі та у європейських країнах зокрема є децентралізація управління та зміна форм власності закладів освіти. Освітні реформи передбачають зміни фінансування закладу освіти, змісту освіти і контролю її якості, зміни управління закладом та системою освіти загалом.

¹⁰⁸ Мелешко В. В. (2004). Формування професійної компетентності керівника малокомплектної школи.

Спостерігається розширення автономних прав закладів. Вони отримують можливість розробляти і впроваджувати власні освітні програми з дотриманням стандарту освіти. Мають право вийти зі статусу бюджетної установи і отримати статус неприбуткової організації – із збереженням податкових пільг і отриманням фінансової автономії¹⁰⁹.

Проте, досвід останніх років демонструє, що далеко не всі вітчизняні заклади освіти готові до ведення конкурентної боротьби. Як приклад, навіть володіння конкурентоспроможною продукцією, що безумовно виступає важливою умовою, не дозволяє багатьом з закладів ефективно реалізовувати цю перевагу через відсутність практики використання цілого комплексу маркетингу. Тому проблема управління конкурентоспроможністю підприємств набуває на сучасному етапі першочергового значення.

Конкурентоспроможність закладу, є здатність до реалізації ним певної сукупності конкурентних переваг, які дозволяють йому стабільно та ефективно розвивати освітні послуги в ході ринкового протистояння з іншими закладами освіти. Відповідно до цього, як головну мету управління конкурентоспроможністю можна відзначити забезпечення умов успішного функціонування закладу в конкурентному середовищі та створення конкурентних переваг, що забезпечать зростання переваги у майбутньому.

Суб'єктами управління у даному випадку виступає скоординована група осіб, які приймають участь у розробці й реалізації управлінських рішень у сфері формування та забезпечення конкурентоспроможністю освітнього закладу, а предметом – виступає процес формування та розвитку конкурентоспроможності закладу. В свою чергу, об'єктом управління конкурентоспроможністю стає не лише навчання, а фінансова, наукова, інноваційна та маркетингова діяльність, висококваліфікований педагогічний персонал, навчально-методична забезпеченість та організаційно-управлінська структура навчального закладу¹¹⁰.

З огляду на часовий період досягнення цілей закладом, управління конкурентоспроможністю доцільно розглядати в контексті оперативного (формування конкурентоспроможності), тактичного (забезпечення належного фінансово-економічного стану) та стратегічного (створення інвестиційно-інноваційної привабливості) рівнів.

Основні рівні забезпечення конкурентоспроможності закладу освіти представлено на рис. 1.

Управління конкурентоспроможністю закладу освіти обумовлює здатність до існування на ринку. На основі цього можна стверджувати, що даний процес передбачає обов'язкове виконання загальновідомих управлінських функцій.

¹⁰⁹ Діденко Є. О. (2014). Управління конкурентоспроможністю юридичної компанії на основі визначення ключових факторів успіху в умовах насиченого конкурентного середовища.

¹¹⁰ Клокар Н. (2016). Розвиток професійних компетентностей керівників місцевих органів управління освітою в умовах децентралізації, с.399.

Процес управління конкурентоспроможністю у загальному випадку можна представити у вигляді таких етапів¹¹¹:

1. Дослідження конкурентоспроможності закладу освіти.
2. Визначення конкурентних переваг та встановлення ключових факторів успіху у конкурентній боротьбі.
3. Розробка конкурентної стратегії та вироблення тактики.
4. Впровадження положень стратегії в процесі здійснення діяльності закладом освіти.
5. Визначення результатів реалізації конкурентної стратегії та її удосконалення в ході виявлення невідповідностей.

Забезпечення конкурентоспроможності закладу освіти		
Оперативний рівень	Тактичний рівень	Стратегічний рівень
Конкурентоспроможність закладу освіти	Фінансово-економічний стан закладу освіти	Інвестиційно-інноваційна привабливість закладу освіти

Рис. 1. Забезпечення конкурентоспроможності закладу освіти

Даний процес може бути реалізований у разі формування на застосування дієвого механізму управління конкурентоспроможністю, що є сукупністю засобів та методів створення системи цілісного управління розвитком закладу та результатами його діяльності задля довгострокового забезпечення його конкурентних позицій на ринку.

В свою чергу, впровадження у життя механізму матиме належну ефективність лише за умови функціональності системи управління конкурентоспроможністю. Вона є сукупністю підсистем, а також комунікацій та процесів між ними, взаємодія яких забезпечує ефективне функціонування освітнього закладу у конкурентному середовищі, його стабільний і безпечний розвиток у майбутньому за рахунок постійного розвитку потенціалу.

На підставі вище викладеного сформовано основні напрями конкурентоспроможності:

- формування стратегічних орієнтирів, з метою реагування на зміни в кон'юктурі ринку освітніх послуг;
- упровадження дієвих механізмів управління інноваційним розвитком як одного з ключових елементів конкурентоспроможності установи;
- забезпечення розвитку інтеграційних проектів;

¹¹¹ Діденко Є. О. (2014). Управління конкурентоспроможністю юридичної компанії на основі визначення ключових факторів успіху в умовах насиченого конкурентного середовища.

– модернізація освітньої політики, що стимулюватиме ринкову позицію освітніх послуг.

Глобалізаційні процеси в світі впливають на конкурентоспроможність закладів освіти, тобто спостерігається зв'язок «товару та послуг». Посилення ринкової позиції закладу можливе із залученням достатнього рівня інновацій і, як наслідок, інвестицій, що суттєво збільшить фінансові ресурси закладу освіти. Останнє зумовлює керівника закладу освіти проводити перманентний пошук дієвих, інноваційно-підприємницьких шляхів, заходів, підходів і методів щодо підвищення привабливості закладу для основних замовників – школярів, студентів, суб'єктів господарювання, регіональних і державних організацій, що, своєю чергою, забезпечує необхідний рівень конкурентоспроможності окремого закладу освіти.

Викладений матеріал дозволяє зробити наступні висновки. Встановлено що:

– конкурентоспроможність закладів освіти визначається якісними та ціновими параметрами освітніх послуг і значною мірою залежить від системи фінансово-економічних, організаційно-правових, науково-технологічних, кадрових, управлінських, демографічних та політичних факторів її забезпечення;

– забезпечення конкурентоспроможності закладу освіти можливе лише при наявності об'єктивної інформації про динаміку внутрішніх процесів у навчальному закладі та максимального врахування впливу факторів зовнішнього середовища на його діяльність;

– в цілому результативність діяльності навчального закладу значною мірою залежить від компетентності керівника, його умінь організувати спільну роботу всіх ланок, задіяних у процесі управління;

– підвищення професійної компетентності керівника дуже важливо, для створення такої управлінської системи, яка забезпечить розвиток закладу освіти відповідно до вимог сьогодення.

Перспектива подальших досліджень проаналізувати та узагальнити результати успішних проектів надання освітніх послуг на національному та міжнародному рівнях.

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DIGITALIZATION OF ENVIRONMENTAL SAFETY MANAGEMENT AS A TOOL FOR ENSURING SUSTAINABLE DEVELOPMENT

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Abstract. The purpose of the research is digitalization of environmental safety management. It has been proven that the latest information systems and technologies are the driver of digital transformation and the formation of an ecological business model focused on ensuring environmental safety and sustainable development of the enterprise. The tools are identified and the stages of modernization and transfer to the digital space of the environmental safety management system are determined. A reference model has been developed that will allow for a comprehensive solution to the challenges of digitization of environmental safety management, taking into account changes in the business environment and the needs of stakeholders. A model of digitization of the management of the production of ecological products is proposed, which is based on innovative principles and is integrated into the environmental safety management system, which in the complex serves as a guarantee of ensuring the implementation of the goals of sustainable development.

Keywords: digitalization, environmental safety, management, sustainable development, integrated information system, European experience

The priorities of the sustainable development policy are to ensure economic development supported on the basis of a modified market system; natural and ecological sustainability; close international cooperation and cooperation to achieve the goals of sustainable social development based on the principle of justice. The awareness of the scientific and political public of Europe of the need to develop and implement new approaches to the preservation of the natural environment, biotic and landscape diversity as interconnected indispensable components of the human habitat and the guarantee of further development of society led to the formation of a number of new approaches to solving organizational tasks of nature protection and understanding them scientific basis from a new point of view.

The ecological dimension of sustainable development is considered by scientists¹¹² using two indicators: 1) Environmental Sustainability Index ESI (Environmental Sustainability Index), which is formed from 21 environmental indicators calculated based on the use of 76 sets of environmental data on the state of

¹¹² Kashchena N., Nesterenko I., Kovalevska N. (2021). Monitoring of natural capital indicators as tool for achieving sustainable development goals, p. 156-166.

natural resources in the country, the level of environmental pollution, the country's efforts in the field of environmental management, the country's ability improve environmental characteristics, etc.; 2) EPI (Environmental Performance Index), which consists of 16 indicators that convey the country's achievements on its way to sustainable environmental development. These indicators include: child mortality rate (deaths per 1,000 children aged 1-14 years), chemical pollution and dustiness ($\mu\text{g}/\text{m}^3$) of the atmosphere, provision of drinking water and its sufficient purification (%), ozone status, nitrate content in drinking water (mg/l), water consumption, share of natural and protected areas, degree of deforestation (%), level of support for agriculture, depletion of fish stocks, share of alternative energy sources, energy efficiency and level of CO_2 emissions¹¹³.

The main criteria for evaluating ecological efficiency in order to fulfill the goals of sustainable development are presented in Figure 1.

For each indicator, the country receives points. Their number depends on the state's position within the range set by the worst country for this indicator (relative zero on the one-point scale) and the desired goal (the equivalent of one hundred points). The desired goal can be established on the basis of international treaties and standards.

According to the conducted studies¹¹⁴, in 2021 the best level of development of the ecological component will be in: Malta, France, Estonia, Portugal, Slovenia, Spain, Denmark, Sweden, Finland; the worst level is Cyprus, Belgium, Poland, and the Netherlands (Figure 2). The average level of sustainable development in EU countries is 3.3 units. That is, the following countries have a high level of sustainable development: Belgium, Slovenia, Portugal, the Czech Republic, France, Spain, Estonia, Ireland, and the Netherlands.

The tool for implementing the strategy of sustainable development is program-targeted regulation through the development of long-term, medium-term and short-term development programs of the state, its regions, administrative-territorial units, innovation and investment projects implemented in the state administration system. A necessary element of the process of development and implementation of Ukraine's sustainable development strategy is the formation of their resource and institutional and organizational support¹¹⁵.

The international TEEB project (The Economics of Ecosystems and Biodiversity, TEEB) contributes to the solution of issues in the field of institutional and organizational support of Ukraine's sustainable development strategy. It is focused on environmental safety and is designed to ensure the systematic integration of ecological assessment of biodiversity into the decisions of relevant authorities in the country and into the general system of ecological and economic calculations, which requires, first, the development of methodological principles for accounting for

¹¹³ Kashchena N., Nesterenko I., Kovalevska N. (2021). Monitoring of natural capital indicators as tool for achieving sustainable development goals, p.157.

¹¹⁴ Environmental Sustainability Index (ESI).

¹¹⁵ Zakharchenko O. V. (2014). Assessment and problems of sustainable development in the world, p. 111.

individual elements of natural capital and their disclosure in reporting business entities.

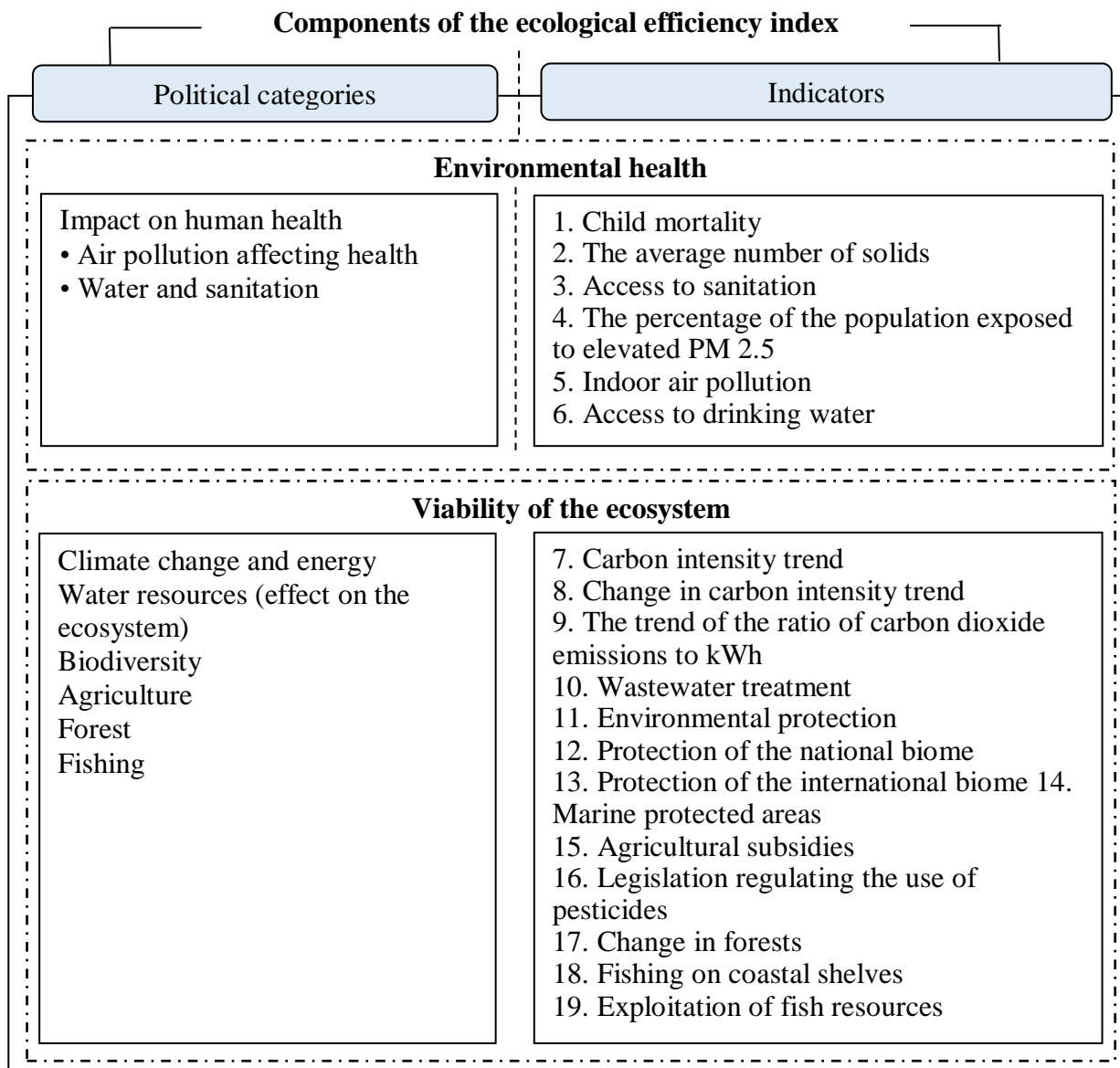


Fig. 1. The main components of the ecological efficiency index

Source: formed on the basis¹¹⁶

The European Union considers environmental security as a part of the national security of each state, as an important component of pan-European stability. That is why environmental protection is defined as a priority area of cooperation between Ukraine and the European Union. In Ukraine, an integrated approach to environmental management has not yet been implemented due to the imperfection of the relevant legislative and regulatory framework.

¹¹⁶ Kashchena N., Nesterenko I., Kovalevska N. (2021). Monitoring of natural capital indicators as tool for achieving sustainable development goals, p.157; Environmental Sustainability Index (ESI); Davydova O. et al. (2020). Sustainable Development of Enterprises with Digitalization of the Economic Management, p.2370-2378

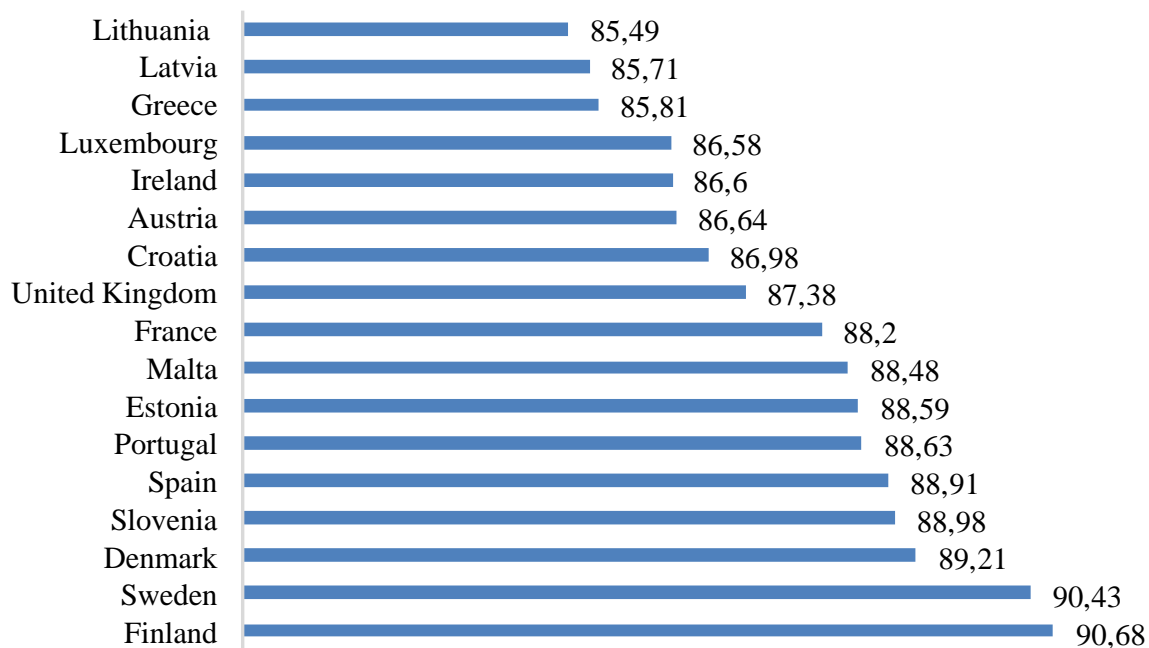


Fig. 2. EPI environmental efficiency indices of EU countries, 2021

*Source*¹¹⁷

Currently, Ukraine is interested in developing further cooperation in the field of environmental protection. The priority directions are global climate changes; management of water resources, in particular the Black Sea; renewable energy and energy efficiency. The application of European experience on the territory of Ukraine is possible in terms of the pace and quality of the implementation of the strategic goals of sustainable development. The list of the main indicators of the strategy (economic development, social development, protection of the natural environment and rational use of natural resources) should be distributed and take into account: the ecological balance of production in the basic branches of industry, agriculture, the production of consumer goods and the provision of services, housing and utilities, transport, military activity; environmental expertise in the field of scientific support, environmental education, civil society, regional policy, international cooperation. The development of a package of normative legal acts in Ukraine on environmental protection and conservation of natural diversity is the basis of sustainable development. As part of the transition to balanced socio-ecological and economic development in Ukraine, a few legal acts were updated to implement the goals and principles of sustainable development.

At the same time, modern state policy requires new approaches to its implementation, which should be based on innovative developments based on the principles of environmental safety.

Environmental safety and innovative development are components not only of state policy, but also the basis of its competitiveness, which is achieved primarily

¹¹⁷Environmental Sustainability Index (ESI). URL: <http://sedac.ciesin.columbia.edu/data/collection/esi>.

through the effective use of regulatory tools and the activation of environmentally oriented business (Table 1).

Table 1 – Tools for regulation and activation of ecologically oriented business

Tools and measures		Subject of development and implementation
Coercive and restrictive	Standardization and rationing, licensing, environmental expertise, environmental payments, financial sanctions for violation of environmental regulations, taxes, fees, fines, etc.	State
Stimulating and compensatory	Tax benefits, targeted subsidies and grants, preferential lending, financing (at least partial) of socially important environmental projects and programs	State, investors
Financial	Formation of specialized investment funds, environmental banks and programs; environmental insurance; environmental audit.	The state, business entities, investors
Informational	Free access of business entities to the environmental legal framework, environmental certification; formation of local environmental information centers; environmental consulting.	The state, business entities, investors
Social and psychological	Environmentally and socially oriented corporate culture and responsibility; activation of environmental education; environmental ethics and consciousness of the entrepreneur and the whole society	Business entities, the state (institutions of education, culture, upbringing, health)
Market (marketing)	Formation of the market for eco-safe products – demand, supply, competition; ecological marketing; creation of ecological brands.	Market entities

Source¹¹⁸¹¹⁹

In domestic practice, such regulatory instruments as certification, licensing, environmental expertise, environmental payments, financial sanctions, taxes, fees, fines, etc. are coercive and restrictive. Currently, disciplinary, administrative, civil, and criminal liability for violation of environmental legislation is common in Ukraine, as specified in Art. 68 of the Law of Ukraine "On Environmental Protection"¹²⁰.

Under modern global challenges, the prerequisite for ensuring environmental safety is effective innovative activity. At the stage of striving for sustainable development and directing entrepreneurship to ecologies economic activity, such types of innovative activities are activated as:

¹¹⁸ Omarov Sh. A. (2014). The concept of sustainable development in the legislation of Ukraine and the countries of the world and the practice of its implementation, p. 85.

¹¹⁹ Svistun L.A., Rozhko A.A. (2016). Strategic principles of ensuring the sustainable development of the economy of Ukraine, p. 866.

¹²⁰ Nazarova H. et al. (2022). Theoretical and methodological aspects of improving the functioning of the accounting system, p. 246.

– instrumental preparation and organization of production. It is at this stage that the ecological component of production is established through changes in the procedures, methods and standards of production and quality control of the production of a new ecological product or the application of a new technological process, the purchase of production equipment, etc.

– start of production and design work. At this stage, new modifications of the ecological product and technological process, which are adjusted in accordance with the norms and standards at the stage of the trial run of production, must meet the norms of environmental safety. An important component of this stage is the retraining of personnel according to the principles of eco-management, as well as the use of new technologies and equipment.

– marketing of new products, which includes preliminary market research, product adaptation to different markets or market preparation for the acceptance of new ecological products, creation of a new market, conducting advertising campaigns, etc.

– acquisition of intangible assets (patents, licenses, know-how, trademarks), services of technological content, machines and equipment, which by their technological content are related to the introduction of product or technological innovations. From the point of view of environmental safety, this component should be thoroughly investigated by the state with the help of regulatory mechanisms and standards to prohibit the introduction of pseudo-innovations on the market, based on secondary technologies that have not justified themselves or are prohibited in other countries.

In the conditions of total digital transformation of economic relations, effective environmentalization of business is possible only on the basis of digitization. The formation of a digital ecosystem of enterprise management requires the identification and rethinking of forms, directions, methods, technologies and tools of digital, innovative policy and the corresponding corporate culture, a high level of which is necessary for reliable communication between all levels of management in order to quickly implement changes and update the existing one or form a new one business models. It is advisable to modernize the enterprise management system and transfer it to the digital space in stages:

– 1st stage – building a system of communications with clients (understanding, analytics, tracking of client experience);

– 2nd stage – formation of modern corporate culture (introduction of new technologies, processes and skills);

– 3rd stage – optimization of business processes and formation of an effective operating model (implementation of new systems, restructuring of infrastructure, modernization of business applications and processes);

– 4th stage – renewal of the existing or formation of a new ecological business model (creation of new ecological products; digitization of production; reorganization of logistics; change of approaches to one's own positioning, etc.).

The basis of the new environmental digital business model and the organization of effective environmental safety management is the use of the latest information systems and technologies, in particular such as applied artificial

intelligence, which is based on big data tools, and allows visualization, end-to-end planning, modeling and adjustment of environmental policy sub business object in real time (Figure 3).

Information systems and technologies, integrating with analytical applications and services for working with intelligent devices, hybrid networks and other components of the digital world, allow optimizing the infrastructure of business process management and provide an opportunity to form digital platforms for the accumulation of information, its processing and transmission for decision-making.

To increase the efficiency of environmental safety management of enterprises, it is advisable to use the reference model of business digitalization (Figure 4), which allows to provide a comprehensive solution to the tasks of digitization of the management process, considering changes in the business environment and the needs of stakeholders.

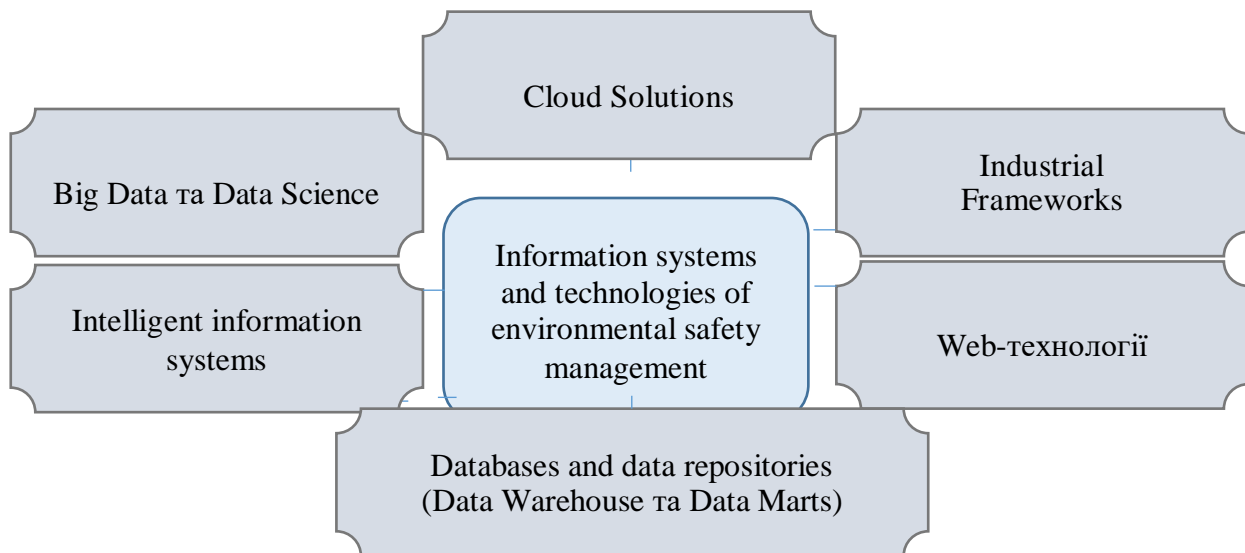


Fig. 3. Information systems and technologies of environmental safety management

Source: own development

The instrumental basis of the reference model of digitalization of business environmental safety management consists of its own databases, freely distributed information content (social networks, Internet resources, market information, etc.), open software of the business process management information system that implements the technology of data integration and digital applications¹²¹.

The current level of information technology development has clearly defined a platform for creating a new solution – a Web environment for consolidation and management of data and processes within the framework of a full set of

¹²¹ Davydova O. et al. (2020). Sustainable Development of Enterprises with Digitalization of the Economic Management, p. 2371.

environmental safety management tasks, the solution of which is necessary for the successful production of ecological products.

For internal data storage, the most effective is a mixed model, in which the XML format is mainly used. However, for attributes that are often used when forming samples, it is advisable to use traditional relational tables. Wide use of web services helps to implement the necessary functionality of a complex distributed solution. To coordinate and synchronize the work of services, you should choose an event mechanism and a link structure of applications and modern methods of creating screen web interfaces.

In the digital space of business entities, an important place should be given to:

- hardware (Devices and Networks) – smart devices, in particular sensors, interfaces and data transfer protocols, cyber security;
- specialized software and algorithms (Industrial Frameworks) – programming tools, promising packages for the development and implementation of control functions (IDE, CAD/CAM, SCADA), software integration of local devices, software gateways and data processing methods, modern algorithms for controlling technological equipment; cloud technologies (Cloud Solutions) (cloud services, cloud environments);
- digital twins (Digital Twins) – components and technologies of digital twins, development, modeling and integration into the production environment, predictive analytics, modern management methods and laws.

Therefore, the implementation of an information system that ensures the concentration of data and their management within the production processes of innovative eco-products is currently an urgent task for a wide range of business entities. The successful organization of innovative production is achieved by ensuring the connection between heterogeneous work processes at the enterprise and the effective use of data created in management corporate software systems¹²².

The concept of digital integrated innovative production of ecological products involves a new approach to the organization and management of production, the novelty of which consists not only in the application of information systems and technologies for the automation of technological processes and operations, but also in the creation of an integrated information environment for managing production on an ecological basis. In the concept of digital production, an integrated computer system plays a special role, the main functions of which are the automation of the design and preparation processes to produce ecological products, as well as functions related to the provision of information integration of technological, production processes and environmental safety management processes. Digital integrated production of ecological products combines the following functions:

- design and production preparation;
- planning and production;
- supply management;
- management of production sites and workshops;

¹²² Koshkalda I. et al. (2020). Motivation Mechanism for Stimulating the Labor Potential. Research in World Economy, p. 54.

- management of transport and warehouse systems;
- quality assurance systems;
- sales systems;
- financial subsystems.

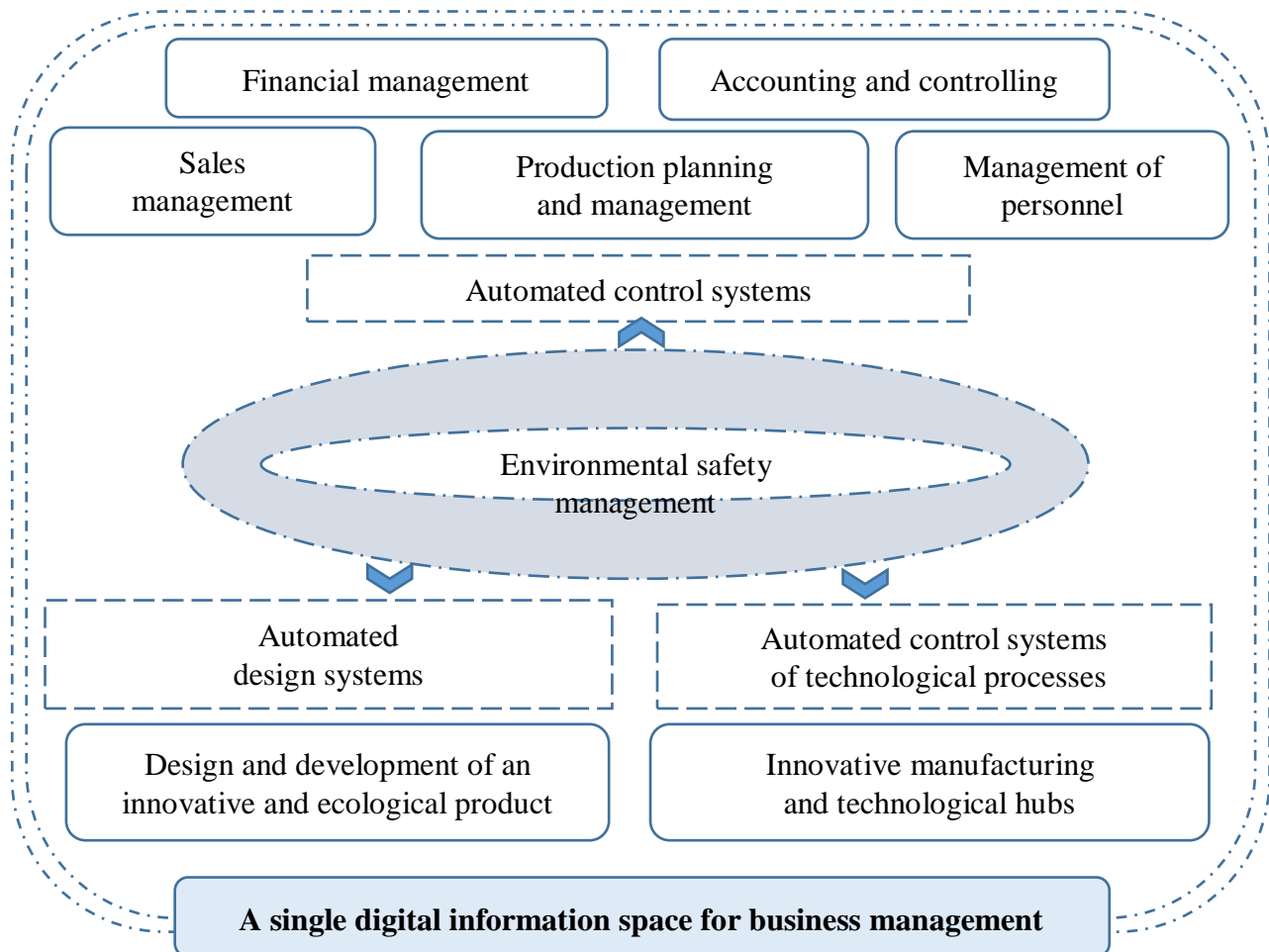


Fig. 4. Reference model of digitalization of environmental safety management of a business entity

Source: own development

All functions are performed using special software modules. Data required for various procedures are freely transferred from one software module to another. In digital production, a common database should be used, which allows, through an interface, to provide user access to all modules of production processes and related business functions that integrate automated segments of activity or production complex. Practice proves that the digital production of ecological products reduces and practically excludes human participation in production. This allows you to speed up the production process and reduce the rate of failures and errors.

Therefore, the modern digital transformation of business processes must be implemented systematically. The digital production system covers the design

processes (beginning with the study of market conditions and ending with logistics issues), manufacturing and sales of ecological products¹²³.

Based on the above, we offer the architecture of the digitalization model for the management of the production of ecological products (Figure 5), which consists of three main, hierarchically interconnected blocks, focused on the implementation of the functions of different levels of management, and in its outline integrates the relevant functional information systems and technologies.

Digital production systems of the strategic and tactical level include systems that perform the task of planning the production of ecological products. The current level is occupied by design systems to produce ecological products. At the operational level are production equipment management systems. The main components of the integrated model of digitalization of management of the production of ecological products are as follows:

1) at the strategic and tactical level (planning level):

- SPMEP (Systems of Planning and Management of Ecological Production) – systems of planning and management of ecological production;
- EPPS (Environmental Policy Planning System) – environmental policy planning system;
- CAP (Computer-Aided Planning) – technological training system;
- CAPP (Computer-Aided Process Planning) – an automated system for designing technological processes and drawing up technological documentation;
- MRPS (Manufacturing Resource Planning Systems) – system of resource needs planning;
- ASMR (Automatic System of Moving Resources) – automatic system of moving resources;
- ASS (Automated Storage System) – automated warehouse system;
- PPMS (Production Process Management System) – production process management system.

2) at the current level (the level of design of ecological products and production):

- PDM (Project Data Management) – data management system for ecological products;
- modification of systems: CAE (Computer-Aided Engineering) – automated environmental engineering system; CAD (Computer-Aided Design) – automated design system; CAM (Computer-aided manufacturing) – automated system of technological preparation of ecological production;
- ETD (Electronic Technical Development) – a system of automated development of operational documentation;
- IETM (Interactive Electronic Technical Manuals) – interactive electronic technical manuals.

¹²³ Kashchena N., Nesterenko I. (2022). Digitalization of the innovative development management information service of the enterprise, p. 255.

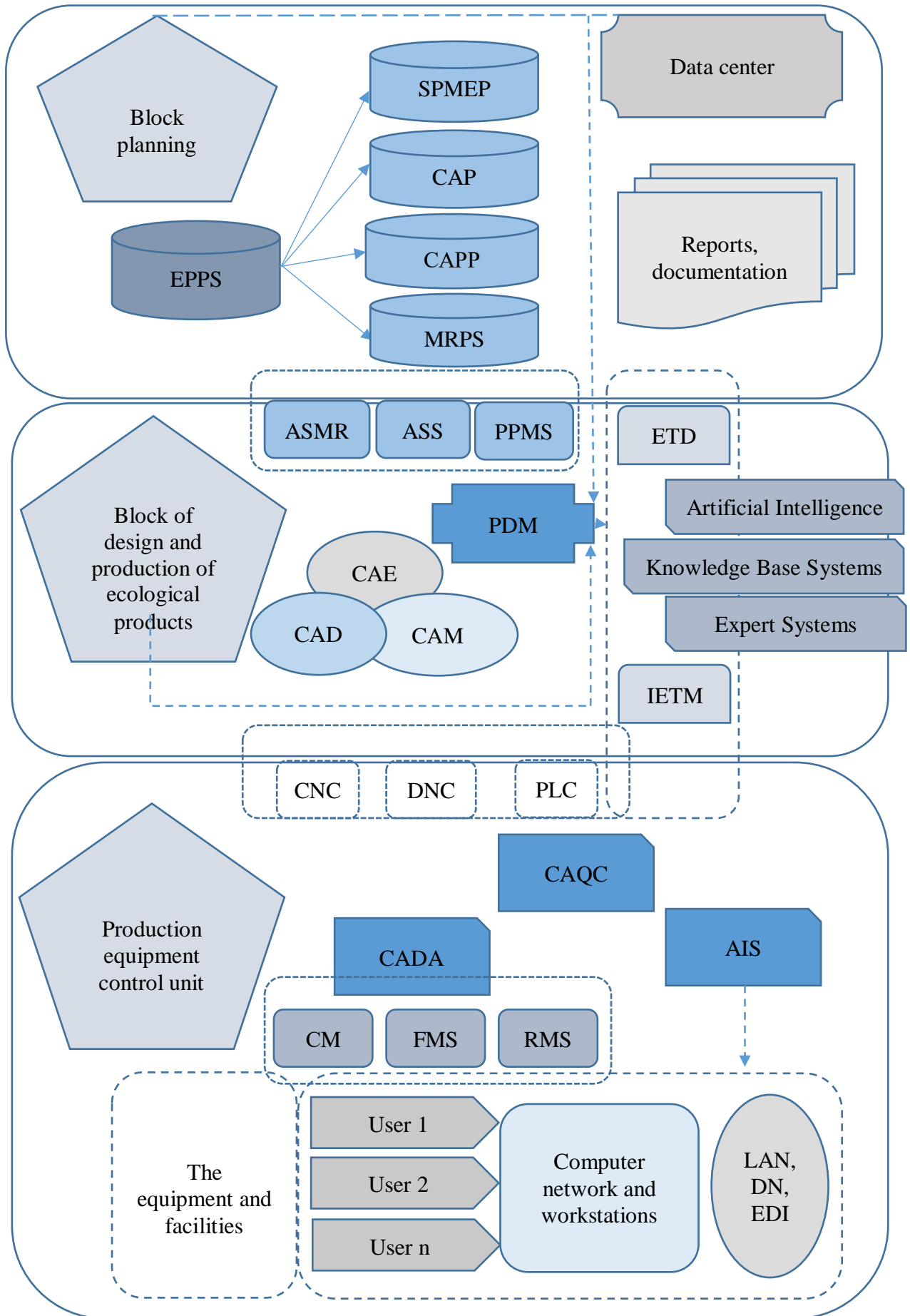


Fig. 5. Integrated model of digitalization of management of production of ecological products (Source: own development)

3) at the operational level (production equipment management level).

- CAQC (Computer Aided Quality Control) – an automated system of environmental product quality management;
- CADA (Control and Data Acquisition) – data management and collection;
- FMS (Flexible Manufacturing System) – flexible manufacturing system;
- RMS (Reconfigurable Manufacturing System) – reconfigurable manufacturing system;
- CM (Cellular Manufacturing) – automated production process management system;
- AIS (Automatic Identification System) – automatic identification system;
- CNC (Computer Numerical Controlled Machine Tools) – numerical software control;
- DNC (Direct Numerical Control Machine Tools) – direct numerical software control;
- PLC (Programmable Logic Controllers) – programmable logic controller;
- LAN (Local Area Network) – local network;
- DN (Distributed Network) – distributed network;
- EDI (Electronic Data Interchange) – electronic data exchange.

The presented integrated model of digitalization of the production of ecological products is a component of the system of digitalization of environmental safety management, which through the applied solutions of the latest information technologies in the field of design, manufacture and sale of ecological products ensures the implementation of the relevant functions of managerial influence, effective information communication interaction and the formation of a single digital information space of business management. The presence of the latter serves as a guarantee of ensuring the implementation of the goals of sustainable development¹²⁴.

The above proposals in a complex form a scientific and applied approach to the digitalization of business environmental safety management, the difference of which is the implementation of the latest achievements in the field of eco-innovations and IT technologies of data collection and processing for all business processes in the management information system of business entities with the aim of obtaining a number of economic, environmental and social benefits¹²⁵. Thus, the economic effect consists in: minimization of costs due to the innovativeness of equipment and technologies; improving the quality of ecological products, reducing energy and material consumption, increasing labor productivity and employee motivation, etc.; increasing profits, strengthening the financial and economic situation; minimization

¹²⁴ Shiyani D.V. et al. (2021). Forecasting the demand for organic products in households with different income levels, p. 16.

¹²⁵ Kashchena N. (2021). Scientific and applied platform of trade enterprises economic activity digital management transformation, p. 17.

of environmental risks by taking measures to prevent environmental fines and sanctions; increasing business reputation; increasing innovative and market attractiveness, additional attraction of investments; development of ecologically oriented markets, etc. Environmental benefits are associated with: image enhancement due to environmental responsibility of business; improving the state of the environment, preserving and restoring the natural resource potential; preservation and improvement of the ecological environment in the locations of enterprises; the development of types of activities in which the growth of production volumes is not accompanied by environmental pollution; conquering a niche in the «environmentally friendly products» market, etc. The social effect is manifested in the realization of personal potential as a socially responsible business entity and the fulfillment of its social mission to society.

In conclusion, we note that digitalization is no longer just a trend, but an integral tool for building economic systems, which through the integration of digital technologies in all spheres of life ensures the transition of business from the real world to the virtual world, its efficiency and further sustainable development on the basis of innovation and environmentalization production taking into account changes in the business environment and the interests of all interested parties. The implementation of the latest achievements in the field of eco-innovations and IT technologies of data collection and processing for all business processes (design, manufacturing, sales, etc.) into the information system of the enterprise's management enables the improvement of the socio-ecological-economic parameters of the enterprise's development and contributes to the strengthening of its environmental safety.

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MODERN PRINCIPLES OF SUSTAINABLE SPATIAL DEVELOPMENT OF INNOVATIVE TERRITORIAL SYSTEMS IN UKRAINE

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Abstract. The article is devoted to topical issues of sustainable spatial development in the context of Ukraine's European integration. The evolution of theoretical approaches to the formation of a modern model of sustainable spatial development is studied. The main concepts related to territorial and spatial development have been delineated. The expediency of introducing the concept of innovative territorial systems into scientific circulation is substantiated. The European experience of sustainable spatial development of territorial communities is summarized and systematized. A conceptual approach to the sustainable spatial development of the territories of Ukraine in modern conditions has been developed.

Keywords: space, sustainable spatial development, territorial communities, concept, comprehensive plan.

The formation of Ukrainian statehood in the late twentieth and early twenty-first centuries was repeatedly tested for its ability to create appropriate conditions for the spatial development of territorial communities at the intersection of geopolitical vectors and influences. Ukraine's desire to approach European standards, its declarative openness to global interaction in the absence of balanced mechanisms to ensure it, and many other differences have led to several gaps in the spatial development of territorial systems in Ukraine. An equally important problem throughout the period of Ukraine's independence has been the imperfection of state policy and the lack of a harmonized, holistic, and consistent concept of spatial development of territories integrated into existing European documents and decisions of global UN Summits. Today, Ukraine is in the process of irreversible global transformation of its entire social life. Its integral part is the restructuring of the constitutional and institutional structure of public administration, integration into the European and global space.

Modern theoretical concepts of spatial development of territories of different ranks are the result of a dynamic change in the system of scientific theories and views on social values, as well as goals, priorities, mechanisms, tools and tasks to ensure their implementation, which depends on the level of development and capabilities of national economies and objectively existing constraints. The theoretical basis for the development of modern approaches to spatial development is a set of theories and concepts, among which are the following theories of systems, endogenous growth,

regional development, sustainable development, balanced development, public administration, and others. Generalization and systematization of scientific works within the framework of these theories makes it possible to trace the evolution of views on the content of the conceptual apparatus, essence, principles, patterns of spatial development and its management.

The term «spatial development» was established in Europe, Canada, and the United States in the early 1970s, and it has been included in Ukrainian glossaries since the mid-1990s. In the broadest sense, spatial development is seen as a policy (system of policies) or a set of conscious actions to manage the elements and interrelationships of a certain territory aimed at optimizing positive changes. A significant contribution to the study of SD was made by such Ukrainian scholars as S.I. Dorohuntsov, M.I. Dolishnyi, B.M. Danylyshyn, V.P. Semynozhenko, V.I. Pyla and others who consider this category comprehensively. Research on the problems of SD is constantly in the focus of attention of leading Ukrainian scholars, in particular, Y.I. Boyko, L.M. Zaitsev, V.S. Kravtsiv, A.G. Mazur, I.R. Mykhasiuk, N.A. Mikula, V.I. Pavlov, S.A. Romanyuk, L.T. Shevchuk and others.

The diversity of approaches to the interpretation of the concept of spatial development indicates the need for further research into its content and essence in the system of new national and global challenges. Some scholars believe that «spatial development» is a reproductive process of space elements that functions as a system of material and energy flows («raw materials, goods, services, organizational, financial and human capital» by L. Morozov¹²⁶). Y. Pavliuk¹²⁷ points to the managerial content of this concept and suggests interpreting spatial development as «a set of organizational measures for managing the elements and connections of territories, a system of actions aimed at optimizing spatial changes. Spatial development should be consistent with the state regional policy, in the process of which the interests of individual regions are combined with the national ones, mechanisms are formed that ensure the economic conditions for the integrity of the country and prevent unjustified territorial and economic isolation and separation». A. Pandas¹²⁸ points out the cyclical nature of the process of spatial development caused by the contradictory consequences of transformations in the socio-cultural or material environment, the subjects of which are the population, property owners, developers, local authorities, united by the interests of living together and doing business within the boundaries of local urban areas. M.P. Butko¹²⁹ considers «sustainable spatial development as ensuring by self-government bodies, regional and state management entities of effective interaction and rational combination of social, economic and environmental elements of the space of human activity for full and affordable satisfaction of the diverse needs of all segments of the population».

¹²⁶ Morozova L.V. (2013). Pryntsyvy prostorovoho rozvytku sotsialno-ekonomichnoi systemy Ukrainy, p.13.

¹²⁷ Pavliuk Y.Y. (2011). Prostorovyi rozvytok rehionalnoi-ekonomichnoi systemy, p.11.

¹²⁸ Pandas A.V. (2015). Metody analizu ta rehuliuвання prostorovoho rozvytku velykoho mista, p.15.

¹²⁹ Butko I.P. (1992). Deiaki problemy stanovlennia i rozvytku terytorialnoho samovriaduvannia v Ukraini, p.92.

The SD covers all spheres of human life, and its provision and effective management of space changes requires the study of all components of its functioning, historical, geographical, demographic, economic, environmental, cultural, political, ethnic, spiritual and religious and other objective and subjective factors and their impact on the configuration of the space of a particular territory.

In the Ukrainian scientific literature, the concept of territorial development is often used alongside the concept of spatial development. «The concept of «territorial development» refers to changes of socio-economic, environmental and other nature that occur in a particular territory, and «spatial development» is used when it comes to changes in the morphology (structure) of a territorial system of a certain level» (L. Kazmir¹³⁰). Territorial development reflects a set of relevant policies (social, economic, environmental, innovative), the implementation of which is accompanied by appropriate changes in the development of territories.

The modern concept of spatial development should ensure the formation of a favorable geospace for the population of territories of different ranks (national, regional, local), which can use both the competitive advantages of the territory to form their self-sufficiency and ensure a decent standard of living for the community's population, considering national and global goals. Spatial development is a process that has a global context but is implemented locally and ensures harmonious social changes in the territory along with the development of material and spiritual needs of the residents because of the most efficient and rational management and use of natural resources, not only stopping environmental degradation but creating conditions for increasing the natural resource potential of social production¹³¹.

Comprehending V. Vernadsky's theory of planetary development, scientists note that the global goal of the development of a region or territory should be coordinated and joint development (coevolution). The coexistence of nature and an overly technologically advanced society is possible only if there is a scientifically based compromise between the laws of nature and the laws of human development with its achievements and problems. Such an approach necessarily necessitates the formation of innovative territorial systems, the innovativeness of which is determined by the need for both development and preservation of space and requires continuous improvement of innovative approaches to human development management.

It should be noted that while sustainable development is a global concept, spatial development (territorial development) is a comprehensive system of organizational measures for managing the elements and connections of territories aimed at optimizing spatial changes within the framework of the UN Global Sustainable Development Goals, which are primarily aimed at protecting the interests of humanity in the present and future world. This is a new stage in the evolution of environmental and economic relations associated with building a harmoniously organized society that can ensure an equilibrium and balanced interaction of

¹³⁰ Kazmir L.P. (2006). *Upravlinnia prostorovym rozvytkom rehionu i terytorialnyi marketynh*, p.130.

¹³¹ Dunaiev I.V. (2018). *Mekhanizmy modernizatsii rehionalnoi ekonomichnoi polityky v Ukraini v umovakh intehratsiinykh protsesiv*, p.18.

environmental, social, and economic factors of development. In modern conditions, the goals and principles of sustainable development established at the global level are becoming the basis for defining national, regional, local goals and strategies for sustainable spatial development of civilized countries. At the same time, ensuring the effectiveness of the process of sustainable spatial development requires the introduction of innovative mechanisms for long-term beneficial interaction between social systems (society, production, economic sectors, academia, civil society institutions) and the environmental systems in which they operate (land resources, geographical features, climatic zones, water resources and forests, etc.)¹³².

According to American scientists, the further development of the theory of sustainable spatial development is closely linked to the formation of innovative territorial systems, as well as their new spatial and temporal models of implementation in the context of increased competition and increased spatial constraints (land, climate, environmental, etc.)¹³³.

The European experience of developing and implementing the European Spatial Development Perspective (ESDP) (1999), which is recommended and based on the principles of balanced and sustainable development of territories, is worthy of note. The EU experience shows that in times of crisis, spatial planning systems are more effective when new land use rights are assigned more quickly only after public scrutiny of development projects and their distribution.

It should be emphasized that the combination of instruments to ensure sustainable spatial development of the EU as a whole and instruments to stimulate regional development (for example, the European Regional Development Fund (ERDF), etc.) makes it possible to strengthen the innovative nature of territorial systems, ensure positive dynamics of job creation, and promote their territorial cohesion. For example, the European Regional Development Fund's funding of innovative pilot projects in large transnational regions of Europe serves as a tool for testing innovative regional planning processes and forms of cooperation.¹³⁴

In general, the transition to a model of sustainable spatial development should be accompanied by innovative shifts, in particular: improving the availability and quality of services while preserving the ecological potential of the territories; encouraging businesses to innovate; growth of the knowledge-based economy, which requires further development of research and innovation capabilities; widespread use of information and communication technologies; creation of more and better jobs that provide more profitable income. At the same time, specific issues of spatial development of the EU countries, their regions and local territorial systems remain the exclusive prerogative of regional governments and territorial communities that plan and manage sustainable spatial development.

In the EU, common spatial strategies have been discussed since 1993. The accumulated experience of spatial development, as well as the practices of spatial

¹³²Desmet K., Rossi-Hansberg E. (2014). Spatial development, p.14.

¹³³ Berisha E. et al. (2021) Spatial governance and planning systems in the public control of spatial development: a European typology. p.191.

¹³⁴ Rivoli J. U. (2017). Global crisis and the systems of spatial governance and planning: a European comparison, p.17.

planning and urban management, ultimately determine the sustainability of development of territories of different ranks. This makes it possible to typologize spatial strategies, analyze their effectiveness, study the efficiency of their implementation tools, form a set of indicators and metrics that consider different conditions in the EU, and identify the causes of potential conflicts and compromises in the implementation of strategies¹³⁵. Thus, the results of comparing the effectiveness of different strategies, exchange, and cooperation between territories to improve them can be the basis for adjusting the recommended international spatial development strategies.

In this context, the experience of specific EU countries in developing and approving a comprehensive plan for the spatial development of territorial communities is convincing. For example, in Poland, decisions on spatial planning are made at the local level, considering specific measures of regional or national importance. Spatial planning is based on a legal basis and is a mandatory task of the gmina (Law of 08.03.1990 «On Territorial Self-Government»¹³⁶). Since 2015, the country has legislated the content part of spatial planning in accordance with the principles of sustainable development. Accordingly, new spatial structures should be formed in such a way as to minimize transportation costs, maximize the use of public transport as the main means of transportation, and the location of new residential facilities should not impede the movement of pedestrians and cyclists. The Law on Revitalization was also adopted, which introduced a new type of spatial planning documentation – a local revitalization plan. Planning activities begin with the preparation of a program to revitalize the development of territories, which diagnoses existing problems and potentials, develops goals, and describes planned areas of action, projects, as well as financial and organizational measures. Spatial transformations bring about positive changes primarily in the social, economic, technical, and environmental aspects of community life. This approach helps to bring degraded areas out of crisis situations and can be applied in any urbanized space. At the gmina level, documents on the organization of spatial planning, namely: study of conditions and directions of spatial development – covers the entire territory of the gmina and reflects its spatial policy, is an act of internal management for the head of the gmina; local revitalization plan – as a special form of local territorial development plan, which is formed on the basis of the gmina revitalization program; local spatial development plan – local plans are binding local regulations, public institutions and all citizens; landscape resolution – is a binding conditions for the placement of temporary street objects (billboards, devices, fences).

In today's context, global economic integration and the deepening internationalization of life have changed the content, roles and functions of the main stakeholders at the regional, national and global levels, and led to a redistribution of the responsibility of the state and communities for local economic development. Territorial communities are transforming from objects to subjects of management,

¹³⁵ Cortinovis C. et al. (2018). Is urban spatial development on the right track? Comparing strategies and trends in the European Union, p.28.

¹³⁶ Strategia rozwoju gminy krok po kroku, p.21.

which makes them agents of change responsible for organizing and planning sustainable spatial development, socio-economic growth, and environmental protection in their territories¹³⁷.

After gaining the status of an EU candidate, Ukraine must build its own concept of sustainable spatial development, taking into account the experience of European countries. Unfortunately, the lack of a consistent state policy in Ukraine aimed at sustainable SD of territories, considering the environmental and economic characteristics of the functioning of economic complexes, has been accompanied by an increase in regional disparities in key socio-economic indicators. The administrative-territorial reform in Ukraine carried out in 2020 has already provided certain conditions for the creation of innovative territorial systems capable of flexibility, adaptation to changing conditions of the external and internal environment, and the ability to provide for themselves based on self-development and their own resources.

For Ukraine, the creation of effective territorial communities is extremely important. When studying the processes of community formation in the times of Kyivan Rus, M. Hrushevsky noted: «People have long been accustomed to unite to collectively solve problems and meet their own needs and interests», and Ivan Franko¹³⁸ considered the community as a basic unit of administrative and territorial structure and believed that the development of the state depends on the local development of the community. And the state, which is represented by executive bodies, carries out state regulation of the spatial development of territorial communities through financial, organizational, informational, and methodological support and stimulation of community self-development by creating conditions for community cooperation, tax incentives for their activities, decentralization of power, and the use of modern management methods. The newly created territorial communities have a certain set of resources (human, natural, technical, technological, informational, financial, etc.) that form the competitive advantages of the territories, as well as rights with responsibility for delegated powers¹³⁹.

Thus, the study on the theoretical foundations of spatial development of territories and generalization of the European practice of its organization makes it possible to formulate conceptual approaches to sustainable spatial development of territories as innovative systems that should become the basis for the development of a comprehensive plan for sustainable spatial development of the territory (hereinafter – the CPSSDT).

The concept of sustainable spatial development of territories (hereinafter – the concept) as innovative systems should unite the system of views of the territorial community itself and its potential stakeholders interested in ensuring sustainable spatial development, form common principles for understanding the phenomena and processes related to the specifics of the territory. This makes it possible to identify

¹³⁷ Buzun O.O. (2018). Kontsept intehrovanooho rozvytku samovriadnykh terytorii, p.18.

¹³⁸ Franko I. (1985). Shcho take hromada i chym вона povynna buty?, p.85.

¹³⁹ Ivanov Y., Ivanova O., Laptiev V. (2021). Rehionalni aspekty rozvytku produktyvnykh syl Ukrainy, p. 21.

their common interests, combine their interests into a single, defining idea for the spatial development of territories on an innovative basis. The concept can be developed for administrative units of different scales (individual settlements of the region (city, village, town, etc. or administrative district, region) or interregional entities (e.g., interregional clusters), and, based on integrated and strategic approaches to spatial planning, consider the interests of stakeholders and final beneficiaries, if possible.

The concept should reflect the strategic directions of the territory's development and consider key areas of life – social, economic, mobility, environment, landscape, culture, historical heritage, education, healthcare, etc. The concept is a prerequisite for further strategic planning, which defines long-term spatial and socio-economic priorities for the development of the territory, corresponds to state and regional development programs, considers the available resource potential for the development of territories, and contains clearly defined prospects for spatial blurring, which create the basis for designing and implementing sustainable development goals and their innovation and investment support.

The concept is one of those documents, the development and implementation of which, unlike urban planning documents, is not strictly regulated by law, but allows for unity of approach to spatial and economic planning of territorial development and the simultaneous development of a comprehensive integrated development plan. The concept should be developed for a period of 10-15 years, during which it is expected to achieve full (or partial in a certain part) implementation of the community development perspective.

The main principles on which the concept is based include: systemicity; rationality; subordination; optimality; subsidiarity; priority; complementarity; accessibility; sustainability; openness; transparency; respect for the interests of all subjects of territorial relations; comprehensive and integrated approach; perspective; partnership; flexibility; adaptability; efficiency; and focus. The concept of sustainable spatial development of territories as an open system is based on a synergistic paradigm, which has the following properties: lack of its full formal description; dynamism; synergistic effect; instability and nonlinearity; adaptability; multivariance; and alternative self-development. When studying the essence of this paradigm, it is necessary to consider the nonlinearity of the development of a territorial community.

In view of the above, it should be noted that the approaches to spatial development of territories within the concept are a systemic approach (considering territorial communities as an innovative system with interconnected and interdependent elements, the management of which leads to changes in the system as a whole, allows to consider each community resource in interaction with other resources-element of the system) and an integrated approach (spatial development of territories should be aimed at the interests of comprehensive development of all resources of the community, regions and the country).

A key component of the comprehensive plan for sustainable spatial development of territories is urban planning and land management documentation that defines the planning organization, functional purpose of the territory, basic principles and directions for the formation of a unified system of public services, road

network, engineering and transport infrastructure and improvement, civil protection, environmental protection, formation of ecological networks, protection and preservation of cultural heritage, as well as the sequence of implementation. The CPSSDT is developed for the entire territory and provides for coordinated decision-making on the integral (comprehensive) spatial development of settlements as a single settlement system and the territory beyond their borders, and is approved with due regard for state, public and private interests. The CPSSDT regulates the distribution, use, and protection of land of all forms of ownership; the basis for investment in construction, use of territories, and implementation of community projects; and the possibility of considering the interests of all segments of the community's population.

Modern practice shows that a well-designed territorial CPSSDT can launch a chain of positive cybernetic recursive influences and incentives: growth in the capacity of the internal regional market, production, labor productivity, improvement of the quality of investment and innovation infrastructure, investment attractiveness, and employment. If the CPSSDT contains streamlined and systematized existing urban planning and land management documentation, it allows for: transparent open access to the resource base and potential of the community; avoidance of possible social conflicts over the use of territories; outlining the immediate prospects of existence and stabilizing future steps for the development of territories within and outside settlements; ensuring investment attractiveness and increasing the amount of revenues to the community budget through new investments; consolidating the community, stakeholders. Thus, the uneven spatial development of Ukraine's territories increases the differentiation in the quality of life of the population, intensifies internal and external migration processes, which significantly affect the asymmetry of population distribution. In our opinion, the main challenges to ensuring sustainable spatial development of Ukraine's territories in the future will be regionalization, urbanization, and globalization. The development of the Concept and, accordingly, a comprehensive plan for sustainable spatial development of territories is important from the standpoint of ensuring the systematic implementation of sustainable development goals and the integration of society around significant national and territorial development goals. New integrated mechanisms for combining the goals of economic, social, environmental, and innovative activities of the respective territories, their mutual influence and interaction should become one of the priority tasks for the Ukrainian state regional policy on SD. Spatial policy is manifested through the targeted activities of the state to manage the social, economic, and environmental development of the regions.

A territorial community is a part of the country's unified space, which is formed by close interaction and interdependence of political, economic, and social relations. Sustainable space and the success of territorial communities within any territory is formed based on the effective combination and use of local natural factors of production and human potential. The desire to contribute to the implementation of the Sustainable Development Goals is a certain guarantee and guideline for sustainable spatial development, and the organization of spatial planning is one of the most important activities in the development of modern Ukrainian society.

Further study of the spatial development of innovative territorial systems requires clarification of the content and essence of the following concepts: innovative territorial system from the standpoint of realization of sustainable development goals and its spatial organization, which should ensure social, economic, environmentally balanced development of the territorial community; local economic development through the prism of synergy of actions of the business community, government, civil society and the scientific environment; spatial planning as a system of methods and approaches used.

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DEVELOPMENT DIRECTIONS OF THE LAND MANAGEMENT SYSTEM OF UKRAINE IN THE CONTEXT OF A SUSTAINABLE FUTURE

НАПРЯМИ РОЗВИТКУ СИСТЕМИ ЗЕМЛЕУСТРОЮ УКРАЇНИ В КОНТЕКСТІ СТАЛОГО МАЙБУТНЬОГО

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Abstract. The modern directions of the land management system, which are aimed at effective management of administrative units, land use in the context of sustainable development, are considered. Land use itself, as a management object, management and regulatory bodies, management parameters of perspective and operational planning, information system together form a complex task for land management actions of technical, organizational, legal and ecological and economic support of rational land use. The increasing importance of the information component in the field of land use has been established, which allows timely response and making informed decisions about sustainable development and digital transformation.

Keywords: land management, rational use of land, soil fertility, digital transformation, ecological network, land use.

Анотація. Розглянуті сучасні напрями системи землеустрою, які спрямовані на ефективне управління адміністративних одиниць, землекористування в контексті сталого розвитку. Саме землекористування, як управлінський об'єкт, органи управління та регулювання, керуючі параметри перспективного і оперативного планування, інформаційна система в сукупності утворюють комплексне завдання для землевпорядних дій технічного,

організаційно-правового та еколого-економічного забезпечення раціонального землекористування. Встановлено зростання значення інформаційного складника у сфері використання земель, який дозволяє своєчасно реагувати та приймати обґрунтовані рішення сталого розвитку, цифрової трансформації.

Ключові слова: землеустрій, раціональне використання земель, родючість ґрунтів, цифрова трансформація, екологічна мережа, землекористування.

Для сьогодення характерним є зниження рівня стабільності як у соціально-економічних процесах, так і в природно-кліматичних явищах. Виходячи з цього, цілком закономірним постає головне завдання для сучасного суспільства – розширення зон еколого-економічної, соціальної стабільності, ґрунтованої на засадах сталого розвитку. Згідно парадигми сталого розвитку є те, що безальтернативним напрямом подальшого суспільного прогресу, економічне зростання, виробництво та споживання, а також інші види діяльності суспільства мають відбуватися в межах, які визначаються здатністю екосистем відновлюватися, поглинаючи забруднення та підтримуючи свою життєдіяльність в інтересах теперішніх і майбутніх поколінь ¹⁴⁰.

Центральне місце в моделі сталого розвитку посідає, безперечно, людина: як особистість, як виробник і споживач товарів та послуг, і що особливо важливо – як генератор нових ідей та суб'єкт їх реалізації. Останнє неможливо забезпечити без ефективного функціонування освітньої сфери, яку варто розглядати як важливий чинник сталого розвитку та соціальної стабільності ¹⁴¹.

Статтею 1 Закону України «Про землеустрій»¹⁴² передбачено, що землеустроєм є сукупність соціально-економічних та екологічних заходів, спрямованих на регулювання земельних відносин та раціональну організацію території адміністративно-територіальних одиниць, суб'єктів господарювання, що здійснюються під впливом суспільно-виробничих відносин і розвитку продуктивних сил.

Розвиток суспільства в усі часи був пов'язаний із впорядкуванням і використанням земельних ресурсів. Комплексне планування та раціональне використання земельних ресурсів, безперечно, неможливе без належного кадрового забезпечення. Для забезпечення виконання державної політики в галузі земельних відносин та сталого розвитку в нашій країні створено систему землепорядних органів України. Фахівців для них готують навчальні заклади різних рівнів акредитації. Відповідно до ст. 66 Закону України «Про землеустрій» професійною діяльністю у сфері землеустрою можуть займатися громадяни, які мають спеціальну вищу освіту відповідного рівня і професійного спрямування. У цьому контексті, якісна підготовка фахівців у сфері геодезії та

¹⁴⁰ Стілл А. В. (2021). Теоретичні основи забезпечення соціально-економічної безпеки на регіональному рівні, с.122.

¹⁴¹ Андрущенко В. (2020). Освіта в стратегії розбудови організованого суспільства, с. 8.

¹⁴² Про землеустрій.

землеустрою є актуальною, адже вони розуміються на просторовому плануванні, використанні земельних ресурсів, у тому числі ґрунтів, води, рослин, забезпеченні довгострокового продуктивного потенціалу цих ресурсів та збереженням їх екологічних функцій.

Поняття «розвиток використання земель» визначається як система взаємопов'язаних дій, обумовлених соціальними, інституційними, управлінськими особливостями, що призводить до досягнення якісного нового стану земельних відносин порівняно із минулими¹⁴³.

Охорона та раціональне використання земель є одним із найголовніших завдань суспільства, оскільки продукти харчування, одержані за рахунок використання землі, становлять 98 %. Для вирішення цього завдання у 2022 році розроблена нова концепція Загальнодержавної цільової програми використання та охорони земель. Така програма розробляється з метою реалізації державної політики України щодо забезпечення сталого розвитку землекористування, створення екологічно безпечних умов проживання населення і провадження господарської діяльності, захисту земель від виснаження, деградації та забруднення, відтворення та підвищення родючості ґрунтів, збереження функцій ґрунтового покриву, збереження ландшафтного і біологічного різноманіття в умовах ринкового середовища та з урахуванням глобальної зміни клімату¹⁴⁴.

Ураховуючи загальнодержавні інтереси, необхідно розробити: прогноз і пріоритети використання земельних ресурсів; основні напрями використання земель залежно від їх категорій; напрями сталого землекористування; пропозиції щодо раціонального – економічно ефективного та екологічно безпечного використання земель; головні напрями охорони земельних ресурсів; заходи щодо боротьби з деградацією земель та опустелюванням, досягнення нейтрального рівня деградації земель; шляхи охорони і відновлення родючості ґрунтів земель сільськогосподарського призначення; заходи з адаптації до зміни клімату; узгоджені заходи охорони земель лісового та водного фондів; напрями охорони земель природно-заповідного фонду та іншого природоохоронного призначення, земель оздоровчого, рекреаційного та історико-культурного призначення. Передбачені заходи повинні здійснюватися шляхом розроблення необхідної землевпорядної документації, освоєння проєктів з визначенням обсягів та джерел фінансування, проведенням моніторингу за здійсненням зазначених заходів.

Перехід до цивілізованих форм ринкових відносин передбачає реформування суспільства в багатьох сферах соціально-економічного розвитку країни. Найважливішим із них є вдосконалення системи земельних відносин та її цифрова трансформація. Сьогодні в Україні презентовано у сфері геодезії, землеустрою та кадастру 2 проєкти, які входять до галузі сільське господарство:

¹⁴³ Мамонов К. А. (2020). Територіальний розвиток використання земель регіону: напрями та особливості оцінки, с. 6.

¹⁴⁴ Про схвалення Концепції Загальнодержавної цільової програми використання та охорони земель. <https://zakon.rada.gov.ua/laws/show/70-2022>

цифрова трансформація земельних відносин, землеустрою та охорони земель (е-Земля); цифрова трансформація геодезії та картографії (НІГД). Ці проекти будуть сприятими розбудові цифрової держави¹⁴⁵.

В основі такого менеджменту – унікальна ефективна система управління проектами, що дозволить трансформувати Україну на всіх рівнях – від загальнонаціонального до місцевого (рис. 1).

Цифрова трансформація земельних відносин, землеустрою та охорони земель (е-Земля) передбачає автоматизацію процесу формування та встановлення меж земельних ділянок повністю в електронній формі, переведення всіх видів документації із землеустрою в електронну форму, забезпечення внесення відомостей про всі об'єкти до Державного земельного кадастру та підвищення їх якості, автоматизацію контролю за використанням та охороною земель, земельного податку та моніторингу земель, відкриття даних Державного земельного кадастру.



Рис.1. Цифрова трансформація у сфері геодезії, землеустрою та кадастру України

В проекті е-Земля передбачено розробку 2 підпроектів:

- підпроект цифровізація контролю за використанням та охороною земель, який повинен забезпечити повну прозорість заходів з контролю та за використанням та охороною земель і буде містити продукти: електронний документообіг інспекторів, виконання наземної зйомки та дронів, автоматизація аналітики;

- підпроект відкриті земельні дані направлений на покращення доступу до даних ДЗК та інших наборів даних шляхом створення API і буде містити 33 продукти: протокол підключення API для підключення зовнішніх користувачів, набори відкритих даних.

Цифрова трансформація геодезії та картографії передбачає запровадження Національної інфраструктури геопросторових даних, а саме: розробка та доопрацювання специфікацій наборів даних і розподілу повноважень щодо

¹⁴⁵ Проекти цифрової трансформації. <https://plan2.dia.gov.ua/projects>

оновлення геопросторових даних, цифровізація банку геодезичних даних, створення цифрових моделей рельєфу та місцевості, оновлення топографічних планів та ортофотопланів і забезпечення доступу до топографічних наборів даних. В проєкті НІГД передбачено розробку 3 підпроєкти:

- підпроєкт оновлення ортофотоплану, який передбачає оновлення ортофотопланів всієї України, забезпечення доступу до ортофотопланів, створення інструментів оновлення та доступу до ортофотопланів окремих територій і буде містити продукт – сервіс доступу до ортофотопланів;

- підпроєкт оновлення наборів топографічних даних направлений на оновлення топографічних планів, забезпечення доступу до топографічних наборів даних та створення інструментів оновлення таких даних для окремих територій і буде містити продукт – сервіс доступу до топографічних наборів даних;

- підпроєкт цифрових моделей рельєфу та місцевості направлений на створення картограм рельєфу та місцевості, забезпечення доступу до картограм рельєфу та місцевості і буде містити продукт – сервіси доступу до наборів геоданих. Доступний для кожного громадянина геопортал, де відображені усі земельні дані, стане інструментом прозорості державних процесів і підґрунтям для інвестицій та економічного зростання. Адже ринок землі потребує саме такого інструменту.

Vkursi Zemli Ukraine – це всеукраїнський проєкт з цифровізації земель поза межами населених пунктів. Проєкт реалізується за підтримки компаній SmartFarming, юридичної фірми «Василь Кісіль і Партнери», банку UKRSIBBANK BNP Paribas Group та за сприяння Міністерства аграрної політики та продовольства України. Мета – надати громадянам, громадам, агробізнесу, державним органам максимум інформації та аналітики про ключові аспекти земельних відносин в кожній області України. Зокрема, хто найбільші власники та користувачі земель, яка реальна площа земель в сільськогосподарському обробітку, які ризики правопорушень у сфері землекористування, скільки податкових надходжень кожна область недоотримує від використання земель та розкрити багато інших питань. У рамках оцифрування та аналізу зібраних даних використовуються відомості про земельні ділянки з державних реєстрів – Державного земельного кадастру, Державного реєстру речових прав на нерухоме майно, порталу нормативно-грошової оцінки та реєстру судових рішень, дані супутникового моніторингу, GIS та Big Data технології. Оцифрувавши та проаналізувавши всю територію України, автори проєкту планують запустити інтерактивний вебпортал, з регулярним оновленням інформації, можливістю порівнювати окремі області та громади, шукати та аналізувати землі за різними параметрами¹⁴⁶.

Просторове планування є одним із найважливіших видів діяльності у розвитку сучасного землеустрою. Воно йде пліч-о-пліч із стратегічним плануванням громад та країн і за своєю суттю є спробою суспільства впливати на просторовий розподіл людей, їх діяльність та ресурси. Зараз просторове

¹⁴⁶ Оцифровка земельного банку України.

планування в Україні, як галузь, перебуває у перехідній фазі від централізованої політики та підходів у плануванні до сучасних інтегрованих та стратегічних підходів. Документація з просторового планування покликана юридично закріплювати бачення майбутнього просторового розвитку, використання певної території на всіх рівнях, включно з міжнародним ¹⁴⁷.

Програма «U-LEAD з Європою» активно підтримує розвиток сфери просторового планування в Україні, особливо на рівні сільських громад. У портфоліо Програми є Тематичні Пакети Підтримки під назвою "Успішна Громада: Крок за Кроком". Вони розроблені для підтримки та розвитку компетенцій працівників місцевого самоврядування в об'єднаних територіальних громадах, в тому числі й у галузі «Просторове планування та управління ресурсами». Програма демонструє сформовану картину поточного стану справ у секторі, щоб забезпечити якісну та належну цільову підтримку українським громадам.

Національний рівень в просторовому плануванні в Україні представлений Генеральною Схемою Планування Території України. Ця схема була затверджена разом із прийняттям спеціального Закону України "Про Генеральну Схему планування Території України" у 2002 році. Вона все ще є дійсною через відсутність термінів дії містобудівної документації в Україні, але її розрахунковий період підійшов до кінця, тож зараз, власне, час розробити нову, особливо з огляду на поточні зміни в геополітичній ситуації (рис.2).

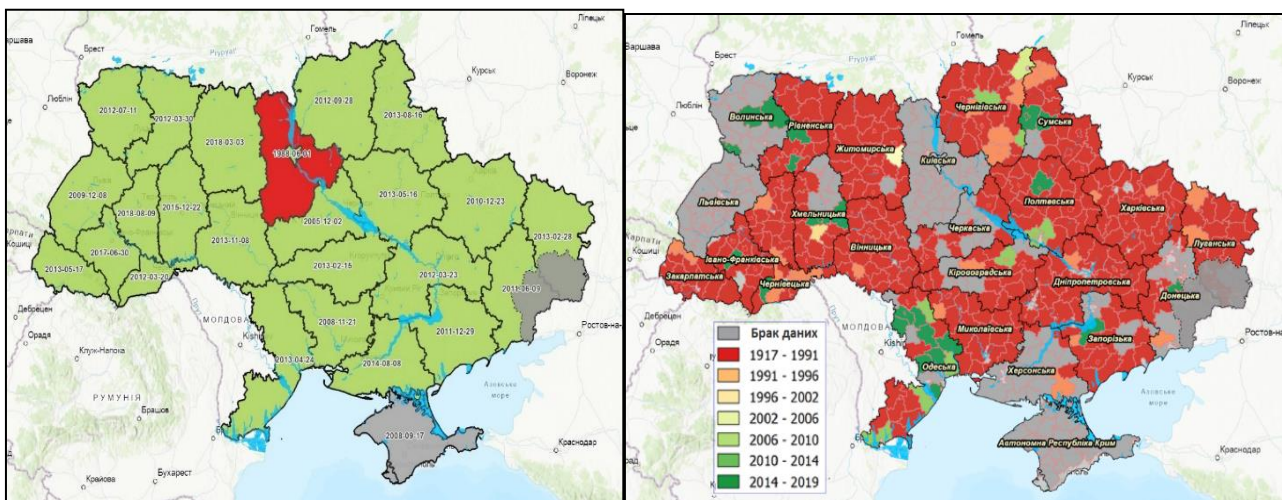


Рис. 2. Національний та регіональний рівень просторового планування в Україні

У контексті зростання власних повноважень регіонів, особливо у частині створення та розвитку об'єднаних територіальних громад, особливого значення набуває використання земель, які є основним джерелом, що забезпечує, зокрема, створення можливостей поповнення місцевих бюджетів. Слід вказати на визначену систему просторових, містобудівних, інвестиційних факторів, що

¹⁴⁷ Просторове планування у новому адміністративно-територіальному поділі.

впливають на використання земель міст. Також необхідно враховувати у системі використання земель земельно-оціночні процедури, кадастрову інформацію, дані моніторингу земель. Обов'язковими для забезпечення управління територіальним розвитком є напрями та особливості містобудування¹⁴⁸.

Об'єднані територіальні громади були в дещо складній ситуації до останніх подій в Україні. Нещодавнє прийняття перспективних планів (1470 ОТГ) та закону № 711¹⁴⁹, який встановлює тип документації з просторового планування для території громади (Комплексний план просторового розвитку території громади), визначає необхідну правову базу для ОТГ в цьому питанні. Завдяки зазначеним змінам в країні, ОТГ отримують багато можливостей з однієї сторони та викликів – з іншої. Ці можливості знаходяться в межах повноважень самостійно керувати своїми територіями на основі принципу повсюдності. Виклики, особливо для неміських ОТГ, полягають у тому, що вони отримують в середньому 10-20 населених пунктів без актуальних планів просторового розвитку, а також в необхідності розробки комплексного плану для всієї території ОТГ.

Комплексний план просторового розвитку громади – одночасно містобудівна документація на місцевому рівні та документація із землеустрою, що визначає планувальну організацію, функціональне призначення території, основні принципи та напрями формування єдиної системи громадського обслуговування населення, дорожньої мережі, інженерно-транспортної інфраструктури, інженерної підготовки і благоустрою, цивільного захисту території та населення від небезпечних природних і техногенних процесів, охорони земель та інших компонентів навколишнього природного середовища, формування екомережі, охорони і збереження культурної спадщини та традиційного характеру середовища населених пунктів, а також послідовність реалізації рішень, у тому числі етапність освоєння території.

Щоб чітко розуміти свої межі, бачити, що і де знаходиться на їхній території, громадам потрібна проста і зрозуміла картографічна підоснова. Це дозволить більш ефективно управляти територією, інвентаризувати майно і ресурси, планувати розвиток громади. Тому, завдяки ініціативі Міністерства розвитку громад та територій України та Координатора проєктів ОБСЄ в Україні, було створено картосхеми для усіх громад¹⁵⁰. Вони є у вільному доступі. Розробка картосхем допоможе громадам приймати управлінські рішення, картосхеми можуть стати основою для більш просунутих інструментів з обліку ресурсів громад, планування їхнього розвитку тощо (рис. 3).

¹⁴⁸ Мамонов К. А., Пілічева М. О. (2022). Методи землевпорядного проєктування у територіальному розвитку використання земель, с. 36.

¹⁴⁹ Про внесення змін до деяких законодавчих актів України щодо планування використання земель.

¹⁵⁰ Картосхеми для громад – інструмент для розвитку територій.

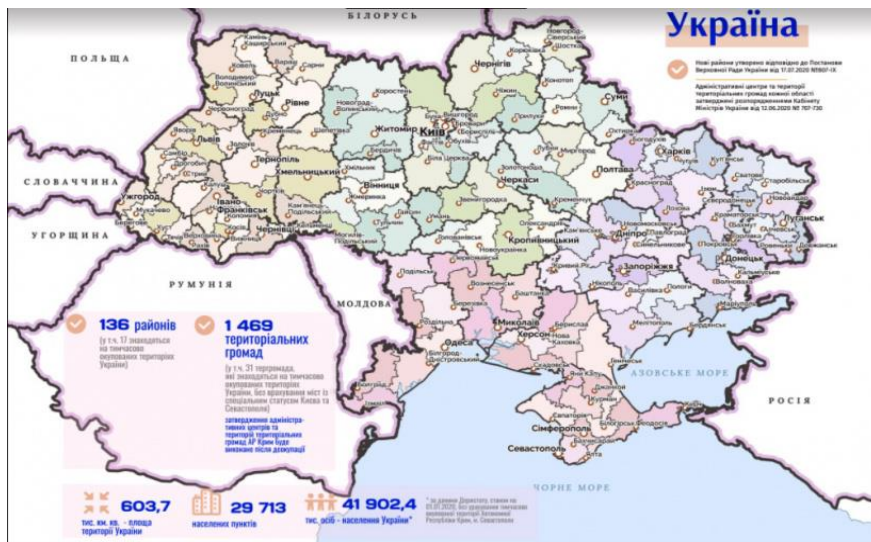


Рис.3. Картосхеми територіальних громад України

Важливе значення для сталого землекористування має впорядкування використання земель на основі концепції екологічної мережі для збільшення площ природоохоронних територій. У рамках цієї концепції заходи спрямовані на вирішення проблеми скорочення біологічного різноманіття. Внесені істотні зміни до вимог, що висувуються до місцевих органів планування стосовно збереження та відновлення природи за допомогою формування Національної екологічної мережі (Смарагдової мережі), яка зобов'язує місцеві органи планування стратегічно планувати природокористування, визначати та наносити на карту структурні елементи екологічних мереж на регіональному та місцевому рівнях із метою забезпечення охорони, покращення та підтримки біологічного і ландшафтного різноманіття (рис.4).

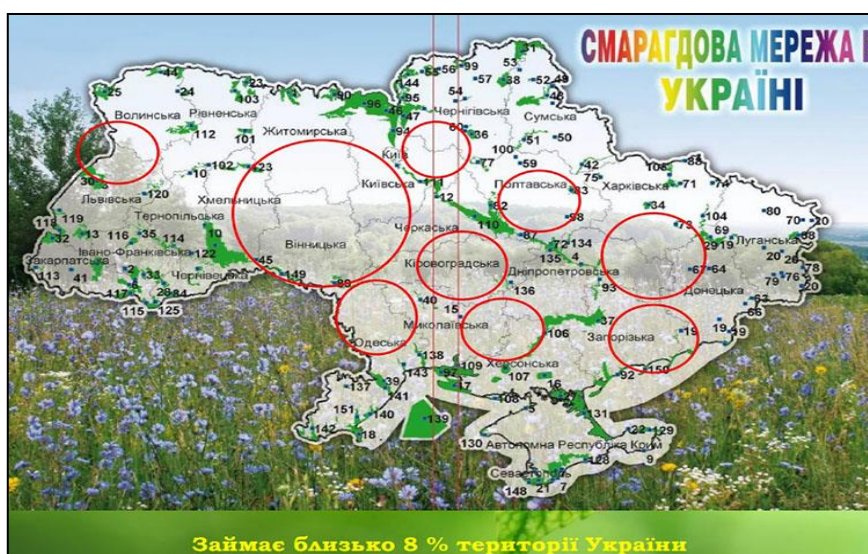


Рис.4. Мережа Емеральд (Смарагдова мережа) на Публічній кадастровій карті України¹⁵¹

¹⁵¹ Мережа Емеральд (Смарагдова мережа) на Публічній кадастровій карті України.

Відтепер уся інформація про всі типи природоохоронних територій, що потраплятиме до Державного земельного кадастру, потрапить автоматично й у всі інші кадастри. Зокрема до ресурсних кадастрів, що ведуться іншим урядовими органами. Наприклад, у Держгеонадра, де планується видобуток корисних копалин. Після цього планування нових кар'єрів і торфорозробок вірогідно уникатиме заповідних земель.

Для отримання актуальної інформаційної бази в землеустрої широко використовуються сучасні геоінформаційні технології, розробки та оптимізації взаємопов'язаних алгоритмів і програм, дані дистанційного зондування землі (ДЗЗ). Так, використання інтегрованого методу класифікації земельного покриття, орієнтується на низькоточні регіони на великомасштабних картах. Ділянки з низькою точністю можна виявити шляхом оцінки точності даних за допомогою спектрорадіометра із середньою роздільною здатністю. Цей метод оптимізує весь процес класифікації, включаючи вибір зображення, а також алгоритм і функції класифікації¹⁵². Дистанційне зондування Землі дозволяє отримувати дані про небезпечні, важкодоступні об'єкти та місця, а також дозволяє здійснювати оперативний моніторинг великих ділянок місцевості. Сьогодні можливості отримання даних дистанційного зондування Землі сучасними методами, як космічними, так і БПЛА, комбінаціями каналів, індексами візуалізації зображень у поєднанні з геоінформаційними технологіями вирішують деякі науково-практичні та економічні проблеми, які вже використовуються в галузевих кадастрах¹⁵³.

Для вирішення проблеми соціально-економічного розвитку, як держави в цілому, так і сфери землеустрою, на основі економічно обґрунтованих знань, потрібна нова формула розуміння і втілення у планування і організацію розвитку окремої адміністративно-територіальної одиниці, землекористування результатів науково-технічного прогресу. Основними її формами є фундаментальні та прикладні наукові дослідження.

Таким чином, узагальнені напрями розвитку системи землеустрою та повноваження суб'єктів щодо їх реалізації наведені у табл. 1.

Сьогодні стратегії розвитку адміністративних одиниць, землекористування (землеволодіння) буде цінною рушійною силою лише у гармонійному поєднанні з проектною діяльністю, яка покликана забезпечити протікання рівноважного та стійкого процесу на кожній земельній ділянці. Саме проекти землеустрою дають можливість конвертувати стратегічний план у конкретні проекти і програми розвитку тієї чи іншої території.

Без перебільшення можна стверджувати, що суть таких проектів настільки істотна, що вони здатні формувати привабливість агроландшафтів, життєстійкість господарської системи, упорядковувати організаційно-господарські та правові відносини, орієнтовані на отримання соціального та

¹⁵² Koshkalda I. et al. (2022). Features of land cover mapping in the low-accuracy areas on large-scale maps for land management, p. 3.

¹⁵³ Dombrovska O. Et al. (2022). Modern capabilities of obtaining remote sensing data as an integral tool for maintaining industry cadastres, p.1.

еколого-економічного ефектів, тобто сталого розвитку. Мова йде про те, що землевпорядний проект являє собою неоціненний внесок у вирішенні проблеми ефективності всієї агроєкосистеми, відтворення родючості ґрунту як основного капіталу національної господарської системи, оскільки енергетичний ресурс ґрунту, щорічно, через винос його врожаєм сільськогосподарських культур, в середньому знижується на десятки мільярдів гривень, стільки ж і більше його втрачається в результаті процесів водної ерозії.

Таблиця 1 – Матриця напрямів розвитку системи землеустрою та повноважень суб'єктів щодо їх реалізації

Напрями розвитку та регуляторні механізми	Суб'єкти системи землеустрою та їх повноваження									
	ВРУ	Органи місцевого самоврядування	Центральні органи виконавчої влади							Землевласники і землекористувачі (резиденти / нерезиденти)
			КМУ	котрі забезпечують формування державної політики у сфері охорони навколишнього природного	що реалізують державну політику у сфері охорони навколишнього природного середовища у сфері земельних відносин	котрі забезпечують формування державної політики у сфері земельного	що забезпечує реалізацію державної політики у сфері земельних відносин	державні адміністрації у галузі земельних відносин	державні органи приватизації у галузі	
Прогнозування розвитку землекористування	-	+	+	+	+	+	+	+	+	+
Планування розвитку землекористування	+	+	+	+	+	+	+	+	+	+
Оцінка ресурсу та земельної власності	-	+	-	+	+	+	+	-	+	+
Організація використання та охорони земель	-	+	+	+	+	+	+	+	+	+
Мотивація ефективного відтворення земель	-	+	+	+	+	+	+	+	+	+
Контроль за використанням та охороною земель	-	+	+	-	+	-	+	-	-	-
Облік земель, земельних ділянок, землеволодінь	-	+	-	-	-	-	+	-	-	+
Моніторинг використання та охорони земель	-	+	+	-	+	-	+	-	-	-
Цифрова трансформація земельних відносин	-	+	+	+	+	+	+	+	+	+

*Доповнено на основі¹⁵⁴

Сучасний розвиток землеустрою спрямовує свою діяльність на реалізацію заходів щодо прогнозування, планування, організації використання та охорони

¹⁵⁴ Tretiak N. et al. (2021). Land Resources and Land Use Management in Ukraine: Problems of Agreement of the Institutional Structure, p. 780.

земель на національному, регіональному, господарському рівнях та інші види діяльності, які приводять до досягнення певних результатів, сформованих на інноваційних засадах. Із цих позицій землеустрій являє потужний інноваційний економічний потенціал, оскільки кожен проект землеустрою є унікальним, опираючись на креативний спосіб мислення, винахідливість розробника такого проекту.

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**DIGITAL TRANSFORMATION AND DIGITIZATION OF THE ECONOMY
AS FACTORS IN THE IMPLEMENTATION OF THE CONCEPT OF
SUSTAINABLE DEVELOPMENT OF THE STATE**

**ЦИФРОВА ТРАНСФОРМАЦІЯ ТА ДІДЖИТАЛІЗАЦІЯ ЕКОНОМІКИ
ЯК ФАКТОРИ РЕАЛІЗАЦІЇ КОНЦЕПЦІЇ
СТАЛОГО РОЗВИТКУ ДЕРЖАВИ**

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Abstract. The purpose of the article is a comprehensive overview of the essence of sustainable development as a basic prerequisite for ensuring the state's competitiveness in the world market. The authors also investigated digitization processes and the digital transformation of the state's economy, as they are currently one of the most important factors in the implementation of the concept of sustainable development. It was found out that the "Digital Compass" approved by the European Commission is an important reference point in the implementation of the digital transformation of society. During the study, special attention was also focused on Ukraine, a candidate country for joining the EU, which is currently undergoing the stage of adaptation of domestic legislation to European standards. In addition, the interaction of these states in the direction of achieving the 17 Sustainable Development Goals through the formation of digital economies was considered.

Keywords: digitization, sustainable development, digital transformation, economy.

Анотація. Мета статті полягає у комплексному огляді сутності сталого розвитку як базової передумови забезпечення конкурентоспроможності держави на світовому ринку. Авторами також було досліджено діджиталізаційні процеси і цифрову трансформацію економіки держави, оскільки вони виступають у наш час одними з найголовніших чинників реалізації концепції сталого розвитку. Було з'ясовано, що вагомим орієнтиром

у здійсненні діджитал-трансформації суспільства являється «Цифровий компас», схвалений Єврокомісією. Особливу увагу під час дослідження було також зосереджено на Україні, країні-кандидаті на вступ до ЄС, котра нині проходить етап адаптації вітчизняного законодавства до європейських стандартів. Окрім цього, розглянуто взаємодію зазначених держав у напрямку досягнення 17 Цілей сталого розвитку шляхом формування цифрових економік.

Ключові слова: діджиталізація, сталий розвиток, цифрова трансформація, економіка.

Останні десятиліття свідчать нам про відчутні позитивні зрушення у здійсненні цифрової трансформації суспільного життя, у тому числі діджиталізації економіки країн світу. Важливість процесу цифровізації полягає у тому, що вона є універсальним, тобто позапрофесійним, явищем сучасності. Відтак цифрові технології високого рівня є затребуваними у будь-якій сфері людської діяльності: освіті, науці, медицині, управлінні державними інституціями тощо.

Однак особливу роль діджиталізація відіграє у економіці держави. Це пов'язано у першу чергу з тим, що цифровізація сприяє більш прозорому функціонуванню влади, підвищує ефективність електронного урядування, слугує базисом для загального економічного зростання, допомагає покращувати ланцюг виробництва та збуту продукції. Окрім зазначеного, цифрова трансформація економічної системи країни призводить до модернізації існуючих індустрій, підвищення інвестиційної привабливості, і, як результат, до появи абсолютно нових сфер цифрової економіки з підвищеною доданою вартістю. Таким чином можна стверджувати, що у наш час процес діджиталізації економічного сектору являється надважливим фактором реалізації концепції сталого розвитку держави, при цьому різноманітні технології (інтернет речей (англ. Internet of Things, скорочено – IoT), електронна ідентифікація (eID), штучний інтелект (AI) та інші) прискорюють досягнення Глобальних Цілей сталого розвитку Організації Об'єднаних Націй (ООН), визначених до 2030 року¹⁵⁵.

Варто зазначити, що такий стрімкий розвиток цифровізації викликає у науковців, підприємців та діючих фахівців-економістів неабиякий інтерес до дослідження сутності цього явища. У таких умовах сучасна економічна термінологія наповнилася великою кількістю нових термінів. Прикладами таких понять є «цифровізація», «діджиталізація», «цифрова трансформація» та «оцифровування». Поява зазначених термінів часто призводить до плутанини при здійсненні наукових досліджень. Тому вважаємо за необхідне навести далі трактування цих понять.

Термін «оцифровування» зазвичай використовували для позначення сукупності дій (починаючи від підготовки та перетворення й до представлення

¹⁵⁵ Гаптунова І., Казацька М. (2021). На шляху до єдиного цифрового ринку ЄС: електронна комерція, с.4.

та архівування) націлених на трансформування друкованих документів у цифровий, тобто машиночитаний та передаваний, формат. Однак не дивлячись на свою багатоетапність, оцифровування виступає тільки початковою фазою більш складного процесу цифровізації. Тобто, оцифровування допомагає перетворити інформацію у цифровий формат, якого потребують цифрові технології. При цьому оцифрованої інформації недостатньо для здійснення цифрових трансформацій¹⁵⁶. Таким чином, цифровізацію, або синонімічне їй поняття «діджиталізацію», часто розуміють як механізм збагачення суспільного життя електронно-цифровими пристроями, засобами або системами, і одночасним налагодженням електронно-комунікаційного обміну між ними. Відтак, цифровізація завдяки діджитал-технологіям, які лежать у її основі, виступає вагомим підґрунтям для постійного економічного розвитку держави, через її результативний вплив на продуктивність, якість та вартість будь-якого виду людської діяльності. Усе вище зазначене вказує на головну мету діджиталізації, яка заключається у звершенні цифрової трансформації нині існуючих та формуванні нових галузей економіки, а також у загальній модернізації усіх сфер життєдіяльності населення. Звідси випливає, що усі ініціативи та суспільно значущі програми, котрі стосуються цифровізації, мають бути інтегровані у програми розвитку як окремих держав, так і міжнародних організацій¹⁵⁷.

Не менш важливою вимогою для безперервного розвитку країн є додержання принципів концепції сталого розвитку (англ. *sustainable development*). До останніх у рамках сучасної науки прийнято відносити такі принципи як збереження довкілля, покращення стану соціальної сфери та баланс технологічного й економічного розвитку. Уперше поняття «сталий розвиток» було окреслене на засіданні Світової комісії з навколишнього середовища та розвитку під головуванням прем'єр-міністра Норвегії, місіс Г.Х.Брунтланд. Зокрема, у звіті цієї комісії від 1987 р. зазначалося, що сталий розвиток становить собою розвиток, який здатен задовольнити потреби теперішнього часу, і разом з тим не ставить під загрозу спроможність майбутніх поколінь задовольняти власні потреби¹⁵⁸. На актуальності концепції сталого розвитку неодноразово наголошувала також Генеральна асамблея ООН. Як приклад, 25 вересня 2015 року була схвалена резолюція під назвою «Перетворення нашого світу: Порядок денний у сфері сталого розвитку на період до 2030 року». Вона містить у собі 17 Цілей сталого розвитку (ЦСР), для кожної з яких у трьох основних сферах (соціальній, екологічній та економічній) сформульовано завдання, усього 169, та обрані відповідні цільові показники¹⁵⁹.

¹⁵⁶ Міхровська М.С. (2021). Діджиталізація, діджиталізація, цифрова трансформація: зміст та особливості, с. 128.

¹⁵⁷ Розпорядження Кабінету Міністрів України «Про схвалення Концепції розвитку цифрової економіки та суспільства України на 2018-2020 роки та затвердження плану заходів щодо її реалізації».

¹⁵⁸ Буряк Є. В. Та ін. (2022)ю Соціально-економічні аспекти сталого розвитку України в умовах війни (євроінтеграційні аспекти), с. 137.

¹⁵⁹ Там само, с. 138.

Україна як країна-кандидат на вступ до Європейського Союзу (ЄС) теж має відповідати існуючим стандартам концепції сталого розвитку. До початку війни наша держава пристосувала значний перелік завдань та показників до своїх національних планів розвитку. Відтак, урахувавши особливості функціонування українського бізнесу та державних інституцій, було визначено 17 Цілей сталого розвитку України до 2030 року. До останніх зокрема віднесена восьма ціль, а саме: сприяння поступальному, всеохоплюючому, сталому економічному зростанню, повній і продуктивній зайнятості та гідній праці для всіх, а також ціль під номером дев'ять – формування стійкої інфраструктури, підтримка всеохоплюючої й сталої індустріалізації та інновацій¹⁶⁰.

Ураховуючи масштабність викликів сучасності, доцільним є відстеження стану справ пов'язаних з реалізацією Порядку денного на період до 2030 року. Це є можливим завдяки групі незалежних експертів зі сталого розвитку, які щорічно видають звіти «Sustainable Development Report». Дані звіти описують прогрес країн у досягненні схвалених ЦСР та вказують на сфери, які потребують особливої уваги. Однією зі складових частин звіту «Sustainable Development Report» є формування рейтингу країн на основі індексу Цілей сталого розвитку (англ. the Sustainable Development Goals Index, скорочено – the SDG Index). Індекс ЦСР можна інтерпретувати як відсоток досягнень країн, тобто, різниця між 100 балами та оцінками держав являється відстанню у відсотках, яку ще треба подолати для досягнення ЦСР¹⁶¹. З метою кращого розуміння прогресу України та її основних міжнародних партнерів у досягненні цілей чинної концепції сталого розвитку, ми скористаємося даними «Sustainable Development Report» за період 2016-2022 років. Зокрема, на рис. 1 відобразимо динаміку місця обраних країн у рейтингу, сформованому на основі the SDG Index.

Отже, побудована точкова діаграма показує, що Україна здебільшого відстає за індексом ЦСР від передових країн Європи, США та Великої Британії. Щоправда за результатами 2022 року, не дивлячись на складне становище через повномасштабну війну з росією, Україні вдалося посісти 37 місце, випередивши цим США, які зайняли 41 позицію. Варто також зазначити, що свою позицію у рейтингу, починаючи з 2018 р., стрімко підвищувала Польща. Таким чином, у 2022 році їй було присвоєне 12 місце або 80,54 бали, тим часом у 2018 році вона була на 32 місці та мала 73,7 бали.

На нашу думку, важливо зацентуватися й на тому, що військовий конфлікт між Україною та росією слугує причиною масштабних коливань в усіх сферах суспільного життя, що породжує прями й опосередковані перешкоди на шляху сталого розвитку не лише України, а й усього цивілізованого світу. Наприклад, наразі на міжнародному ринку спостерігається швидко зростаюча інфляція, підвищилась незахищеність у фінансовому полі, гостро постали проблематики продовольчої забезпеченості

¹⁶⁰ Указ Президента України «Про Цілі сталого розвитку України на період до 2030 року» від 30.09.2019 р. документ №722/2019.

¹⁶¹ Official website the Sustainable Development Report.

та енергетичної кризи. До того ж за даними Світового банку очікується рецесія міжнародної економіки та досить ймовірною є стагфляція, масштабів яких не було з 1970-х років. Усе це значно зменшує спроможність багатьох країн досягати ЦСР ООН.

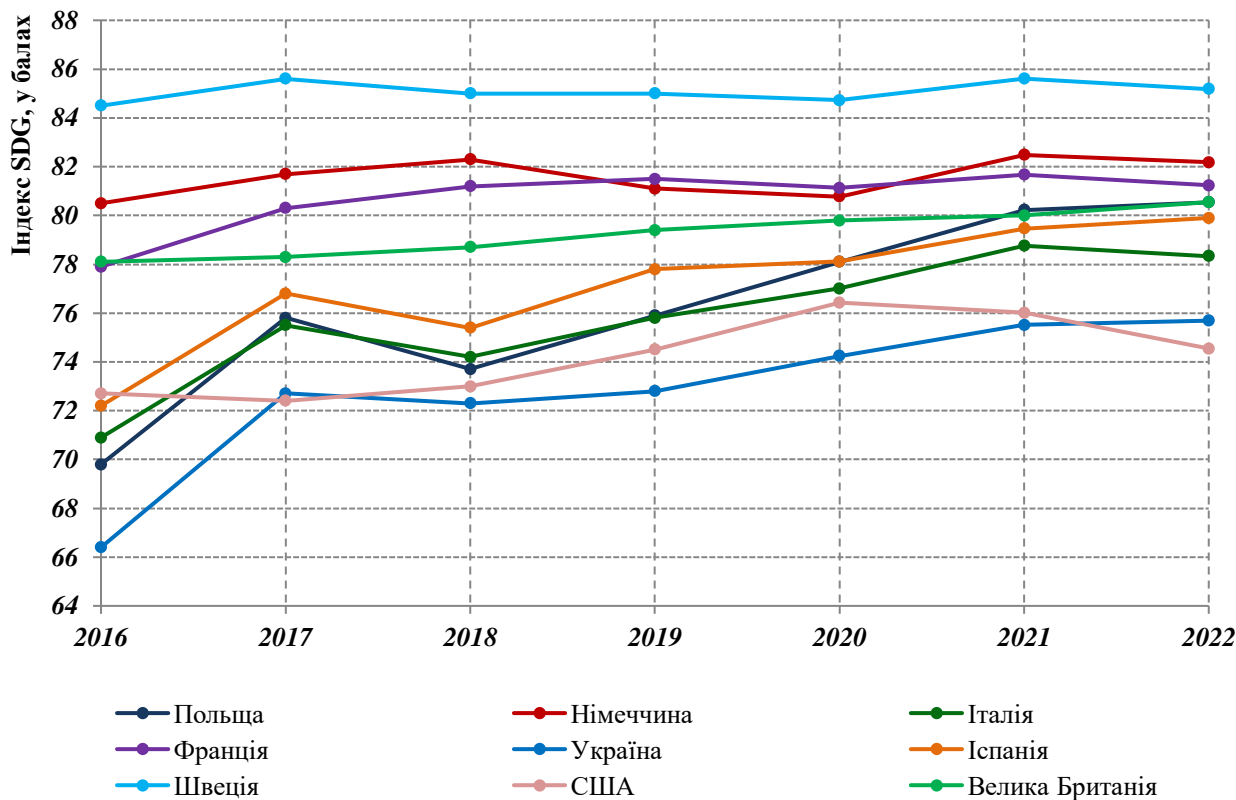


Рис. 1. Динаміка зміни індексу Цілей сталого розвитку (The SDG Index) для країн Європи, США та Великої Британії за 2016-2022 роки

Для відновлення українського економічного становища як ніколи важливою є наявність достовірної та своєчасної інформації, необхідної для прийняття відповідних управлінських рішень. Однак військові дії на території України значно ускладнюють процес отримання та опрацювання потрібних економічних та фінансових даних, у тому числі пов'язаних із Порядком денним-2030 та оцінкою динаміки в досягненні ЦСР. Одна з проблем заключається зокрема у тому, що організаційні ресурси українського уряду націлені на динамічну військову ситуацію, що у свою чергу перешкоджає повноцінному координуванню дій у межах Порядку денного-2030. 23 червня 2022 р. Україна набула статусу кандидата на членство в ЄС. Останнє послугувало поштовхом до створення Офісу з реалізації Цілей сталого розвитку, функціональне призначення котрого полягає в організації процесу

розробки та запровадження механізму врахування ЦСР при модернізації національної та регіональних стратегій розвитку¹⁶².

Однією з умов, яка забезпечує будь-якому науковому дослідженню високу практичну цінність, є дотримання загально визнаних принципів наукового пізнання під час його проведення. Тож спираючись на принципи об'єктивності та причинності, зауважимо, що ще до початку військового конфлікту на території України виникали масштабні проблеми, які перешкоджали поступовій реалізації Порядку денного-2030, у тому числі здійсненні цифрової трансформації, провідними країнами Європи та світу. У даному випадку доцільно згадати пандемію Covid-19 і спровоковану нею економічну кризу, більш відому як «коронакриза». Як наслідок, Covid-19 став своєрідним підґрунтям для нової хвилі «цифрової бідності» та посилення існуючого раніше «цифрового розриву». Він виник між тими підприємствами, які вже могли використовувати весь потенціал сучасного цифрового середовища, та тими, які не були повністю оцифрованими. Таким чином, відбулося загострення проблеми забезпечення усіх громадян і компаній європейських країн доступом до використання можливостей, які породжує цифрова трансформація суспільства. Європейське бачення до 2030 року – це цифрове суспільство, де ніхто не залишиться осторонь. Отже, можемо стверджувати, що діджиталізація економіки та цифрова трансформація усіх інших сфер є потужним інструментом підвищення рівня життя громадян і акселератором для досягнення державами Цілей сталого розвитку.

У 2021 році Європейська комісія запропонувала створити так званий «Цифровий компас» з метою перетворення амбіцій ЄС у процесі діджиталізації на конкретні цілі, а також подальше їх досягнення. Запропонований Єврокомісією цифровий компас ґрунтується на розширеній системі моніторингу, що дозволяє спостерігати за траєкторією країн європейського простору щодо темпів цифрової трансформації, встановлювати недоліки у європейських стратегічних цифрових можливостях. Важливим питанням також є впровадження цифрових принципів, які визначені наступним чином:

1) Цифрове населення та висококваліфіковані цифрові фахівці.

У розрізі даного принципу йдеться про те, що комплексні цифрові навички мають сформувати суспільство, яке матиме змогу довіряти цифровим продуктам і Інтернет-сервісам, розпізнавати дезінформацію та захищатися від спроб онлайн-шахрайства. З кожним роком міжнародна конкуренція за цифрових спеціалістів ставатиме більш жорсткою, оскільки оцінка й розуміння алгоритмів цифрового простору й надалі лишатиметься критичним фактором інноваційного виробництва, підвищення продуктивності праці та загального сталого розвитку країн. Отже, пошук та підтримка талановитих цифрових фахівців відіграватимуть ключову роль у діджитал-трансформації ЄС.

¹⁶² Буряк Є. В. Та ін. (2022). Соціально-економічні аспекти сталого розвитку України в умовах війни (євроінтеграційні аспекти), с. 140.

2) Безпечна та ефективна стійка цифрова інфраструктура.

Даний принцип говорить, що стійка цифрова інфраструктура (у тому числі розвиток мікроелектроніки та уміння обробляти величезні обсяги даних) слугуватиме основою для досягнення Європою цифрового лідерства на світовій арені. Окреслені напрями діяльності однозначно потребують значних інвестиційних вкладень, проте досягнення гігабітного підключення кожного громадянина та кожної бізнес-одиниці до 2030 року є пріоритетним завданням.

3) Цифрова трансформація бізнесу.

Під час пандемії Covid-19 впровадження новітніх цифрових технологій допомогло підприємствам зберегти свою діяльність в умовах наростаючої коронакризи. Різноманітні цифрові технології: 5G, IoT, штучний інтелект, робототехніка та інші стануть базисом інноваційних продуктів, нових процесів виробництва та бізнес-моделей. Зауважується, що швидка реалізація стратегій Єдиного цифрового ринку ЄС та положень звіту «Формування цифрового майбутнього Європи» посилять цифрову трансформацію бізнесу та забезпечить справедливу та конкурентоспроможну цифрову економіку.

4) Діджиталізація державних послуг.

ЄС націлений на те, щоб державні послуги в Інтернеті були повністю доступними для всіх користувачів, у тому числі для людей з обмеженими можливостями. До того ж Єврокомісія вважає, що захищене електронне голосування сприятиме більш активній участі населення у політичному житті демократичної держави. Цифровізація державних послуг дасть змогу громадянам будь-якого віку та підприємствам будь-якого розміру відчутніше впливати на напрямок і результати діяльності уряду, тим самим підвищуючи рівень надання цих послуг¹⁶³.

Розглянуті принципи «Цифрового компасу» підштовхують до висновку, що кінцевою метою ЄС є відкрита цифрова економіка, заснована на потоці інвестицій та високотехнологічних інновацій у якості двигуна постійного розвитку. При цьому інтереси та цінності держав мають захищатися за допомогою трьох головних чинників: рівні умови функціонування на цифрових ринках, безпечний кіберпростір і дотримання основних користувацьких прав і Інтернеті.

Для зміни статусу кандидата на повноправне членство у Європейському Союзі Україні необхідно здійснити адаптацію вітчизняного законодавства із законодавством ЄС. Прикладом практичних дій українського уряду у процесі наближення законодавства до європейських норм і стандартів слугує схвалення у 2021 році Концепції розвитку цифрових компетентностей (далі – Концепції). Її реалізація передбачена на період до 2025 року. Одним із основних завдань Концепції є формування цифрових навичок і компетентностей у громадян з

¹⁶³ European Commission. 2030 Digital Compass: the European way for the Digital Decade. Brussels. 09.03.2021.

метою розвитку цифрової економіки, електронної демократії, людського капіталу та сталого розвитку держави.

Відповідно до Концепції, цифрова компетентність становить собою динамічну комбінацію знань, умінь, навичок та способів мислення у сфері інформаційно-комунікаційних технологій. Поняття цифрової компетентності також охоплює здатність людини вдало соціалізуватися і провадити професійну або навчальну діяльність із використанням діджитал-технологій¹⁶⁴. У Рекомендаціях Парламенту і Ради Європи підкреслюється вагомість розвитку цифрових компетентностей для здійснення цифрової трансформації. Тож вони вважаються одними з восьми ключових компетентностей для навчання протягом життя (англ. Lifelong Learning) у країнах ЄС¹⁶⁵.

Розгляд цифрової трансформації економіки варто здійснювати й через призму процесу глобалізації. Адже глобалізація здатна як сприяти сталому розвитку країн, так і збільшувати цифровий та економічний розрив між ними. З метою уникнення останнього доцільною є регулярна оцінка стану запровадження цифрової економіки в будь-якій державі. Найбільш комплексним методом такої оцінки є формування рейтингових індексів. Серед сучасних рейтингових індексів діджиталізації виокремлюють такі: Digital Economy and Society Index (DESI), Digital Evolution Index (DEI), Digital Adoption Index (DAI), Global Innovation Index (GII), Boston Consulting Group e-Intensity Index.

Не менш поширеним є індекс світової цифрової конкурентоспроможності, або IMD World Digital Competiveness Index (WDCI)¹⁶⁶, який оцінює здатність та готовність економіки держави вивчати та впроваджувати діджитал-технології як головну рушійну силу трансформації бізнес-середовища, суспільства та уряду. WDCI формується на основі 50 показників. Україна входить до рейтингу WDCI, тож ми здійснили аналіз річних звітів IMD за період 2014-2022 років¹⁶⁷ та оцінили рейтингову позицію України у порівнянні з іншими європейськими державами. Результати даного дослідження відображено на рис. 2.

Рис. 2 вказує на тенденцію підвищення України у рейтингу WDCI протягом 2019-2021 років. Тим часом для Польщі в останні роки характерним є різке рейтингове зниження: 32 місце у 2020 р., 41 – у 2021 р., 46 – у 2022 р.. Зауважимо, що через обмежену надійність зібраних даних, у зв'язку з

¹⁶⁴ Розпорядження Кабінету Міністрів України «Про схвалення Концепції розвитку цифрових компетентностей та затвердження плану заходів з її реалізації» від 03.03.2021 р. документ №167-р.

¹⁶⁵ Наливайко О. О. (2021). Цифрова компетентність: сутність та динаміка його розвитку: монографія «Компетентнісний підхід у вищій школі: теорія та практика», с. 46.

¹⁶⁶ Руденко М. В. (2021). Аналіз позицій України в глобальних індексах цифрової економіки, с. 14.

¹⁶⁷ The International Institute for Management Development (IMD). World Competitiveness Center: Rankings.

військовим конфліктом, росія та Україна були виключені із звіту IMD за 2022 рік.

Повертаючись до питання взаємозв'язку глобалізації, сталого розвитку та діджиталізації, варто зазначити, що глобалізація є рушійною силою впровадження діджитал-технологій. У свою чергу посилення цифровізації, як чинника досягнення ЦСР, ускладнює поділ прямого та непрямого впливу цифрових технологій на суспільство та економічний сектор зокрема. Це пов'язано з заміною традиційних товарів на нові віртуальні. Позитивним моментом тут є зменшення рівня забруднення навколишнього середовища, оскільки використання діджитал-технологій робить фізичну присутність людей все менш необхідною. Таким чином, цифрова трансформація економіки держави здатна забезпечити стійке виробництво та споживання. Разом з тим бізнес-сектор підлаштовує свою діяльність під стан біосфери. Так, чимало підприємств починають практикувати цифрове виробництво, відоме нині як Індустрія 4.0¹⁶⁸.

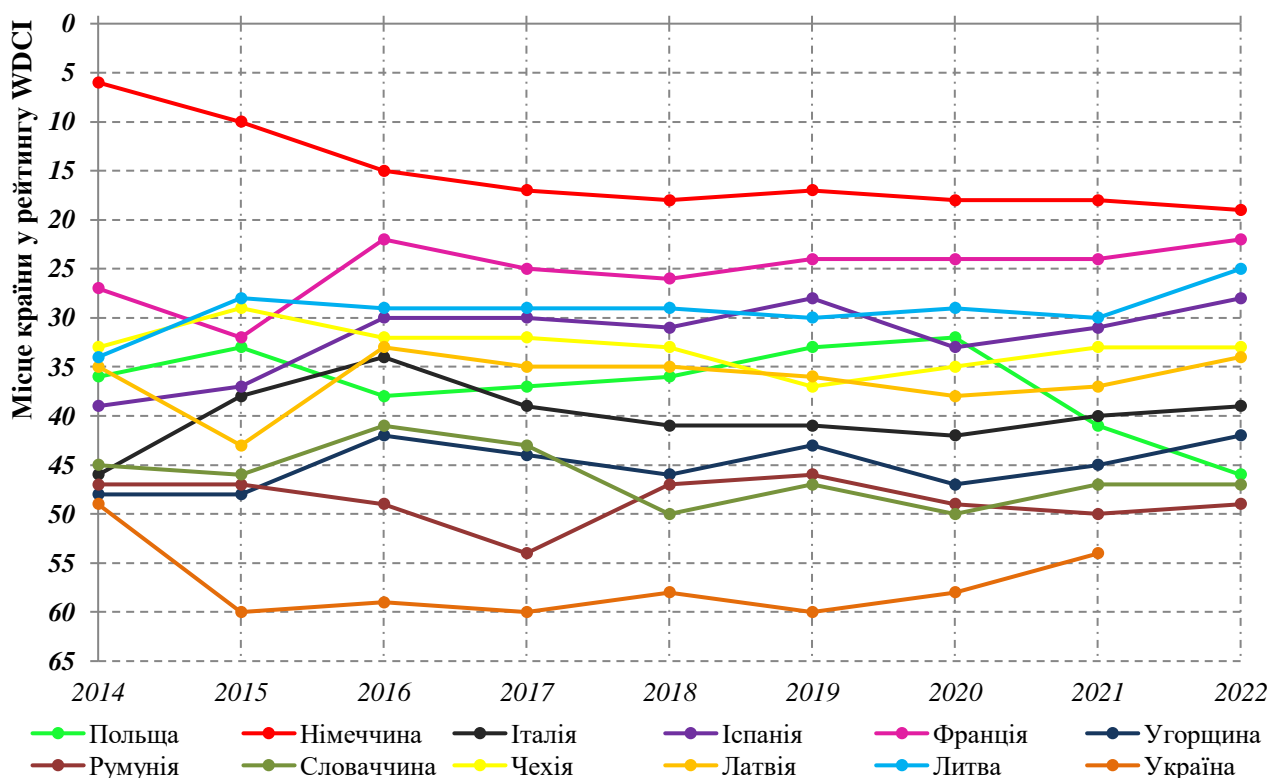


Рис. 2. Динаміка позиції країн Європи у рейтингу світової цифрової конкурентоспроможності (WDCI) за 2014-2022 роки

Індустрія 4.0. є головним трендом «Четвертої промислової революції» і характеризується розвитком інформаційно-комунікативних технологій, автоматизацією та роботизацією виробництва. Кіберфізичні системи

¹⁶⁸ Кудрявцев В. М. (2022). Взаємозв'язок процесу цифровізації та концепції сталого розвитку, с. 79-80.

створюють віртуальні копії об'єктів фізичного світу, контролюють фізичні процеси і приймають децентралізовані рішення. Переваги Індустрії 4.0 полягають наприклад у зменшенні впливу людського фактору на виробничий процес і одночасному підвищенні конкурентоспроможності підприємства.

Європейський Союз не стоїть осторонь тенденції запровадження Індустрії 4.0, у тому числі фінансуючи тематичні проекти в Україні. Якісним прикладом слугує програма Interreg Europe, котра спрямована на покращення регіональних політик та стратегій ЄС. Діджиталізація промисловості виступає важливим напрямом Interreg Europe, а серед головних практик в 2018-2023 роках можна назвати наступні: SMARTY, InnoHEI, PASSPARTOOL, INNO Industry, DIGITAL REGIONS¹⁶⁹.

Наростаючі глобалізація та лібералізація усе більше впливають на міжнародний ринок, диктуючи країнам нові вимоги для зміцнення їх економік та постійного покращення життя населення. Сталий розвиток національних соціально-економічних систем є надактуальним пріоритетом з двох головних причин: посилення державної безпеки та підвищення конкурентоспроможності. Україна та інші країни Європи є досить залежними від зовнішніх фінансових ресурсів, а також від видобутку і використання корисних копалин. Це перешкоджає формуванню національних економічних стратегій за принципом незалежності. Окрім цього, надмірне використання природних ресурсів призводить до погіршення стану навколишнього середовища. Однак реалізація державами концепції сталого розвитку може допомогти вирішити існуючі проблеми.

Фактором, який відчутно впливає на досягнення 17 Цілей сталого розвитку, виступає діджиталізація економіки держави, а також загальна цифрова трансформація останньої. Сутність та принципи даних явищ є унормованими на рівні не лише вітчизняного, а й міжнародного законодавства. Тож, Єврокомісія створила у 2021 році «Цифровий компас», який базується на чотирьох стовпах: оволодіння цифровими навичками громадянами, вибудова ефективної цифрової інфраструктури, цифрова трансформація бізнес-сфери та діджиталізація державних послуг.

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¹⁶⁹ Офіційний веб-сайт платформи Industry4Ukraine.

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PAYMENT SYSTEMS IN UKRAINE: VARIETIES, FUNCTIONAL AND OVERSIGHT

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Abstract. The purpose of the study is to substantiate the essence, role, and species diversity of payment systems and to analyze the efficiency of their functionality in Ukraine based on their oversight. On the basis of the study, the author's position on the interpretation of the concept of "payment system" is formed. The author substantiates the classification principles for distinguishing different types of payment systems and systematizes them. The current state, trends in the development of payment systems and their capacity, as well as the workload of payment systems in Ukraine are analyzed. The peculiarities of cross-border transfers of currency values from Ukraine during martial law in Ukraine are outlined. The principles of oversight of payment systems aimed at identifying and preventing risky activities that threaten the interests of users of financial market infrastructures are determined.

Keywords: payment system, types of payment systems, overseas payment systems.

Reliability and practicality of payment systems ensure efficient fulfillment of obligations to transfer funds and settle obligations arising during business activities. As the experience of developed countries shows, the rational organization of the payment system contributes to the improvement of monetary relations, the efficient functioning of the financial sector, and the effective operation of the financial sector. At the current stage of economic development, traditional paper money is no longer able to fully meet the needs of modern society, which increases the role of payment systems in the country's economic growth. Thus, the efficient functioning of payment systems is an important component of the positive development of the financial system. Analysis of recent research and publications. The works of the following researchers are of great theoretical and practical importance for the functioning of payment systems, their oversight, risk management inherent in payment systems, and the development of payment infrastructure in Ukraine: N. Arkhireiska (2021)¹⁷⁰, O. Dzhusov (2020)¹⁷¹, O. Yermoshkina (2021)¹⁷², S. Pirig (2021)¹⁷³, Y. Khudolii

¹⁷⁰ Archireyska, N., Kuchkova, O.: Modern trends in the payment market of Ukraine - cashless payments and electronic wallets.

¹⁷¹ Jusov O., Pilyak O. (2020). Current state, problems and prospects for the development of payment systems in Ukraine

¹⁷² Yermoshkina O., Musaeva N. (2021). Payment system as a basic element of the digital economy: institutional and behavioral aspects.

¹⁷³ Pyrih S., Ischuk L., Olexandrenko I. (2021). Assessment of the payment card market and factors influencing its development.

(2021)¹⁷⁴ and others. Despite the significance of existing scientific achievements, the research of the functionality of payment systems and their oversight in the current conditions of development of the payment infrastructure of Ukraine remains relevant.

The purpose of the study is to substantiate the essence, role, and species diversity of payment systems and to analyze the effectiveness of their functionality in Ukraine based on their oversight.

Globalization processes in the economies of different countries of the world are gaining momentum today, and therefore the development of economic relations at both the national and international levels is becoming increasingly important. At the same time, settlement operations and payments play a significant role in the market economy of any country, serving the movement of money between economic entities and in the international economic space. After all, economic entities daily carry out many transactions for the exchange of goods, services and financial assets, which, in turn, are mediated by monetary settlements and transfers¹⁷⁵. Obviously, efficiently functioning payment systems are the key to the stable functioning of the country's financial system, its financial market, and the economy. Today, the concept of "payment system" is one of the most important definitions of the banking sector and the financial market in general. The content characteristics of this concept are quite differentiated both at the level of international and national definitions and at the level of research results of economists.

Based on the results of the analysis of various interpretations of the essence of the payment system, it can be concluded that the ambiguity of scholars' opinions in disclosing the essence of this concept makes it possible to carry out a morphological decomposition of its definitions into components according to the following main comparison features:

- the essential component of the definition (key, narrowly specified definition of the payment system);
- subjective component of the definition (participants of payment system).

The identified morphological units characterizing the essential component of the definition of "payment system" are heterogeneous, however, they reveal the multidimensionality of this concept. Thus, in our opinion, the broadest expression of the essential component of the term "payment system" is revealed by such a morphological unit as "aggregate", which is interpreted as "an indivisible unity of something; the total amount, sum of something"^{176,177}; "a set of elements which have some common properties essential for their characterization"¹⁷⁸. Regarding the subjective component of the concept of "payment system", it is advisable to distinguish such a morphological unit as "payment organization, payment system participants and payment infrastructure service providers", which is the broadest and,

¹⁷⁴ Kholodiy Y., Taranets B. (2021). Current state and innovative directions of payment systems development in Ukraine.

¹⁷⁵ Kvasnytska R., Forkun I., Gordeeva T. (2022). Modern approaches to ensuring information security of payment systems and their cyber defense, p.48.

¹⁷⁶ Shemshuchenko. Y. (2007). Great Encyclopedic Legal Dictionary, p. 1214.

¹⁷⁷ Dictionary of the Ukrainian Language, p. 832.

¹⁷⁸ Dictionary of financial and legal terms, p. 314.

at the same time, clearly specifies the subjects of the payment system functionality. The instrumental and procedural component of the concept of "payment system" cannot be disclosed by a single morphological unit, so we believe that the following morphological units are worthy of attention: payment instruments, software, hardware and other means, procedures, laws, rules and regulations for payments, transfers and settlements. The results of the morphological decomposition make it possible to specify the author's vision of the interpretation of the concept of "payment system" as an organizationally formed set of a payment organization, payment system participants, payment infrastructure service providers and relations between them regarding payments, transfers and settlements based on payment instruments, software, hardware and other means, procedures, laws, rules and regulations at the level of individual countries or at the international level.

The essence and role of payment systems is revealed through the functions they perform. It should be noted that due to the wide functionality of payment systems, the range of functions they perform is also wide. At the same time, the functions of payment systems should still be grouped according to their key focus, namely: the function of ensuring the transfer of money, payment, or settlement; information function; regulatory function; control and supervisory function; automation function.

In general, payment systems solve such important tasks as: ensuring the smooth functioning of all elements of the system itself; ensuring the security of settlements and payments; insurance against any failures in financial transactions¹⁷⁹.

Different organizational and legal bases for the functioning of payment systems have contributed to the formation of different types of these systems. Therefore, payment systems are classified both by various general features inherent in all payment systems and by specific features that outline specific features of certain types of payment systems. At the same time, the definition of the features of payment system classification by different authors varies significantly. The analysis of scientific papers made it possible to systematize the types of payment systems according to various criteria for their allocation. At the same time, it is noteworthy that among the variety of features proposed by researchers, there is no division of payment systems by service entities that receive payment services. Thus, according to this criterion, payment systems can be divided into: payment systems whose service entities that receive payment services are banks and their customers (interbank payment systems); payment systems whose service entities that receive payment services are banking institutions belonging to the same group (intra-bank payment systems); payment systems whose service entities that receive payment services are the owners (holders, managers) of credit cards, debit cards, e-wallets, digital money, etc. (mass payment systems). Payment systems should also be divided based on the functionality of the system itself into money transfer systems; systems for settling securities transactions; and card payment systems. A generalized classification of payment systems according to various features is shown in Figure 1.

¹⁷⁹ Kvasnytska R., Forkun I., Gordieieva T. (2022). Realities of payment systems functioning in Ukraine and their impact on information security, p. 356.

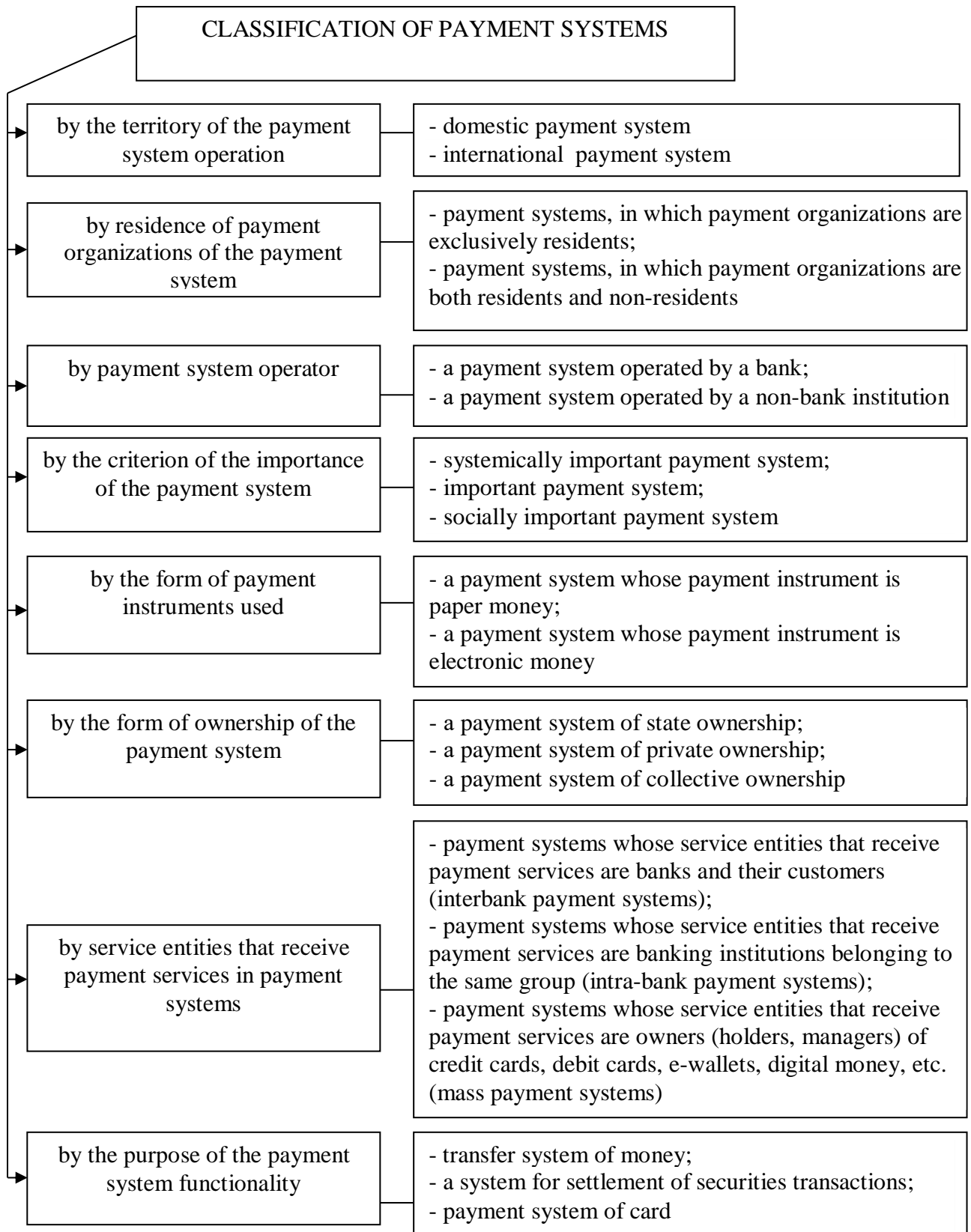


Fig. 1. Classification of payment systems

The above classification of payment systems reflects the various essential characteristics of each type of payment system, which, in turn, contributes to a more complete disclosure of the specifics of a particular payment system.

Considering the payment systems of Ukraine in general, the following two types of payment systems can be distinguished: domestic payment systems, which include state and domestic payment systems; international payment systems. The state payment systems of Ukraine are the Electronic Payment System (EPS) of the NBU and the National Payment System "Ukrainian Payment Space" (NPS PROSTIR), which were created by the National Bank of Ukraine (NBU), which is their payment organization and settlement bank. The NBU is the main body of domestic payment systems, which regulates the operation of payment systems, registers and excludes them from the Register of Payment Infrastructure.

When analyzing the status and trends in the development of payment systems, their capacity, and workload, it is worth paying attention to the payment systems created by the NBU, banks, and non-bank institutions. For example, statistics show that the NBU's EPS is used to make the largest amounts of transfers and payments in Ukraine (in 2019, payments and transfers amounting to UAH 32472 billion were made through the NBU's EPS, which is almost 90% of all payments and transfers; in 2020 payments and transfers amounted to UAH 44838 billion, which is 91.4% of all payments and transfers; in 2021, payments and transfers amounted to UAH 57270 billion, which is 93.3% of all payments and transfers¹⁸⁰. The number of payments made within Ukraine by the NBU's EPS in 2019-2021 amounted to 1215 million (from 384 million in 2019, their number increased to 446 million, i.e. by 16.14%). The average daily number of payments made through the NBU's EPS has been growing year after year. Thus, daily payments were made through the EPS in the amount of in 2019 - UAH 130 million; in 2020 - UAH 178 million (by 48 million more than in 2019 - by 36.92%); in 2021 - UAH 229 million (by 51 million more than in 2020 - by 28.65%). At the same time, the average daily balance of funds held on the accounts of the NBU's EPS participants has remained unchanged in recent years - UAH 82 billion¹⁸¹, which led to an increase in the average daily turnover ratio of funds on the accounts of EPS participants in 2020 compared to 2019 by 41.6%, and in 2021 by another 26.6%.

The NPS PROSTIR payment system is a national system of mass electronic payments. Today, the main product of the system is PROSTIR payment cards issued by Ukrainian banks to a customer's account. As of the beginning of 2021, the total volume of transactions carried out using NPS PROSTIR payment cards, as well as transactions with electronic money issued by NPS PROSTIR member banks, amounted to UAH 29647 million (88% - transactions using NPS PROSTIR payment

¹⁸⁰ EPS. Facts and figures. 2019-2021.

¹⁸¹ Ibid.

cards)¹⁸². The volume of non-cash transactions using NPS PROSTIR cards as of January 01, 2021, increased by 3.7 times compared to January 01, 2020. It is worth noting that in 2020, a combining payment card "PROSTIR - UnionPay International" appeared on the domestic market, combining the technologies of such payment systems as NPS PROSTIR and the international payment system UnionPay.

Analyzing the efficiency of payment systems whose payment organizations are banks and non-bank institutions, it can be noted that their total number in Ukraine in 2019-2021 has slightly increased (from 01.01.2019 to 01.01.2022, the number of payment systems in Ukraine increased from 42 to 51). At the same time, according to information from the NBU's official website, it is estimated that as of January 01, 2022, there were registered:

- 15 payment systems with banks as payment organizations (9 money transfer systems and 6 intra-bank systems)
- 21 payment systems whose payment organizations are non-bank institutions;
- 15 international payment systems created by non-residents (international money transfer systems and 6 international card payment systems)¹⁸³.

Thus, in 2021, the following funds were transferred via money transfer systems:

- within Ukraine – 807.18 million transfers in the amount of UAH 355.4 billion or USD 13045.1 million. USD – 77.48% of the total amount of transfers;
- to Ukraine – 7.80 million transfers in the amount of USD 3157.1 million. USD – 18.75% of the total amount of transfers;
- outside Ukraine – 1.12 million transfers in the amount of USD 635.0 million. USD 3.77% of the total amount of transfers¹⁸⁴.

The international transfer system Western Union holds a leading position in making transfers both to Ukraine and abroad. Although, in fairness, it should be noted that the share of transfers to Ukraine via Western Union has been decreasing from year to year over the analyzed period (in 2021, compared to 2020, the share decreased from 60.48% to 57.54%, i.e. by 4.86%). In general, Ukraine has been a recipient country of cross-border transfers for many years, i.e. the amount of transfers received in Ukraine from abroad through money transfer systems is many times higher than the amount of transfers sent outside Ukraine.

As of 01.10.2022, "35 money transfer systems were operating in Ukraine, including: 28 payment systems created by residents, 7 payment systems created by non-residents. In total, in the third quarter of 2022, payment systems created by both residents and non-residents transferred: within Ukraine – 162.72 million transfers in the amount of UAH 99.3 billion or USD 2,848.7 million (equivalent). USD (in equivalent); to Ukraine – 3.28 million transfers in the amount of USD 747.7 million

¹⁸² NPS "PROSTIR". Official site.

¹⁸³ Information from the NBU Register of Payment Infrastructure.

¹⁸⁴ Activities of money transfer systems in Ukraine.

(in equivalent). USD (equivalent)"¹⁸⁵.

Currently, for the period of martial law in Ukraine, the NBU Board Resolution No. 18 dated February 24, 2022 "On the Operation of the Banking System during the Period of Martial Law" is in effect. Thus, authorized institutions are prohibited from carrying out cross-border transfers of currency values from Ukraine/transfers of funds to correspondent accounts of non-resident banks in hryvnia/foreign currency opened with resident banks, including transfers made on behalf of clients¹⁸⁶. This resolution also defines the cases of cross-border transfers of currency values that can be made (banks' own transactions; transfers by residents under import transactions specified in the Resolution of the Cabinet of Ministers of Ukraine No. 153 "On Certain Issues of Ensuring Imports" dated February 24, 2022, provided that the delivery of goods under such transactions was made/is being made after February 23, 2021, etc.). To ensure the continuous, reliable, and efficient functioning of financial market infrastructures, including payment systems, the National Bank of Ukraine (NBU) conducts oversight aimed at identifying and preventing risky activities that threaten the interests of users of financial market infrastructures. Thus, the main subject of oversight in Ukraine is the NBU, which, to ensure financial stability, should cooperate with the central banks of foreign countries, international organizations, and other government agencies both within the country and internationally within the framework of joint oversight of payment and settlement systems¹⁸⁷. The main purpose of oversight (oversight) of payment systems is to ensure the reliability and efficiency of payment systems in terms of transferring funds and settling financial instruments¹⁸⁸. Oversight includes monitoring of the payment infrastructure; assessment of the payment infrastructure for compliance with the requirements of Ukrainian legislation and international oversight standards; setting requirements and restrictions on the operation of the payment infrastructure; providing recommendations for improving the operation of the payment infrastructure and/or applying enforcement measures¹⁸⁹. The NBU also carries out joint oversight with the central banks of other countries, i.e., oversight of entities established by non-residents.

Oversight is carried out by the NBU using methods such as monitoring and

¹⁸⁵ Activities of money transfer systems in Ukraine.

¹⁸⁶ On the operation of the banking system during the period of martial law: Resolution of the NBU.

¹⁸⁷ Vyshyvana B., Tereshko O. Oversight of payment and settlement systems: theoretical aspects and mechanism of implementation in Ukraine, p. 220.

¹⁸⁸ The concept of introducing supervision (oversight) of payment systems in Ukraine: NBU Resolution.

¹⁸⁹ Regulation on the Procedure for Oversight of Payment Infrastructure in Ukraine: NBU Resolution.

evaluation of payment systems. The NBU monitors payment systems in two ways¹⁹⁰:

1) on-site monitoring of payment systems, which is carried out by authorized employees of the NBU by inspecting oversight objects to ensure their compliance with the requirements of Ukrainian legislation and assessing the adequacy of measures taken by them to ensure the continuous, reliable and efficient functioning of the payment infrastructure;

2) off-site monitoring of payment systems, which is conducted on a regular basis by the NBU employees remotely by collecting, systematizing, and analyzing information on the activities of oversight objects in terms of their payment services in order to ensure compliance with the requirements of the legislation of Ukraine regulating the activities of payment systems, use (maintenance) of payment instruments and payment schemes, issuance and use of electronic money, and determining the relations between oversight objects in the course of providing payment services.

When conducting oversight, the NBU also assesses payment systems and payment schemes of important payment service providers to prevent, detect, and eliminate violations in the operation of payment systems and payment schemes in accordance with Ukrainian law and to improve the operation of payment systems and payment schemes in accordance with international oversight standards¹⁹¹. The results of the assessment allow the NBU to formulate appropriate recommendations to the participants of the payment system (payment scheme), its operator, to bring its activities in line with applicable law and international oversight standards.

It is worth noting that when compiling the list of payment systems, payment system participants, payment service providers, e-money issuers, and technology operators that will be subject to oversight, the NBU assesses the importance of a particular payment system according to certain criteria and distinguishes the following payment systems from them¹⁹²:

1) systemically important payment systems, if the payment system meets at least one of the criteria of systemic importance:

- the payment system ensures interbank payment transactions, the share of which is more than 10% of the total amount of payment transactions performed in the country by interbank settlement systems and through correspondent accounts of banks opened with other banks of Ukraine;

- the payment system performs payment transactions for transactions with

¹⁹⁰ Regulation on conducting on-site and off-site monitoring of payment infrastructure oversight facilities: Resolution of the NBU.

¹⁹¹ Oversight of financial market infrastructures of the NBU.

¹⁹² Regulation on the Procedure for Oversight of Payment Infrastructure in Ukraine: NBU Resolution

government securities on the open market;

- the payment system ensures settlement of obligations of payment system participants arising in other payment systems;

2) important payment systems, if the payment system meets at least one of the importance criteria:

- the payment system performs payment transactions, the share of which exceeds 10% of the total amount of payment transactions performed within Ukraine, to Ukraine and abroad by payment systems established by residents and non-residents (except for interbank settlement systems and payment systems that issue electronic means of payment);

- the payment system performs transactions using electronic payment instruments issued in this payment system, the share of which exceeds 10% of the total amount of payment transactions performed in Ukraine by payment systems that issue electronic payment instruments.

As of January 1, 2022, one payment system (EPS), 6 socially important payment systems, and 5 important payment systems are systemically important payment systems in Ukraine¹⁹³. To improve the reliability and efficiency of systemically important or important payment systems, the NBU applies enhanced requirements to their activities in terms of management and organization of their activities; access and participation in the payment system; risk management system; finality of settlements; cyber resilience; and business continuity management. Thus, it can be summarized that it is advisable to associate oversight with the action of an organizational and functional mechanism, the components of which should be considered: purpose, principles, subject; objects; functional areas; methods; support; results (decisions). It is this systematic approach to understanding oversight as an organizational and functional mechanism that is formed and used by the NBU that helps to achieve various qualitative characteristics of payment systems (their efficiency, security, economy, continuity, and effectiveness), which, in turn, helps to ensure that payment systems are maintained at a high level of trust by recipients of payment services, their protection, and economic growth and social welfare of the state.

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TRENDS IN THE DEVELOPMENT OF TECHNOLOGY TRANSFER IN THE INTERNATIONAL ENVIRONMENT

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Abstract. The article examines the peculiarities of the transfer of innovative technologies. It was determined that strategic cooperation in the financial and production spheres of the company is not enough to ensure its competitiveness on the world market and integration into the global economic space. Attention is paid to issues of international development. The international transfer of technologies ensures the maximum return from their implementation and provides companies with the following strategic opportunities: development of the domestic market; development of new industries; adaptation and transfer of achievements of developed countries; entry into the transnational infrastructure. The directions of the development of technology transfer for various areas are presented, and it is also significant that compliance with the principles of transparency and legality of technology and equipment transfer, conscientious behavior of participants in the technology transfer market is an important factor in the further civilizational development of Ukraine.

Keywords: technology transfer, intellectual capital, international infrastructure, international cooperation, competitiveness of companies.

Intellectual capital in the international economy is considered as the main element in the competitive struggle, which ultimately determines the economic efficiency of the company's development. Modern trends in global innovative activity include the use of innovative technologies in all sectors of the national economy. The expansion of international economic ties helps to increase the pace of economic development. Research in the field of international transfer enables companies to quickly respond to new changes in economic processes and maintain their positions in international markets.

The category "international technology transfer" is new in economic science. Theoretical achievements of scientists lag behind the practices of global companies in this direction. Important results in the theory of international technology transfer were made by Keller V., Aitken B., Bransletter L., Edmonds K. The works of

different scientists show differences in the understanding of the category "international technology transfer". The impact of globalization on the world economy was studied by the following Ukrainian scientists: Vernadskyi V., Galchynskyi A., Geets V., Baranovskyi O., Vasylenko Yu., Lutsyshyn Z., Filipenko A.S. The consequences of globalization were studied by Alle M., Herst P., Thompson G., Gerda D., Stieglitz J.

The process of humanity's transition from industrial development to post-industrial development was marked by the formation of the category "globalization". Kofi Anan believes that globalization is a general term that means a complex complex of cross-border interactions between individuals, enterprises, institutions and markets, which is manifested in the expansion of commodity flows, technologies and financial funds, in the growth and strengthening of the influence of international institutions of civil society, in the global activities of transnational corporations, in the expansion of cross-border communication and information exchanges, through the Internet, in the cross-border transfer of diseases and environmental consequences, and in the interconnectedness of certain types of criminal activity.

The main feature of world economic globalization is the dominance of international relations over national ones, international standards, and norms over national ones¹⁹⁴. Companies have new opportunities for development, which are accompanied by certain risks, which depend on changes in the rules of the game in the international arena. The process of globalization promotes the emergence of new competitive areas, which leads to fierce competition using traditional methods. There is a rapid increase in the number of internal competitors of the company and a gradual growth of international competitors who have great opportunities. Under such conditions, there is a need for a constant process of introducing innovations not only at the enterprise level, but on an international scale.

Strategic cooperation in the financial and production spheres of the company is not enough to ensure its competitiveness on the world market and integration into the global economic space. For the company to occupy an attractive niche in the international market, it needs to implement the process of creating new competitive advantages based on the results of innovative research. The result of the process is the implementation of competencies that are difficult for others to replicate. Competences have an intangible nature and are used in management technologies, intellectual resources of personnel¹⁹⁵. These questions fall within the scope of a theoretical concept successfully developed in recent decades – the concept of "intellectual capital". Intellectual capital can be acquired through the implementation of strategic decisions in one's activities: improving the qualifications of employees due to the exchange of experience or personnel with leading international companies (taking courses in global business schools, internships in international companies), constant analysis of the company's existing potential, continuous monitoring of

¹⁹⁴ Romaniuk I. et al. (2020). Advertising management.

¹⁹⁵ Babko N., Kviatko T. (2020). Section 2. Financial and economic issues of society development in the turbulence conditions.

market trends trends, use of international advanced technologies and know-how in their activities.

Technology transfer is the movement of technology through various channels from one owner to another. Technology transfer refers to the international transfer of foreign scientific and technical achievements, that is, when technology created in one country is transformed into a product or process used in another country¹⁹⁶.

International technology transfer ensures maximum return upon its implementation and provides companies with the following strategic opportunities:

- Development of the domestic market;
- Development of new industries;
- Adaptation and transfer of achievements of developed countries;
- Entering the transnational infrastructure¹⁹⁷.

The pace of development and the efficiency of the economic circulation of technologies are determined by the participation of research institutions, enterprises and organizations in the international transfer of technologies. Indicators of countries' participation in international transfer, export and import of technologies and the dynamics of their change over time are important indicators of economic development.

The choice of methods or forms of technology transfer depends on factors:

- target purpose of the technology;
- strategy of cooperation with development partners;
- investment and technical capabilities of the company to implement the technology.

Forms of technology transfer are presented in Table 1.

Table 1. – Forms of technology transfer in international transfer

Classical	Forms contributing to the establishment of technology transfer
1. Patent agreements 2. License agreements 3. Engineering 4. "Know-how" 5. Franchising	1. Signing the license agreement 2. Joint venture 3. Strategic partnership 4. Turnkey agreement 5. Purchase of equipment or service 6. Employment of a foreign manager or expert 7. Purchase of a foreign company 8. Direct foreign investment 9. Buy backcontract 10. Original equipment

¹⁹⁶ Ihnatenko M., Romaniuk I., Yatsenko Y. (2021). Support of projects and strategies for the development of rural green tourism enterprises by local communities and the state, p.7-13.

¹⁹⁷ Kviatko T.M., Rudenko S.V., Mykolenko I.G. (2018). Strategic management conceptual principles of agricultural enterprises competitive behavior, p. 48-53.

The success of technology transfer depends on constant cooperation between the buyer and the technology supplier at all stages of the transfer. Companies ordering technology must establish schedules for the implementation of agreements and evaluation indicators to monitor the correct implementation of the process.

High-tech innovative companies of the European Union are equipped with the best research laboratories, which give the opportunity to own more modern developments and knowledge, and to benefit from the transfer of technologies. Based on the research of national universities, they receive new forms of knowledge thanks to close cooperation with universities from abroad. The Enterprise Europe Network (EEN) is one of the technology transfer networks operating at the EU level. The purpose of EEN's work is to establish international cooperation and spread knowledge.

The Federal Technology Transfer Act of 1986 mandates technology transfer in the United States for all scientists and engineers working in federal laboratories. This law stipulates the use of cooperative research agreements (CRADAs), according to which federal laboratories can enter partnerships with private firms at the stage of scientific research and development work. The United States of America has long been a leader in the creation and development of new technologies that contribute to understanding the world around us, solving complex problems of the competitiveness of the country's industry, and improving the quality of life in society. In the federal policy in the field of technology transfer, attention is paid to the first three stages of the transfer structure: investment, scientific research and experimental design work, intellectual property rights.

Companies and consumers involved in the prototyping, development and commercialization phases are subject to federal tax laws and regulations that affect the transfer of technology. Most universities and many research institutions are non-profit organizations. The Internal Revenue Code regulates the types of research that tax-exempt organizations typically conduct. It also regulates the terms of licensing agreements with commercial corporations. Universities are financed by issuing bonds, which is an additional limiting factor¹⁹⁸.

In Switzerland, R&D consortia seek to combine public sector research competences with the needs and expertise of the private sector to develop new products or processes. State funding is linked to the progress of the relevant work and depends on the results of the project, which are evaluated on the basis of established parameters.

Switzerland and Finland through the state policy of market reforms and using the international transfer of technologies ensured a gradual growth of technology exports and occupied the main place in the world market of high-tech products. Often, companies use the category "technological balance", which defines the international transfer of technology on a commercial basis. Technological balance is the difference between technological revenue and technological payments for

¹⁹⁸ Danko Y.I. et al. (2019). Competitiveness and price policy of Ukrainian agrarian enterprises for the production of organic products.

technology. Payments as a percentage of gross domestic R&D expenditures determine the share of imported technology in a country's R&D.

Let's analyze the situation in Ukraine. Ukraine's acquisition of the status of a candidate state for joining the EU requires the formation of a new innovative and technological strategy for the development of the state, which will enable it to make a "technological leap" despite aggression and economic troubles.

The report "Global Innovation Index – 2020" of the World Intellectual Property Organization, prepared jointly with the IN SEAD business school and Cornell University, ranks Ukraine 45th among 131 economies in the world in terms of their innovative performance (80 indicators in 7 areas). Switzerland, Sweden, and the USA lead the ranking of the leading innovative countries. Ukraine took 30th place among the countries of the European region. The basis of its innovative capacity is human capital and research.

In 2020, Ukraine ranked 56th among the 60 studied countries according to the Bloomberg Innovation Development Index. In 2020, the rating was topped by Germany, South Korea, and Singapore.

The European Innovation Scoreboard provides a comparative assessment of the strengths and weaknesses of the innovation systems of 27 EU member states and 10 neighboring countries, including Ukraine. The report of the European Innovation Scoreboard – 2020 classifies Ukraine among the countries of "slow innovators" (outsiders). Ukraine's strengths are high rates of broadband penetration, employment in science-intensive activities, spending on innovations not related to research and development, and exports of science-intensive services.

The strategic goal of forming a highly developed socially oriented economy in Ukraine, based on innovation and innovation, is provided by the National Economic Strategy of Ukraine for the period until 2030, approved by the resolution of the Cabinet of Ministers of Ukraine on March 3, 2021, the plan of measures for the implementation of the Association Agreement between Ukraine and the European Union, by the European Atomic Energy Community and their member states, approved by Resolution No. 1106 of the Cabinet of Ministers of Ukraine dated October 25, 2017.

Ukraine's competitive position is unstable. The war with Russia led to the loss of a significant part of the industrial and investment potential of our state, and significant migration led to the reformation of the human potential of the state. At the same time, financial and technological assistance to Ukraine from the USA and the EU was the result of a significant breakthrough in the field of technology transfer. For the first time in its history, Ukraine gained access to the most modern medical, military, defense and dual purpose technologies and developments. This transfer takes place at the level of states and under state guarantees.

The extraordinary circumstances of Russian aggression forced states and governments to look for new ways of transferring equipment and technologies.

Ukraine has a chance not only to protect its independence and territorial integrity, but also to make an innovative leap in the development of its economy. Ukraine needs significant efforts on the part of international partners and the state. The issue of creating new industries and joint ventures, whose activities are aimed at restoring and improving equipment and machinery, as well as the use of defense technology assets in civilian life, are relevant. An important aspect is access to the latest technologies in the medical field: ophthalmology, orthopedics, and reconstructive and restorative medicine.

Compliance with the principles of transparency and legality of technology and equipment transfer, conscientious behavior of participants in the technology transfer market is an important factor in the further civilizational development of our country. In this sense, it is worth paying attention to the specifics of the development of international legal regulation of technology transfer, guarantees and restrictions contained in Ukraine's international obligations.

A feature of the modern stage of development of international technology transfer is that transnational corporations actively involve their foreign branches, scientific centers, and laboratories in conducting scientific research activities. The use of intra-corporate technology exchange is one of the means of foreign economic expansion. The main channel for the implementation of this policy of transnational corporations is the transfer of licenses to their own branches and subsidiaries at transfer prices, that is, the provision of new achievements on preferential terms. Licenses enable multinational corporations to set up production of competitive goods at private enterprises and sell them in the states where they operate. As a result, multinational corporations get the opportunity not only to minimize the costs and time of development of the invention, but also to avoid customs barriers and currency restrictions of other countries. About 2/3 of the total value of international agreements with objects of intellectual property, according to experts, are agreements between affiliated corporate structures, which indicates the predominance of concerted actions and economic concentrations in the international trade of objects of intellectual property. In 1978, the UN Commission on International Trade Law began to consider the unification of the rules of international technology transfer, along with questions about transnational corporations, restrictive business practices, the elimination of discrimination in trade and the obligation to cooperate in trade relations. Later, this commission decided to consider the issue of unification of rules regulating the transfer of technology together with contractual provisions in the field of industrial development. One of the arguments in favor of the inclusion of provisions on the transfer of technologies in the legal guidance on the construction of industrial facilities was that the transfer of technologies is a necessary element of providing assistance to the customer in the operation of the enterprise and its maintenance. The issue of counteracting restrictive business practices in many aspects in Ukrainian legislation is defined and unified in relation to European

requirements, but the issue of technology transfer to the customer as assistance in the operation of the enterprise and its maintenance remains unresolved. Even the norms adapted to Ukrainian legislation regarding the control of economic concentration processes do not provide for specific rules that ensure the protection of economic competition regarding the use of technology transfer as an effective mechanism for gaining control over the market of relevant goods, works or services. For example, amendments to the Law of Ukraine "On the Protection of Economic Competition" on improving the efficiency of the control system over economic concentrations are aimed at implementing the provisions of Article 256 "Approximation of legislation and application practice" of the Association Agreement between Ukraine and the European Union, which provides, in particular, the need to implement Articles 1 and 5 (1)-(2) of Council Regulation (EC) No. 139/2004 of January 20, 2004 on control over the concentration of business entities and the implementation of the provisions of clause 73 of the Action Plan on deregulation of economic activity and simplification of the regulatory framework, which provided for a review of the system of value indicators, for the achievement of which it is necessary to obtain the permission of the Antimonopoly Committee of Ukraine for concentration, in particular, in terms of increasing their values and taking into account the impact of concentration on competition in Ukraine, based on the OECD Recommendations, the Recommendations of the International Competition Network on the construction of an effective, efficient and fast system control by economic concentrations, but do not provide mechanisms for countering economic concentration (M&A) using technology transfer mechanisms. Achieving the relevant evaluation indicators is extremely illusory; however, the processes of concentration in the Ukrainian market did not stop even the war, although we can observe a gradual flow of transactions to other jurisdictions with a more loyal tax and control regime.

M&A activity observed in the biopharmaceutical industry of both original drug manufacturers and genetics manufacturers. Mergers often involve multiple countries, as companies in this industry are more globalized, with an emphasis on growth in emerging markets. In countries with a medium and low level of economic development, there has been monopolization of local enterprises by multinational companies, targeted acquisition of local firms by multinational corporations (for example, Sanofi's acquisition of Medley in Brazil), as well as mergers of local firms. Prior notification of the merger to the antimonopoly authorities of each country should be the norm because the geographical boundaries of drug markets are defined as national borders. Prior notification enables each national authority to assess the impact of the merger on the level of concentration in the relevant markets, with the requirement to identify dominant drugs and, if necessary, to prevent unjustified increases in the level of concentration. An important policy issue is the determination of the threshold value of the M&A volume: in proportion to the country's GDP or to the volume of sales of medicines during prior notification. In recent years, the US has

expanded its prior notification requirements for licensing agreements, demonstrating the importance of licensing agreements as a form of acquisition in the pharmaceutical industry.

According to the fourth part of Article 256 of the Association Agreement between Ukraine and the EU, Ukraine must implement Articles 1-8 of EU Regulation No. 772/2004 of April 30, 2004, on the application of Article 81(3) of the Treaty establishing the EU to categories of technology transfer agreements. This regulation is no longer valid and relevant issues are regulated by EU Regulation No. 316/2014 of March 21, 2014, on the application of Article 101(3) of the Treaty on the Functioning of the EU to categories of technology transfer agreements (Regulation).

An important condition for the application of the rules is the purpose of the agreement – the production of goods using the transferred intellectual property rights. The rules do not apply to joint research and development (R&D) and supply contracts. At the same time, the rules apply to the provisions of technology transfer agreements governing the purchase of goods by the licensee and the transfer of all related intellectual property rights necessary for the production or sale of contract goods.

According to the rules, agreements on the transfer of technologies will be considered legal and will not require obtaining the permission of the Antimonopoly Committee of Ukraine, if they are concluded between competing business entities and their combined share in this market does not exceed 20%, as well as if they are concluded between business entities, that are not competitors, the market share of each participant does not exceed 30%.

These rules do not apply to technology transfer agreements that contain certain hardcore restrictions: limiting the ability of one of the parties to determine their prices during the sale of goods to third parties; production restrictions; distribution of markets according to territorial characteristics, assortment or circle of customers (consumers); limiting the ability of the licensee to use its rights to the technology or limiting the ability of any party to carry out research and design work.

In some cases, antitrust authorities may not apply the rules to technology transfer agreements. This may be related to the market research conducted by the Antimonopoly Committee of Ukraine, because of which it was established that technology transfer agreements in this market will limit competition and will not lead to positive consequences. Standard requirements for concerted actions of business entities in the field of technology transfer, compliance with which allows for concerted actions without the permission of the Committee bodies, do not apply to multilateral agreements and industrial cooperation agreements.

The development of technology transfer and innovation in the EU is not limited to international contractual obligations, regulations, and directives. The basis of technology transfer in the EU is the creation and operation of framework research programs open to external participants. The programs are tools for promoting the

scientific and technological progress of countries and correlate EU strategies in the field of promoting the development of culture, science, and education on a global scale. The EU allocates resources to promote the development and transfer of technologies. The legal foundations of cooperation in the field of science and technology are contained in the agreements on partnership and cooperation of the EU with third countries, as well as in agreements on associate membership.

Adherence to the principles of transparency and legality of technology and equipment transfer, good faith behavior of participants in the technology transfer market is an important factor in the further civilization development of Ukraine. The state should pay attention to the specifics of the development of international legal regulation of technology transfer, guarantees and restrictions contained in Ukraine's international obligations. Because even the norms of European directives and regulations implemented in Ukrainian legislation are not a guarantee of the development of honest and transparent technological exchange and technology transfer. Procedures for public procurement of innovative products, holding creative competitions for scientific developments (regulated by Directive 2014/24/EU and Directive 2014/23/EU), and multilateral agreements on the transfer of technologies and scientific developments that are insufficiently regulated by current legislation remain unsettled.

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THE ORGANIZATIONAL AND ECONOMIC MECHANISM OF ENSURING THE SUSTAINABLE DEVELOPMENT OF THE ECONOMY IN THE CONDITIONS OF DIGITALIZATION

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Abstract. The prepared section substantiates the relevance of the organizational and economic mechanism for ensuring the sustainable development of the economy in the context of digitalization. Its main elements are revealed. Proven versatility, complexity, commitment to holistic ownership and implementation. The main ways of introducing and implementing the organizational and economic mechanism for ensuring the sustainable development of the economy in the context of digitalization are proposed and justified.

Keywords: organizational and economic mechanism, the sustainable development, economy, digitalization.

Sustainable economic development refers to the process of improving the economic well-being and quality of life for present and future generations. It is characterized by its focus on meeting the basic needs of all people, reducing poverty and inequality, and promoting economic growth that is inclusive, environmentally friendly, and socially responsible.

The key features of sustainable economic development include meeting the basic needs of all people, including access to food, water, shelter, and healthcare; promoting social inclusion and reducing poverty and inequality; encouraging economic growth that is environmentally sustainable and supports natural resource conservation; building resilience to climate change and other environmental challenges; investing in human capital and promoting lifelong learning.

It is important now because the world's population is expected to continue growing and the earth's resources are becoming increasingly scarce. Therefore, it is crucial to ensure that economic growth is sustainable, to meet the needs of current and future generations. Additionally, climate change and other environmental challenges are posing a growing threat to our planet, so it is important to focus on sustainable economic development to build resilience and mitigate these risks.

We assume that it will be possible to solve these problems with the help of an innovative, effective organizational and economic mechanism for ensuring the sustainable development of the economy, which will be based on modern approaches.

One of the most striking modern approaches is the digitalization of the economy.

Digitalization is transforming various sectors of the economy around the world, so it is important to understand how to effectively manage and use these changes for sustainable economic growth.

Development and implementation of the organizational and economic mechanism for sustainable development in the digital age is highly relevant and important to today's economy, as digital technologies are transforming the way we live and work, and it is essential to understand how to effectively manage and harness these changes for sustainable economic growth. This includes designing and implementing policies, strategies, and regulations that balance economic growth with social and environmental sustainability, as well as addressing the potential challenges that may arise from the incorporation of new technologies in the economy. This topic has practical implications for business and government as they need to understand how to adapt their strategies and policies to the digital age. Overall, this topic is crucial for businesses, governments, and society to ensure that the benefits of digitalization are realized in a sustainable and equitable way.

In addition, the topic of sustainable development in the digital age is also relevant in light of global challenges such as climate change and inequality, as digital technologies can be leveraged to address these issues, but they can also exacerbate them if not managed properly. The use of digital technologies can help to improve efficiency, reduce resource consumption, and promote the implementation of sustainable development goals. Thus, it is important to understand how to design and implement organizational and economic mechanisms that promote sustainable development in the digital age, including policies, strategies and regulations that balance economic growth with social and environmental sustainability.

The development of organizational and economic mechanisms for sustainable development in the digital age is also relevant to the concept of the "Fourth Industrial Revolution", which refers to the current era of rapid technological change and its impact on society and the economy. The Fourth Industrial Revolution is characterized by the convergence of digital, physical, and biological systems, leading to new technologies and innovations such as artificial intelligence, the Internet of Things, and 3D printing, etc.

The incorporation of these technologies in the economy could bring benefits such as increased productivity, improved services, and improved living standards, but it could also bring challenges such as increased inequality, job displacement and privacy concerns. Therefore, a comprehensive and well-designed organizational and economic mechanism is needed to make sure that these technologies are adopted in a sustainable way and that the benefits are distributed equitably.

It's worth to mention that it's not only government's role to ensure sustainable development in the digital age but also the private sector and citizens. Companies should also play an important role in fostering sustainable development by

implementing sustainable practices, promoting fair labor conditions, and protecting the environment. Moreover, citizens should also be encouraged to adopt sustainable lifestyle and consumption choices to reduce their environmental impact.

International cooperation and collaboration are essential to address the global challenges of sustainable development in the digital age. This includes sharing best practices, knowledge, and technologies, and coordinating policies and regulations at the international level.

All this ensures the relevance and timeliness of the topic.

Our previous studies, which preceded the study of issues of development and implementation of an effective organizational and economic mechanism for ensuring sustainable economic development in the digital era, are outlined in the following scientific works¹⁹⁹.

In summary, the topic of organizational and economic mechanisms for sustainable development in the digital age is multi-faceted and requires a comprehensive and holistic approach that involves the participation and collaboration of different actors: government, private sector, and citizens, as well as international cooperation.

Another important aspect to consider when discussing organizational and economic mechanisms for sustainable development in the digital age is the role of education and training. As digital technologies continue to evolve and change the way we live and work, it is essential to ensure that individuals have the necessary skills and knowledge to participate in the digital economy. This includes not only technical skills but also digital literacy, critical thinking, and problem-solving skills.

Moreover, education and training programs must also adapt to the new digital reality, with more emphasis on digital skills and online learning, to prepare students for the future digital workforce. Furthermore, education and training programs should also focus on providing students with the knowledge and skills to understand and navigate the ethical, social, and environmental implications of digital technologies.

In summary, education and training are essential components of an organizational and economic mechanism for sustainable development in the digital age. It is important to ensure that individuals have the necessary digital skills and knowledge to participate in the digital economy and to understand the ethical and social implications of digital technologies.

Another important aspect of organizational and economic mechanisms for sustainable development in the digital age is the concept of digital governance. Digital governance refers to the set of policies, processes, and institutions that govern the use and management of digital technologies. It includes issues such as data privacy, security, and protection, digital rights and freedoms, and the regulation of digital platforms and services. So, effective digital governance is essential for sustainable development as it helps to ensure that digital technologies and services

¹⁹⁹ Goel A.K., Marchenko M., Iefremov A. (2022). Digitalization of economic planning of competitive marketing activities in the conditions of globalization, p.58-59; Lomovskykh L., Marchenko M., Goel A.K. (2019). Digitalization of economic business-processes while making management decisions in marketing activity, 104-110.

are developed, deployed, and used in a way that promotes the public good and supports sustainable development goals.

Effective digital governance is essential to ensure that digital technologies are used in a responsible and sustainable way and that their benefits are shared equitably. It plays a crucial role in addressing the potential negative impacts of digital technologies such as digital divide, surveillance, and the erosion of privacy.

Furthermore, digital governance also involves the participation of different stakeholders, including government, private sector, civil society, and international organizations. Collaboration and participation of these stakeholders are important to ensure that digital governance policies are inclusive, responsive, and effective.

However, digital governance can be challenging in the digital age as digital technologies and services are constantly evolving and can have a significant impact on society and the economy. This makes it difficult for governments and other stakeholders to keep pace with the changing digital landscape, and to ensure that digital governance is effective.

To address this challenge, governments and other stakeholders must develop policies and regulations that are adaptable to the changing digital landscape, and that promote sustainable development. This includes initiatives such as the development of digital governance frameworks, and the creation of digital governance institutions such as regulatory bodies and oversight committees.

In addition, there is a need for greater international cooperation on digital governance to ensure that digital technologies and services are developed, deployed, and used in a way that promotes sustainable development globally.

In conclusion, digital governance is a vital component of organizational and economic mechanisms for sustainable development in the digital age. It is essential to establish effective digital governance policies, processes, and institutions that govern the use and management of digital technologies in a responsible and sustainable way, and that address the potential negative impacts of digital technologies.

Another important aspect of organizational and economic mechanisms for sustainable development in the digital age is the concept of digital innovation. Digital innovation refers to the process of creating, developing, and applying new digital technologies, products, and services. This includes not only technological innovation but also organizational, business model, and policy innovation.

Digital innovation plays a key role in driving sustainable economic growth by increasing productivity, efficiency, and competitiveness. However, it is important to ensure that digital innovation is inclusive and promotes sustainable development by creating opportunities for all, reducing inequalities, and addressing environmental and social challenges.

One way to achieve this is through the concept of inclusive innovation. Inclusive innovation refers to innovation that focuses on creating new products, services, and business models that specifically target the needs and aspirations of marginalized or under-served communities, such as low-income populations, and rural areas.

In addition, there are different types of policies and regulations that governments can use to foster digital innovation that promotes sustainable development. These include funding and support for R&D, tax incentives, and innovation-friendly regulations.

In summary, digital innovation is a critical component of organizational and economic mechanisms for sustainable development in the digital age. It is important to ensure that digital innovation is inclusive and promotes sustainable development by creating opportunities for all, reducing inequalities, and addressing environmental and social challenges.

Another important aspect of organizational and economic mechanisms for sustainable development in the digital age is the concept of digital infrastructure. Digital infrastructure refers to the physical and virtual infrastructure that enables the use and delivery of digital technologies and services. It includes elements such as broadband and mobile networks, data centers, cloud computing, and cybersecurity.

Access to reliable and affordable digital infrastructure is essential for sustainable development as it enables the digital economy and digital society to function and enables individuals and businesses to access and participate in the digital world.

In conclusion, digital infrastructure is a crucial component of organizational and economic mechanisms for sustainable development in the digital age. It is essential to ensure that all regions and communities have access to reliable and affordable digital infrastructure to enable the digital economy and digital society to function, and to enable individuals and businesses to access and participate in the digital world.

Having the right digital skills is essential for sustainable development as it enables individuals to participate in the digital economy and digital society, and to access the opportunities and benefits that digital technologies and services provide.

However, not all individuals have the same level of digital skills. This can lead to digital skills divide, where certain individuals and communities are left behind in terms of their ability to use digital technologies and services effectively. This is a significant challenge for sustainable development, as digital skills are closely linked to economic and social development.

To address this challenge, governments and other stakeholders must invest in digital skills development and policies that promote universal access to digital skills training. This includes initiatives such as the development of digital skills training programs, and public-private partnerships to support the development of digital skills in underserved communities.

Consequently, digital skills are a crucial component of organizational and economic mechanisms for sustainable development in the digital age. It is essential to ensure that all individuals have access to the digital skills training they need to participate in the digital economy and digital society and to access the opportunities and benefits that digital technologies and services provide.

The key elements of the organizational and economic mechanism for ensuring sustainable economic development in the digital age include:

1. Digital transformation of the economy: This involves the integration of digital technologies into all aspects of economic activity, including production, distribution, and consumption.

2. Development of digital infrastructure: This includes the creation of high-speed digital networks, data centers, and cloud computing services.

3. Support for digital innovation and entrepreneurship: This includes the provision of funding, training, and other resources to entrepreneurs and start-ups working on digital technologies.

4. Digital skills development: This involves the training and education of workers in the digital economy, including in areas such as big data analysis, artificial intelligence, and blockchain.

5. Digital governance: This includes the development of policies and regulations to support the digital economy, such as data protection laws, intellectual property laws, and competition laws.

6. Digital data management: This includes the development of data management systems that can be used for decision-making, forecasting and risk management in the digital economy.

7. Collaboration and coordination between the government, private sector and civil society: This includes the development of public-private partnerships and other initiatives to promote the digital economy.

Sure, one aspect of an organizational and economic mechanism for ensuring sustainable development in the digital economy is the concept of the "digital twin." A digital twin is a virtual replica of a physical asset, such as a factory or transportation system, that can be used for simulation and analysis. This allows for more efficient use of resources and better decision making in terms of operation and maintenance. Another aspect is the development and implementation of digital platforms, which can facilitate the exchange of goods and services and create new business models. Additionally, the integration of advanced technologies such as artificial intelligence and the Internet of Things can lead to increased automation and optimization of processes. However, it is also important to consider the potential negative impacts of digitalization, such as increased inequality and the displacement of jobs, and to address them through appropriate policies and regulations.

Another important aspect of a sustainable digital economy is the development and implementation of policies and regulations that promote fair competition, consumer protection, and data privacy. This includes measures such as anti-trust laws to prevent monopolies, data protection regulations to safeguard personal information, and regulations to ensure that all businesses and individuals have equal access to digital technologies and markets.

Another key aspect, as already indicated, is the development of digital infrastructure and skills. This includes investments in high-speed internet access,

digital literacy programs, and training for workers to acquire the skills necessary to participate in the digital economy.

Additionally, it is important to ensure that the benefits of digitalization are distributed fairly across society, including to marginalized and disadvantaged communities. This can be achieved through policies such as progressive taxation, social safety net programs, and targeted investments in education and training.

Moreover, there is a need for international cooperation to address cross-border issues such as data privacy, cyber security, and digital trade. This could involve cooperation among governments, international organizations, and the private sector to establish common standards, regulations, and best practices.

Finally, it is important to keep in mind that the digital economy is constantly evolving, and the policies and regulations put in place will need to be regularly reviewed and adapted to ensure they remain effective in promoting sustainable development.

As can be seen from the above, there is no one single way to implement an organizational and economic mechanism for ensuring sustainable economic development in the digital age that would be most acceptable for everyone. It depends on several factors such as country, region, industry, etc. However, some common approaches that may be useful for implementing an organizational and economic mechanism for ensuring sustainable economic development in the digital age include investing in infrastructure, developing skills, innovative policy and regulation.

Thus, based on the foregoing, we can conclude that this is a multifaceted complex mechanism that should be complex. The main directions of its implementation are:

1. **Developing a national digital strategy:** Governments can develop a national digital strategy that outlines the vision, goals, and actions needed to achieve sustainable development in the digital age. This strategy should include measures to promote digital inclusion, digital skills development, and digital innovation, as well as policies to promote the use of digital technologies in key sectors such as healthcare, education, and government services.

2. **Investing in digital infrastructure:** Investing in digital infrastructure such as high-speed internet access, data centers, and cloud computing services is essential for sustainable development in the digital age. This infrastructure is necessary for the development of digital services and applications that can drive economic growth and social development.

3. **Promoting digital innovation:** Governments and private sector organizations can work together to promote digital innovation by providing funding and support for research and development, incubation and acceleration programs, and startup competitions.

4. **Encouraging digital entrepreneurship:** Governments can encourage digital entrepreneurship by creating an enabling environment for the development of digital businesses, including providing access to finance, mentoring, and training programs.

5. Encouraging responsible digitalization: Governments and private sector organizations should encourage responsible digitalization by promoting the use of digital technologies that are sustainable, inclusive, and respect human rights.

6. Fostering digital skills development: Governments and private sector organizations can work together to invest in digital skills development and policies that promote universal access to digital skills training. This includes initiatives such as the development of digital skills training programs, and public-private partnerships to support the development of digital skills in underserved communities.

7. Promoting data governance: Governments can promote good data governance by ensuring that data protection, privacy, and security laws are in place and enforced. This will help to build trust in digital services and applications and ensure that individuals have control over their personal data.

8. Enhancing collaboration: Governments and private sector organizations can work together to promote sustainable development in the digital age by fostering collaboration and partnerships between different stakeholders. This will help to ensure that digital technologies and services are developed and deployed in ways that benefit all members of society.

In conclusion, the digitalization of the economy requires a new organizational and economic mechanism to ensure sustainable development. This includes the creation of a favorable legal and regulatory environment, the development of digital infrastructure and the necessary digital skills, as well as the active participation of the state in the digitalization process. The development of digital technologies and the creation of a digital economy can bring significant benefits, such as increasing productivity and efficiency, reducing costs, and improving the quality of goods and services.

However, it is important to ensure that the process of digitalization is inclusive, considering the needs of different groups of the population, and the potential negative effects of digitalization on employment and social inequality should be mitigated. Overall, it's important to have a well-thought-out strategy and approach to digitalization to fully realize its potential while minimizing negative consequences.

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METHODOLOGICAL APPROACHES TO THE HARMONIZATION OF INVESTMENT AND OPERATIONAL COSTS OF THE GRAIN INDUSTRY

МЕТОДИЧНІ ПІДХОДИ ДО ГАРМОНІЗАЦІЇ ІНВЕСТИЦІЙНИХ ТА ОПЕРАЦІЙНИХ ВИТРАТ ЗЕРНОВОЇ ГАЛУЗІ

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Abstract. Approaches to determining the optimal level of investments in updating the fleet of grain harvesters and their harmonization with the level of current costs of agricultural formations were studied. It was established that the unsatisfactory technical condition of the fleet of grain-harvesting equipment of agricultural producers aggravates the problem of technical support of grain production and requires the harmonization of the ratio of investments for the reproduction of resource potential and operating costs during its productive use. The proven methodical approach allows determining the optimal level of investments for the renovation of the fleet of grain harvesters, considering the peculiarities of the organization of wheat production, the situation of grain prices, material resources, grain harvesting equipment, and financial factors. A positive feature of the proven approach is the possibility of minimizing non-productive costs by taking into account technological and market factors.

Keywords: cost harmonization, modeling, investments, profit, costs, marginal efficiency.

Анотація. Досліджено підходи до визначення оптимального рівня інвестицій у оновлення парку зернозбиральних комбайнів та їх гармонізації з

рівнем поточних витрат агроформувань. Встановлено, що незадовільний технічний стан парку зернозбиральної техніки агротоваровиробників загострює проблему технічного забезпечення зернового виробництва, і потребує гармонізації співвідношення інвестицій на відтворення ресурсного потенціалу та операційних витрат під час його продуктивного використання. Апробований методичний підхід дозволяє визначити оптимальний рівень інвестицій на реновацію парку зернозбиральних комбайнів з урахуванням особливостей організації виробництва пшениці, кон'юнктури цін на зерно, матеріальні ресурси, зернозбиральну техніку, фінансових чинників. Позитивною рисою апробованого підходу є можливість мінімізації непродуктивних витрат за рахунок врахування технологічних й ринкових чинників.

Ключові слова: гармонізація витрат, моделювання, інвестиції, прибуток, витрати, гранична ефективність.

Війна в Україні обумовлює нові виклики до аграрної галузі. Реаліями сьогодення є витрата усталених каналів збуту продукції та постачання матеріально-технічних ресурсів, домінування неринкових чинників формування кон'юнктури цін, міграція економічно активної населення, руйнація майна і знищення врожаю або загроза цього, окупація частини територій. Запорукою захисту економічної та продовольчої безпеки країни є нарощування обсягів виробництва зерна, що висуває жорсткі вимоги до технічного стану сільськогосподарських машин, у тому числі парку зернозбиральних комбайнів. Проблеми у цій сфері сформувалися задовго до початку війни. Так, скорочення у 2,5 рази парку зернозбиральних комбайнів сільськогосподарських підприємств України протягом 2000-2020 рр. обумовило зростання перманентне навантаження на кожен агрегат. У наслідок цього у 2020 р. воно досягло 196,3 га, тоді як у Німеччині та Франції у 2016-2020 рр. не перевищувало 60-70 га посівів пшениці.

Вирішення проблеми можливо шляхом одночасного нарощування інвестицій у реновацію парку зернозбиральних комбайнів та отримання збиральної техніки на умовах ленд-лізу. Падіння більш ніж на 30% валового внутрішнього продукту суттєво обмежує власні інвестиційні можливості агроформувань та суттєво підвищує вартість позикові ресурси. За таких умов особливої актуальності набуває пошук підходів до визначення оптимального рівня капітальних витрат та їх гармонізація з рівнем поточних витрат, обумовлених організацією технологічного процесу.

Питанням інвестиційного забезпечення економіки та, зокрема аграрного сектору та його впливу на економічну ефективність функціонування підприємств присвячено значну кількість публікацій, серед яких слід відзначити ті авторами яких є М. Porter (2008), А.А. Thompson, А.І. Strickland (1987), R.E. Freeman (1984), Harrison Jeffrey S., Caron H. St. John (1994), П.І. Гайдучський (2020), М.І. Кісіль (2016), М.М. Кропивко (2018), Ю.О. Лупенко, О.В. Захарчук (2018), Т.В. Мацибора (2019), М.А. Однорог (2015), П.Т. Саблук (2017) та ін. У цих працях закладене теоретико-

методологічне, методичне й практичне підґрунтя організації інвестиційного процесу. Проте виклики сьогодення, зокрема складність і за деякими аспектами неможливість прогнозування розвитку економічних процесів, актуалізує проведення дослідження підходів до визначення оптимального рівня інвестицій та їх гармонізації з рівнем поточних витрат агроформувань.

Метою статті є висвітлення результатів дослідження присвяченого розробці підходів до визначення оптимального рівня інвестицій у оновлення парку зернозбиральних комбайнів та їх гармонізації з рівнем поточних витрат агроформувань.

Зазвичай гармонізацію економічних процесів трактують як їх взаємне узгодження, систематизацію, уніфікацію, координацію, впорядкування, забезпечення відповідності. Гармонізація економічних процесів сприяє збалансуванню функціонування суб'єкта господарювання. Його системне бачення переключає узгодження формування та використання його ресурсного потенціалу, інвестиційних та операційних витрат. Отже, важливим завданням є гармонізація співвідношення операційних витрат, що виникають під час створення продукту і перенесення на нього вартості ресурсного потенціалу, та фінансування інвестицій під час відтворення цього потенціалу.

Першим кроком на шляху вирішення завдання стало визначення, на підставі статистичної обробки звітності сільськогосподарських підприємств України за 2020 р., рівняння залежності урожайності пшениці від змінних витрат на гектар зібраної площі:

$$f_1(x) = -0,180x^2 + 6,425x, \quad (1)$$

де $f_1(x)$ – очікувана урожайність пшениці, ц/га; x – змінні виробничі витрати на 1 га зібраної площі пшениці тис. грн.

Залежність має високий рівень статистичної надійності, про що свідчить значення коефіцієнта детермінації (R^2), який для функції (1) дорівнює 0,9106, а також перевищення розрахунковим значенням коефіцієнта Фішера ($F_p = 28,0$) його табличного значення ($F_{табл.} = 0,116$). При цьому високою надійністю, виходячи зі значень t -коефіцієнту Стьюдента, відзначалися і коефіцієнти при лінійному і квадратичному членах формули (1). Зокрема при табличному значенні цього коефіцієнту від -1,72 до 1,72 фактичні його значення при вказаних членах дорівнювали 3,2 і 6,17 відповідно.

Релевантність застосування функції (1) для планових розрахунків забезпечує дотримання оптимальних строків збирання пшениці, які при однофазному (прямому) комбайнуванні не повинні перевищувати 6-10 днів після досягнення пшеницею повної стиглості. В той же час аналіз умов і строків збирання ранніх зернових у 2016-2020 рр. свідчить, що у наслідок недостатньої кількості та незадовільного технічного стану більшої частини зернозбиральної техніки його тривалість складала від 32 до 55 днів (Олійник, 2021). При цьому подовження тривалості збиральної кампанії понад десятиденний термін обумовило щодобове зниження урожайності на 1 % (Кравченко, 2015), у

наслідок чого було втрачено більш ніж 10 % потенційного врожаю, тобто 6-6,5 млн тонн зерна.

Зважаючи на цю обставину постало питання – чи можна, дещо знизивши очікуваний рівень урожайності й плановий рівень витрат, мінімізувати втрати врожаю й максимізувати фінансовий результат та яким чином імплементувати такий підхід у виробничу функцію (1). Для його вирішення до рівняння (1) було введено складову, яка дозволяє скоригувати очікувану потенційну урожайність на величину потенційних втрат, пропорційно тривалості збиральної кампанії (d). З урахуванням цього видозмінена форма функції (1) є наступною:

$$f_2(x, d) = (-0,180x^2 + 6,425x) - 0,01 \cdot (d - 10) \cdot (-0,180x^2 + 6,425x) = (1,1 - 0,01d) \cdot (-0,180x^2 + 6,425x), \quad (2)$$

де $f_2(x)$ – очікувана урожайність пшениці, ц/га; x – змінні виробничі витрати на 1 га зібраної площі пшениці тис. грн; d – тривалість збиральної кампанії, днів.

Надалі функції (1) та (2) було об'єднано у систему, яка дозволяє визначити очікувану урожайність у разі закінчення збиральної кампанії у оптимальні агротехнічні строки або у разі її подовження понад десятиденний термін:

$$f_3(x, d) = \begin{cases} (-0,180x^2 + 6,425x), & \text{якщо } d \leq 10 \\ (1,1 - 0,01d) \cdot (-0,180x^2 + 6,425x), & \text{якщо } d > 10, \end{cases} \quad (3)$$

де $f_3(x)$ – очікувана урожайність пшениці, ц/га; x – змінні виробничі витрати на 1 га зібраної площі пшениці тис. грн; d – тривалість збиральної кампанії, днів.

Включення до функції (2) змінної d обумовило необхідність формалізації підходів до розрахунку останньої. Логічно обчислювати її через співвідношення очікуваного валового збору та сумарної продуктивності парку зернозбиральних комбайнів сільськогосподарського підприємства. У свою чергу, очікуваний валовий збір є добутком посівної площі та планової урожайності. При цьому остання, для цілей моделювання, може бути визначена за допомогою функції (1). У той же час сумарну продуктивність парку зернозбиральних комбайнів господарства визначає їх кількість, годинна продуктивність і тривалість зміни. При цьому для врахування умов виробництва і технічного стану зернозбиральних комбайнів доцільним є введення коефіцієнта корисного використання робочого часу зміни:

$$d(pl, x, n) = \frac{pl \cdot f_1(x)}{k \cdot W_{год} \cdot T_{зм} \cdot K_{врч}}, \quad (4)$$

де pl – площа, з якої було зібрано пшеницю, га; $f_1(x)$ – очікувана урожайність пшениці, ц/га; $W_{год}$ – годинна продуктивність зернозбирального комбайна, ц/год; $T_{зм}$ – тривалість зміни, год. (згідно (Рижутський, 2011; Кравчук, 2009, Вітвицький, 2010) рекомендоване значення 12,0 год.); $K_{врч}$ – коефіцієнт

використання робочого часу зміни (згідно (Рижутський, 2011; Кравчук, 2009, Вітвицький, 2010) рекомендоване значення 0,7); k – кількість зернозбиральних агрегатів, од.

Враховуючи суто індивідуальний характер формування розмірів посівних площ пшениці та парку зернозбиральних комбайнів для кожного сільськогосподарського підприємства їх співвідношення у формулі (4) було замінено на планову площу обмолоту пшениці одним зернозбиральним комбайном (N):

$$d(N, x) = \frac{N \cdot f_1(x)}{W_{\text{год}} \cdot T_{\text{зм}} \cdot K_{\text{врч}}}, \quad (5)$$

де N – планова площа обмолоту пшениці одним зернозбиральним комбайном, га.

Після цього, на підставі аналізу статистичної звітності, було визначено, що на озброєнні вітчизняних зерновиробників переважно знаходяться агрегати із потужністю двигуна 330-335 к.с. Аналіз ринку зернозбиральної техніки свідчить, що найбільш близьким до вказаної потужності є широко представлені на ньому комбайни шостого класу – *New Holland CR7.90, John Deere S670, John Deere S770, CASE IH 7140, CASE IH 7240, Gleaner S97, Claas Lexion 740, Massey Ferguson 9540, Massey Ferguson 9545* (*Cost of Production Farm Machinery, 2023*). Зважаючи на це, на підставі аналізу пропозиції агрегатів з цього переліку на сайті *Tractothouse.com* (*Tractothouse, 2023*), у якості базової було обрано модель із найбільшою кількістю лотів – *John Deere S670*, що має номінальну потужність двигуна 317 к.с. і годинну продуктивність 111,27 ц/год.

Надалі, підставивши до функції (5) фактичні та рекомендовані значення годинної продуктивності комбайну *John Deere S670* (111,27 ц/га), тривалості зміни (12 год.), коефіцієнту використання робочого часу зміни (0,7), було сформовано аналітичний вираз функції залежності тривалості збиральної кампанії від планової площі обмолоту одним агрегатом та змінних витрат на одиницю посівів:

$$d(N, x) = \frac{N \cdot f(x)}{111,27 \cdot 12 \cdot 0,7} = \frac{N}{937,67} (-0,180x^2 + 6,425x), \quad (6)$$

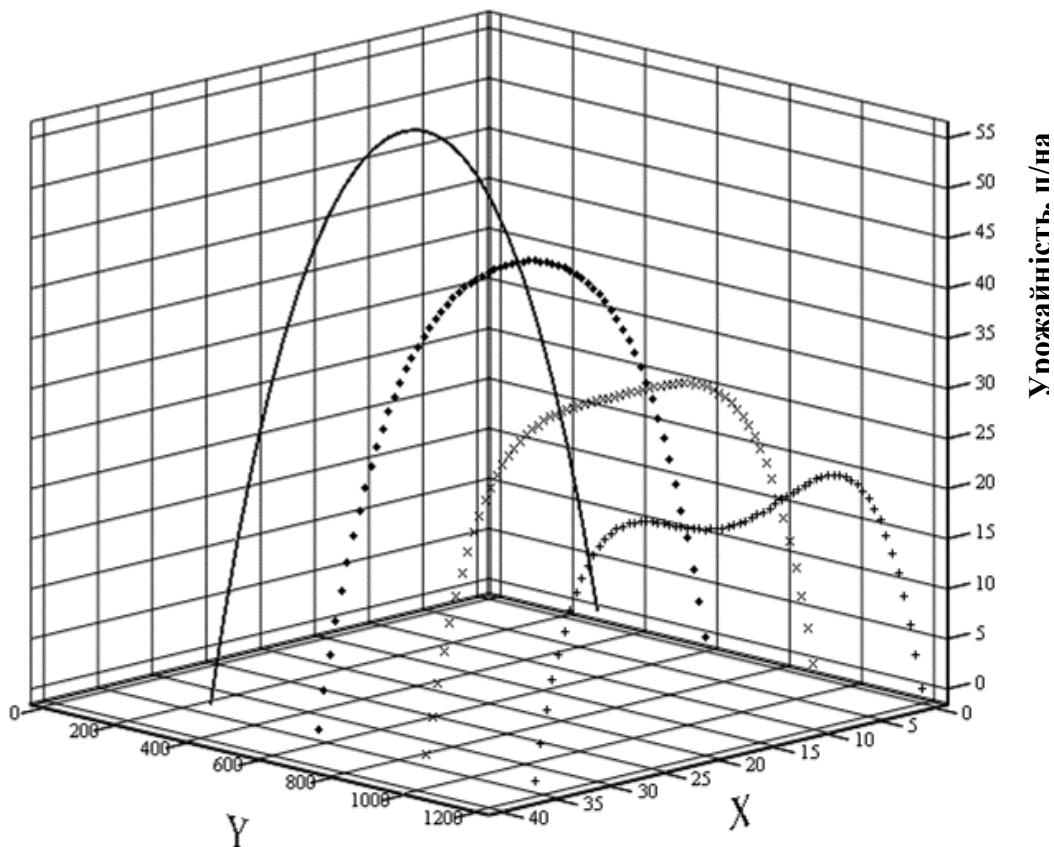
де x – змінні виробничі витрати на 1 га зібраної площі пшениці тис. грн; N – планова площа обмолоту пшениці одним зернозбиральним комбайном, га.

Надалі змінну d у другому рівнянні системи (3) було замінено на праву частину виразу (6):

$$f_3(x, N) = \begin{cases} (-0,180x^2 + 6,425x), & \text{якщо } d \leq 10 \\ (1,1 - 0,01 \frac{N}{937,67} (-0,180x^2 + 6,425x)) \cdot \\ \cdot (-0,180x^2 + 6,425x), & \text{якщо } d > 10 \end{cases}, \quad (7)$$

де $f_3(x)$ – очікувана урожайність пшениці, ц/га; x – змінні виробничі витрати на 1 га зібраної площі пшениці тис. грн; d – тривалість збиральної кампанії, днів; N – планова площа обмолоту пшениці одним зернозбиральним комбайном, га.

Графічна ілюстрація залежності урожайності пшениці від змінних витрат при різній площі збирання свідчить про скорочення непродуктивних втрат у разі зменшення навантаження на зернозбиральний комбайн і зростання технологічної ефективності зернового виробництва (рис. 1).



Графік залежності урожайності (ц/га) від змінних виробничих витрат на 1 га посівів (тис. грн) при

- +++ – річному навантаженні на зернозбиральний комбайн 1200 га
- × × × – річному навантаженні на зернозбиральний комбайн 900 га
- ◆ ◆ ◆ – річному навантаженні на зернозбиральний комбайн 600 га
- – річному навантаженні на зернозбиральний комбайн 300 га
- X – змінні виробничі витрати на 1 га площі, тис. грн
- Y – річне навантаження на зернозбиральний комбайн, га

Рис. 1. Вплив на урожайність пшениці інтенсивності виробництва і умов використання збиральної техніки сільськогосподарськими підприємствами України у 2020 р.

Джерело: Власні розрахунки автора за даними офіційного сайту Державної служби статистики України <http://www.ukrstat.gov.ua/>

Наступним кроком стало моделювання впливу на економічну ефективність зернового виробництва інтенсивності і навантаження на зернозбиральну техніку під час обмолоту пшениці. Заради цього систему рівнянь (7) було трансформовано. Зокрема, виходячи з припущення про стовідсоткову товарність зернового виробництва для визначення очікуваного обсягу товарної продукції рівняння були помножені на середню ціну реалізації зерна пшениці сільськогосподарськими підприємствами України у 2020 р., яка згідно даних офіційного сайту Державної служби статистики становила 386,75 грн/ц. З урахуванням вимірювання змінних витрат на одиницю посівів у системі рівнянь (7) у тис. грн ціну 1 ц зерна пшениці було перераховано у однойменну одиницю.

Після цього, для визначення очікуваного прибутку, праву частину рівнянь було зменшено на величину змінних витрат x та середню величину постійних витрат при виробництві зерна пшениці, яка, згідно аналізу звітності про витрати сільськогосподарських підприємств України за 2020 р. склала 2,711 тис. грн/га.

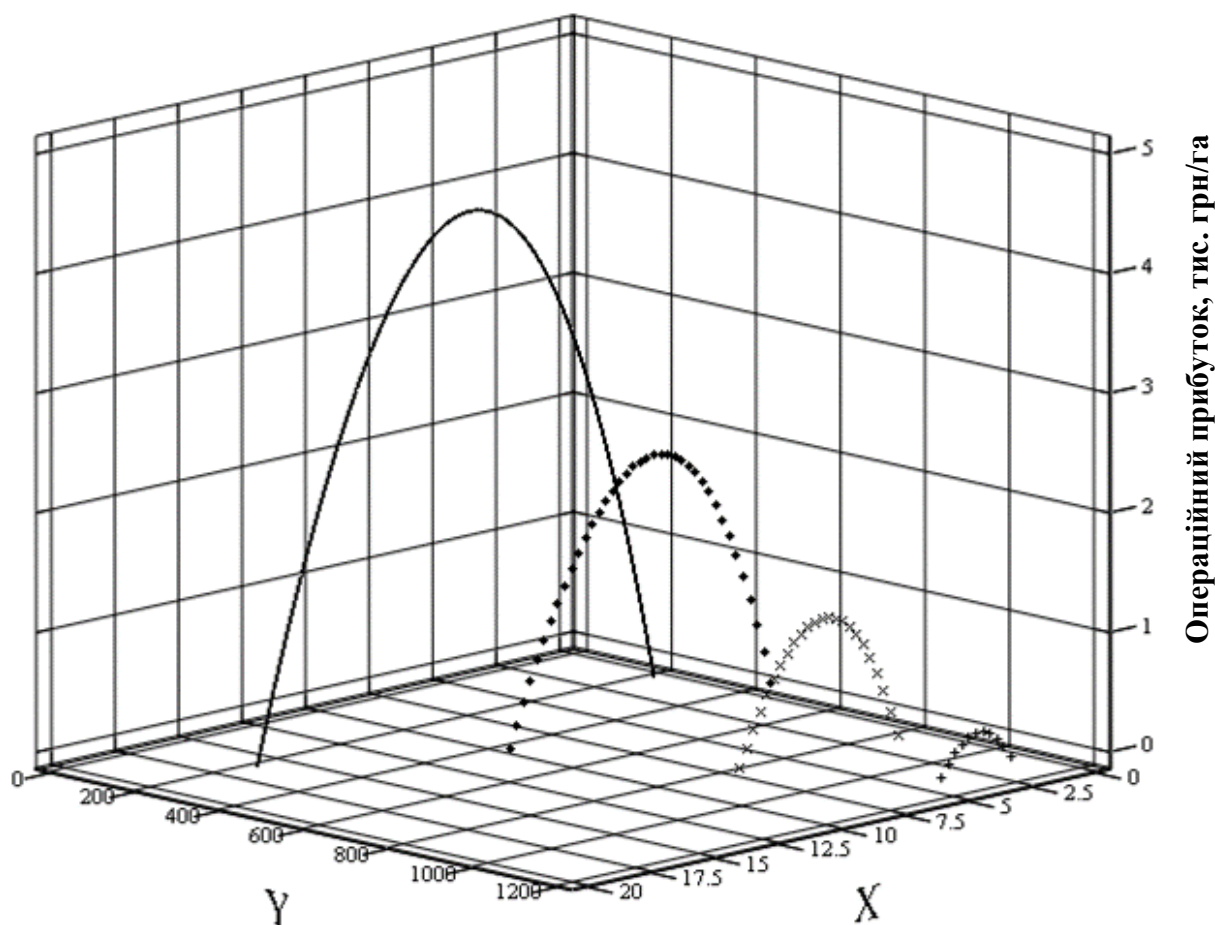
$$f_6(x, N) = \begin{cases} 0,3868 \cdot (-0,180x^2 + 6,425x) - x - 2,711, \text{ якщо } d \leq 10 \\ 0,3868 \cdot (1,1 - 0,01 \frac{N}{937,67} (-0,180x^2 + 6,425x)) \cdot \\ \cdot (-0,180x^2 + 6,425x) - x - 2,711, \text{ якщо } d > 10 \end{cases} \quad (8)$$

де $f_6(x)$ – очікуваний операційний прибуток, тис. грн/га; x – змінні виробничі витрати на 1 га зібраної площі пшениці тис. грн; d – тривалість збиральної кампанії, днів; N – планова площа обмолоту пшениці одним зернозбиральним комбайном, га.

Графічна інтерпретація поведінки функції (8) свідчить про зниження максимум прибутку, а також оптимуму витрат, що гарантує його досягнення у разі надмірного зростання навантаження на зернозбиральний комбайн (рис. 2). Так, за умов коли на кожен зернозбиральний комбайн сільськогосподарського підприємства припадає по 300 га посівів пшениці, максимальний прибуток 4,2 тис. грн/га гарантує технологія зі змінними витратами 9,0 тис. грн га/га. Натомість вибір цієї технології при навантаженні 1200 га веде до збитку -2,7 тис. грн/га. За такого навантаження оптимальною є технологія зі змінними виробничими витратами 3,9 тис. грн/га, за якої фінансовий результат дорівнюватиме +0,4 тис. грн/га.

Отже, за умов обмолоту кожним зернозбиральним комбайном по 1200 га пшениці господарству доцільніше застосовуватиме технологію зі змінними витратами на одиницю посівів майже у шість разів меншими порівняно із технологією, що дозволяє досягти максимальної урожайності. Зрозуміло, що відмова від індустріальних технологій знижує ефективність використання ресурсного потенціалу агроформувань і тому логічним є нарощування інвестицій у технічну базу збиральних робіт. Але зважаючи на дію агробіологічних чинників окупність таких інвестицій має спадаючий характер.

А тому при визначенні оптимальної величини капітальних і поточних витрат модель (8) було трансформовано шляхом включення приросту амортизаційних відрахувань та інших постійних витрат, обумовлений капітальними вкладенням.



Залежність прибутку (тис грн/га) від виробничих витрат на 1 га посівів (тис. грн) при

- +++ – річному навантаженні на зернозбиральний комбайн 1200 га
- X X X – річному навантаженні на зернозбиральний комбайн 900 га
- ◆◆◆ – річному навантаженні на зернозбиральний комбайн 600 га
- – річному навантаженні на зернозбиральний комбайн 300 га
- X – виробничі витрати на 1 га площі, тис. грн
- Y – річне навантаження на зернозбиральний комбайн, га

Рис. 2. Вплив на економічну ефективність виробництва пшениці інтенсивності виробництва і умов використання наявної збиральної техніки сільськогосподарськими підприємствами України у 2020 р.

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Так, для обчислення приросту амортизаційних відрахувань середні витрати на придбання зернозбирального комбайна у звітному році – 4845,4 тис. грн було рівномірно розподілене на 12 років, рекомендованих компанією *John*

Deere у якості орієнтиру продуктивного використання комбайну цієї марки. Отримане значення – 403,8 тис. грн повинно бути розподілене на весь парк комбайнів та планове навантаження при збиранні пшениці. Наприклад, у разі збільшення парку комбайнів удвічі середній приріст на кожен комбайн становитиме 50% від 403,8 тис. грн, аналогічно у збільшенні парку у чотири рази частка купованих досягне трьох четвертих, а тому на кожен з комбайнів припадатиме 75% від 403,8 грн.

Зважаючи на це формула обчислення приросту амортизаційних відрахувань має вигляд:

$$A = \frac{403,8 \cdot n}{N}, \quad (9)$$

де n – частка знов придбаних зернозбиральних комбайнів у їх загальній кількості; N – річне навантаження на зернозбиральний комбайн, га.

Крім цього було формалізовано потенційне зростання постійних витрат за умов сплати відсотків за користування кредитом залученим для покриття витрат на придбання комбайну. Так, зважаючи на статистичні дані офіційного сайту НБУ сільськогосподарські товаровиробники у 2020 р. залучали довгострокові кредити на придбання техніки у середньому під 16%. Таким чином, за умов лінійного нарахування відсоткових платежів річна величина витрат на сплату процентів (I) дорівнюватиме:

$$I = \frac{4845,4 \cdot 0,16 \cdot n}{N} = \frac{775,3 \cdot n}{N} \quad (10)$$

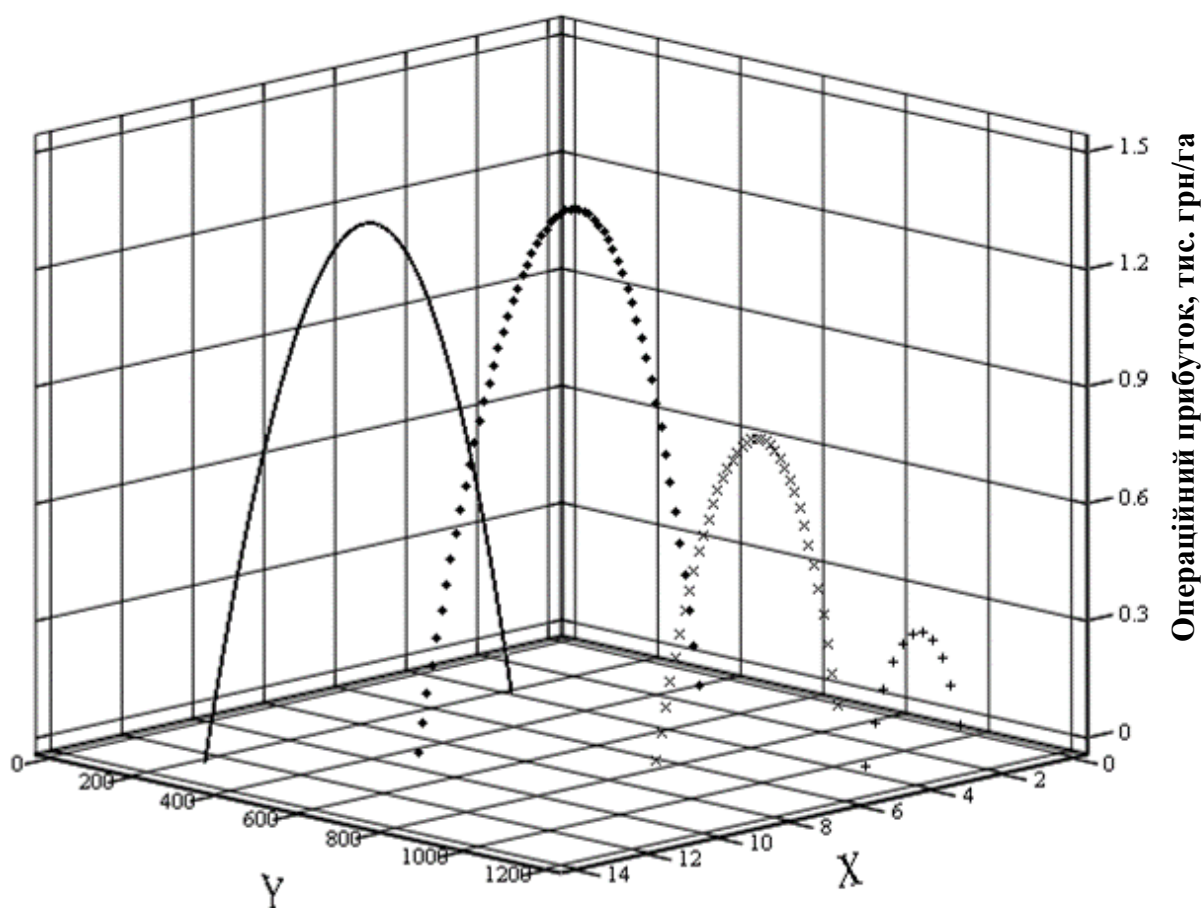
де n – частка знов придбаних зернозбиральних комбайнів у їх загальній кількості; N – річне навантаження на зернозбиральний комбайн, га.

Отже, з урахуванням потенційного приросту постійних витрат система рівнянь для визначення очікуваного прибутку має вигляд:

$$f_7(x, N) = \begin{cases} 0,3868 \cdot (-0,180x^2 + 6,425x) - x - 2,711, & \text{якщо } d \leq 10 \\ 0,3868 \cdot (1,1 - 0,01 \frac{N}{937,67} (-0,180x^2 + 6,425x)) \cdot \\ \cdot (-0,180x^2 + 6,425x) - x - 2,711 - \frac{(403,8 + 775,3) \cdot n}{N}, & \text{якщо } d > 10 \end{cases} \quad (11)$$

де $f_6(x)$ – очікуваний прибуток, тис. грн/га; x – змінні виробничі витрати на 1 га зібраної площі пшениці тис. грн; d – тривалість збиральної кампанії, днів; n – частка знов придбаних зернозбиральних комбайнів у їх загальній кількості; N – річне навантаження на зернозбиральний комбайн, га.

Графічна інтерпретація поведінки функції (11) свідчить про нелінійність змін окупності інвестиційних вкладень (рис 3).



Залежність прибутку (тис грн/га) від виробничих витрат на 1 га посівів (тис. грн) при

- +++ – річному навантаженні на зернозбиральний комбайн 1200 га
- × × × – річному навантаженні на зернозбиральний комбайн 900 га
- ◆ ◆ ◆ – річному навантаженні на зернозбиральний комбайн 600 га
- – річному навантаженні на зернозбиральний комбайн 300 га
- X – виробничі витрати на 1 га площі, тис. грн
- Y – річне навантаження на зернозбиральний комбайн, га

Рис. 3. Вплив на економічну ефективність виробництва пшениці інтенсивності виробництва і умов використання наявної та знов придбаної збиральної техніки сільськогосподарськими підприємствами України у 2020 р.

Джерело: Власні розрахунки автора за даними офіційного сайту Держаної служби статистики України <http://www.ukrstat.gov.ua/>

Зокрема, зниження навантаження з 1200 га до 900 га, за рахунок розширення парку збиральної техніки, обумовлює зростання постійних витрат на 0,3 тис. грн/га. Як наслідок стає можливим перехід до технології зі змінними витратами 5,0 тис грн з одночасним зростанням показника інтенсивності виробництва на 1,1 тис. грн/га (табл.1). У той же час наслідком скорочення тривалості збиральної компанії і зменшення непродуктивних витрат є

зростання урожайності до 23,1 тис. грн, що за стовідсоткової товарності виробництва еквівалентне приросту виручки на 1,9 тис. грн/га (23,1-18,3 x 0,3868). Як підсумок прибуток сільськогосподарського підприємства зростає на 0,4 тис. грн/га. Аналогічно за умов зменшення навантаження з 1200 до 600 га очікуваний приріст прибутку досягне 1,0 тис грн/га. У той же час за умов зменшення навантаження з 1200 до 300 га фінансовий результат зросте лише на 0,9 тис. грн, що вказує на зниження граничної ефективності витрат.

Таблиця 1 – Вплив навантаження на зернозбиральний комбайн John Deere S670 на оптимальну інтенсивність та ефективність виробництва зерна пшениці сільськогосподарськими підприємствами у 2020 р.

Показники	Навантаження на зернозбиральний комбайн, га			
	300	600	900	1200
Оптимальні витрати, тис. грн/га				
урожайний	17,8	17,8	17,8	17,8
прибутковий	9,0	6,7	5,0	3,9
Урожайність (ц/га) при витратах на рівні урожайного оптимального				
прибуткового оптимального	52,5	42,0	31,4	20,9
Фінансовий результат (тис. грн/га) при витратах на рівні урожайного оптимального, за умов використання виключно наявних зернозбиральних комбайнів	0,4	-4,5	-8,5	-12,6
інвестицій у оновлення парку зернозбиральних комбайнів	-1,4	-5,4	-9,5	-12,6
Фінансовий результат (тис. грн/га) при витратах на рівні прибуткового оптимального, за умов використання виключно наявних зернозбиральних комбайнів	4,2	2,3	1,1	0,4
інвестицій у оновлення парку зернозбиральних комбайнів	1,3	1,4	0,8	0,4
Середній постійні витрати, тис. грн/га	2,7	2,7	2,7	2,7
Інвестиції включені до постійних витрат поточного року	2,9	1,0	0,3	
у т.ч. числі амортизація	1,0	0,3	0,1	
витрати сплату відсотків	1,9	0,6	0,2	

Джерело: Власні розрахунки автора за даними офіційного сайту Держаної служби статистики України <http://www.ukrstat.gov.ua/>

Так, у разі збільшення парку, яке дозволяє зменшити навантаження з 900 до 600 га приріст постійних витрат складає 0,7 тис. грн/га, оптимального рівня

змінних витрат – 1,7 тис. грн/га, товарної продукції – 2,9 тис. грн/га (30,6-23,1 x 0,3868). Як наслідок гранична прибутковість витрат дорівнюватиме +20,8% $((2,9-(0,7+1,7))/(0,7+1,7)*100)$. Натомість, у разі зменшення навантаження з 600 до 300 га постійні і змінні витрати, а також товарна продукція збільшуються відповідно на 2,3, 1,9 та 2,9 тис. грн/га, а гранична збитковість витрат становить –30,9%. Отже, за незмінних умов (технологія виробництва, кон'юнктура цін на продукцію, виробничі ресурси, сільськогосподарська техніка, відсоткові ставки тощо) позначка 600 га посівів пшениці на один зернозбиральних комбайн *John Deere S670* є економічною межею доцільності інвестицій у реновацію парку зернозбиральний комбайн вітчизняних сільськогосподарських підприємств шляхом придбання аналогічного або подібних агрегатів.

Незадовільний технічний стан парку зернозбиральної техніки агротоваровиробників, його руйнація у наслідок бойових дій, неможливість використання частини сільськогосподарських угідь у наслідок мінування, з одного боку, необхідність збереження досягнутих показників валового виробництва зерна в Україні, з іншого, загострює проблему технічного забезпечення зернового виробництва, зокрема для збирання врожаю. За таких умов важливою є гармонізація співвідношення інвестицій на відтворення ресурсного потенціалу та операційних витрат під час його продуктивного використання.

Апробований методичний підхід дозволяє визначити оптимальний рівень інвестицій на реновацію парку зернозбиральних комбайнів з урахуванням особливостей організації виробництва пшениці, кон'юнктури цін на зерно, матеріальні ресурси, зернозбиральну техніку, фінансових чинників. Розрахунки засвідчили економічну недоцільність інвестування коштів у оновлення парку зернозбиральних комбайнів за рахунок зернозбиральних комбайн *John Deere S670* або їм подібних якщо на один агрегат припадає меншим 600 га посівів пшениці. Позитивною рисою апробованого підходу є можливість мінімізації непродуктивних витрат за рахунок врахування технологічних й ринкових чинників формування оптимально рівня витрат. Натомість впровадження інновацій обумовлює зміну форми виробничої функції, що має вплинути на динаміку граничної ефективності інвестицій, а тому перспективним є розширення підходів до моделювання та врахування ролі інновацій під час пошуку оптимального рівня поточних витрат та інвестицій.

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POSSIBILITIES OF DEVELOPING THE TRANSFER OF INNOVATIVE TECHNOLOGIES FOR THE POST-WAR RECONSTRUCTION OF UKRAINE

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Abstract. The article presents the peculiarities providing innovative development strategies through the involvement of technology transfer models. Prerequisites for the need to involve the transfer innovative technologies to obtain a higher level of competitiveness for Ukrainian business have been established. The relationship between innovation and technology transfer is elaborated. Models and directions of strategic management for Ukrainian business are presented, mechanisms of risk management and monitoring market situation in general are defined. Attention to the components, components and scenarios risk monitoring, and the main ones determined for today's situation and for the perspective of the coming years are presented, taking into account the conditions business entities during the state of war and subsequent post-war recovery. Procedures for creating a basis the further selection more relevant technology transfer model for the post-war recovery of Ukrainian business were developed.

Keywords: innovative development, transfer of innovative technologies, strategic management, strategy modeling, risk management, procedural approach.

The transfer of innovative technologies is one of the priority directions of the development of Ukrainian business for the perspective of wartime and the subsequent period of post-war recovery. Understanding the need to find and substantiate new models of strategic development to ensure the appropriate level of competitiveness of enterprises makes it necessary to fully study the substantive component of this process.

At the same time, it should be understood that the main prerequisite for ensuring the level of competitiveness for companies is the involvement of modern tools of innovative development.

Innovative development is extremely important for Ukrainian business for several reasons. First, improving competitiveness. Thanks to innovation, enterprises can develop and advance in the market, attract new customers, and increase their market share. Innovative development allows enterprises to create unique offers that ensure their competitiveness in comparison with other market participants. Secondly, increasing productivity. Innovation can help businesses improve productivity and production efficiency, which will lower costs and increase profits. Innovative technologies and processes can help reduce energy costs, increase production speed and improve product quality. Thirdly, the creation of new markets. Innovation allows businesses to create new markets and new products that may be unique and require specific skills. It can help businesses occupy new niches and develop in new directions. Fourth, raising the standard of living and a responsible society, creating a socially responsible business. Innovative development can contribute to raising the standard of living of the population, creating new jobs, and developing social infrastructure. This can have a positive impact on the economy and help reduce poverty. Fifth, improving the image of Ukrainian business using modern tools, with the aim of further attracting investments and international grant programs²⁰⁰.

Innovative business development and transfer of innovative technologies are closely related. The transfer of innovative technologies helps enterprises to attract new technologies, knowledge, and experience, which allows them to develop and create new products and services. This can positively affect the competitiveness of enterprises and increase their profits.

The transfer of innovative technologies can take place with the help of various forms, for example, by purchasing licenses for new technologies, partnerships with other companies, cooperation with universities and research institutes, or taking part in projects for the introduction of new technologies²⁰¹.

Innovative development is an important factor for increasing the competitiveness of Ukrainian companies and the national economy in general.

The most common models of innovative development for Ukrainian companies are presented on Figure 1. Models for strategic management of innovative business development include:

1. Internal development. This model involves using the company's internal resources, such as research and development, to develop new products, services and technologies. Companies can create their own research and development centers or cooperate with universities and research institutes.

²⁰⁰ Law of Ukraine "On scientific and scientific and technical activity" (2016).

²⁰¹ Kyzim M. O. et al. (2021). Theoretical and methodological approach to the determination of promising directions of scientific and scientific and technical activity in Ukraine, p. 23-36; Danko Y.I. et al. (2019). Competitiveness and price policy of Ukrainian agrarian enterprises for the production of organic product; Scientific and innovative activity of Ukraine 2020: Statistical collection (2021).

2. External development. This model involves collaboration with other companies, universities, research institutes or external consultants to develop new products and technologies. This model can provide access to new knowledge and technology, as well as reduce research and development costs.

3. Study of the market. This model involves analyzing the market and consumer needs to produce products and services that meet the needs of the market. This model can help ensure competitiveness in the market and increase sales.

4. Acceleration. This model involves working with incubators and accelerators that provide funding and mentoring for startups and other companies developing new technologies and products. This model can help increase the speed of development and bring the product to market.

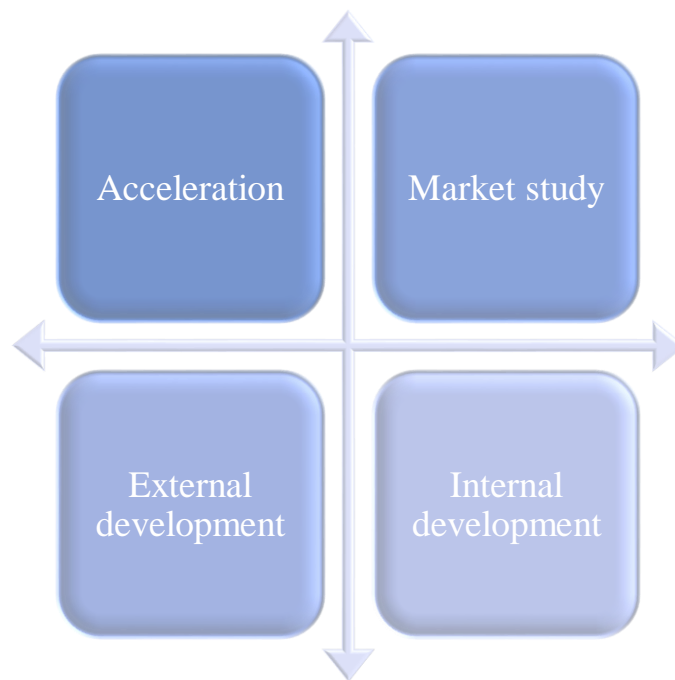


Fig. 1. Variations of innovative development models for business

Choosing an innovative development strategy for a business can be a difficult task that requires careful analysis of the market, consumer needs, competitors, and own capabilities²⁰². On Figure 2 shows the algorithm for choosing an innovative development strategy for business.

Consider individual positions in more detail.

1. Analysis of the market and consumers. Start with market and consumer research to find out consumer needs and wants, market trends, and potential competitors. Market research can be conducted independently or by contacting professional research companies.

²⁰² Olvinska Yu. O., Samotoyenkova O. V., Vitkovska K. V. (2021). Current state and trends of development of innovative activity in Ukraine, p. 64-71.

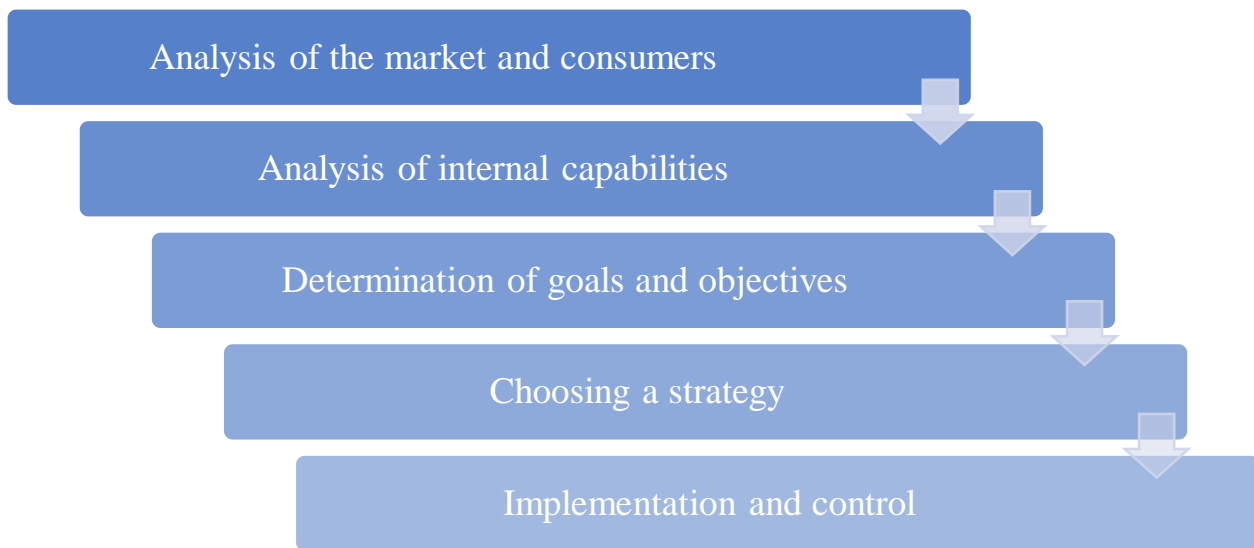


Fig. 2. Algorithm for choosing an innovative development strategy for business

2. Analysis of internal capabilities. Assess the company's own capabilities, such as the availability of technology, human resources, finance, and other resources that can be used to implement the innovation strategy.

3. Determination of goals and objectives. Formulate the specific goals and purpose of the innovation strategy, which should correspond to the needs of the market and the company's own capabilities.

4. Choosing a strategy. Based on the analysis of the market, internal capabilities, and definition of goals, choose the strategy that best suits the needs of the company. For example, if a company has a sufficient level of internal resources, internal development may be an effective strategy, while if the company has limited resources, external development may be more appropriate.

5. Implementation and control. Implement the chosen strategy, and the procedure for generating, implementing, implementing strategic management should include a full complex and analytical system of risk management²⁰³.

Innovative development can be associated with significant risks, as it requires the introduction of new products, services, and technologies to the market. Risk management is an important stage in the formation and implementation of an innovative strategy²⁰⁴. Below are the procedures that will help manage the generation and implementation of models, as well as manage risks when forming an innovative development strategy (Figure 3).

²⁰³ Orlenko O. M., Ivanenko I. K. (2021). Dynamics of innovative activity in Ukraine and ways of its development, p. 96-99; Kviatko T.M., Rudenko S.V., Mykolenko I.G. (2018). Strategic management conceptual principles of agricultural enterprises competitive behavior, p.48-53; Babko N., Kviatko T. (2020). Section 2. Financial and economic issues of society development in the turbulence conditions. Topical issues of society development in the turbulence conditions, p.138; Babko N.M. (2022). Marketynh yak protses upravlinnia kompaniieiu v umovakh konkurentsii.

²⁰⁴ Fiier O. et al. (2019). Risk managment in the sphere of state economic security provision using the example of professionsl liability insurance, p. 51-60.

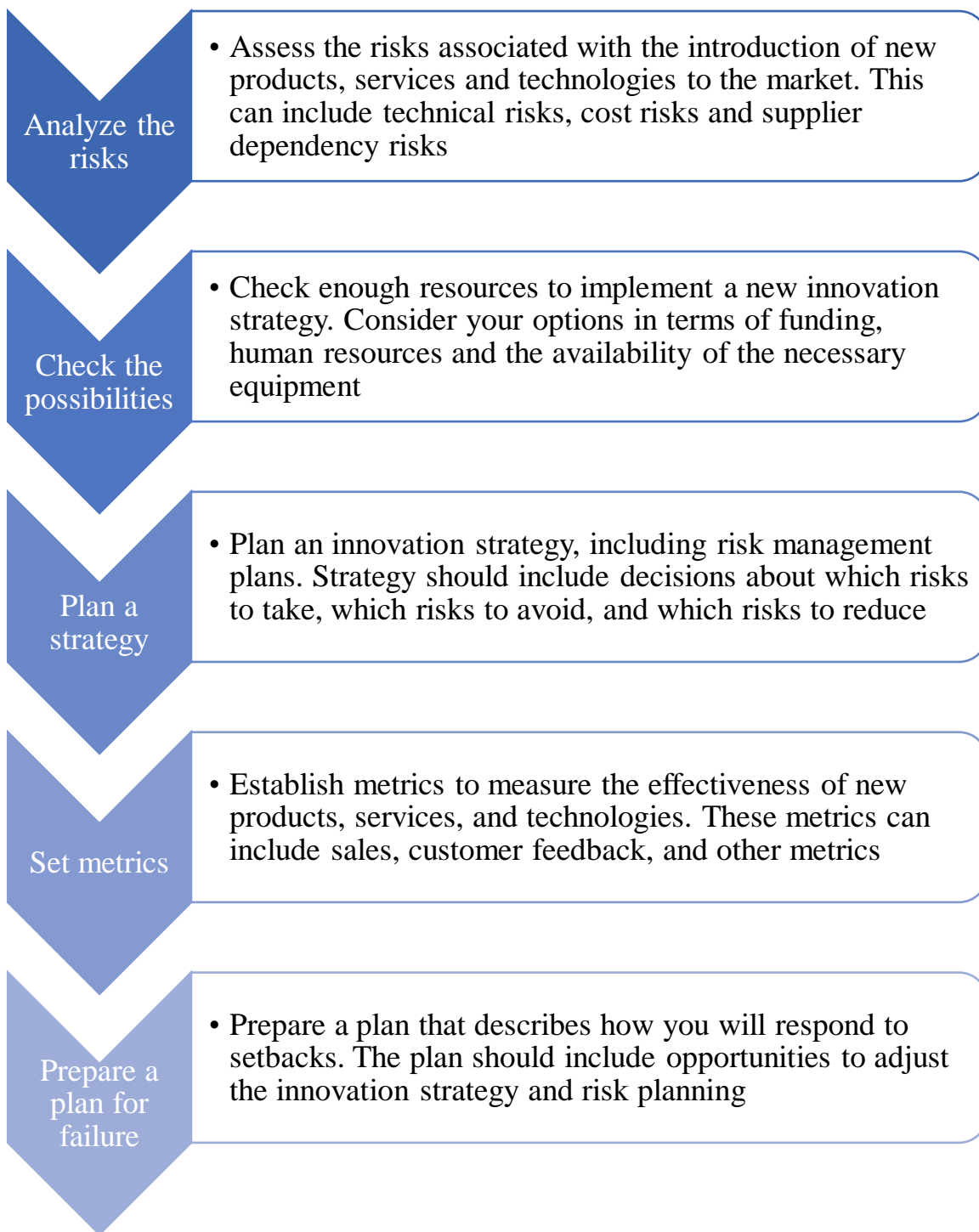


Fig. 3. Procedural solutions for integrated risk management

The final stage should be monitoring and risk assessment. In 2023, Ukrainian business should pay attention to the following areas of risk monitoring. Political risk. Ukraine remains a country with an unstable political situation, so business leaders should focus on monitoring changes in the country's political course, as well as relations with key partners, with Russia and the EU. Economic risk. Business must consider the impact of the economic situation on business activity, in particular on the inflation rate, exchange rate, interest rates and other economic indicators. Security

risk. Ukraine is a country with a high level of criminal activity and terrorist threats, so businesses must take measures to protect their employees and assets.

Reputational risk. Openness and transparency are becoming increasingly important in today's business environment. A business must closely monitor its reputation and take measures to ensure high ethics and social responsibility. Cyber security risk. Cybercrime protection is becoming increasingly important for businesses. Businesses must take measures to protect their information systems and the personal data of their customers. The risk of climate change. Climate change can have a major impact on business activities, particularly agriculture and transportation technologies.

Innovative business development involves the constant search for new opportunities to improve products, processes and services offered by the company. This is possible using new technologies and knowledge, which is the result of the transfer of innovative technologies. At the same time, it is an opportunity to solve many managerial, informational, economic, environmental, social, and other problems that are relevant in the modern world, and this can become an additional advantage for business in the eyes of consumers and investors²⁰⁵.

Therefore, the transfer of innovative technologies and innovative business development are interrelated and can help companies improve their competitiveness, develop, and create new opportunities for growth.

The transfer of innovative technologies is the process of transferring new technologies from one organization, industry, or country to another to promote innovative development and improve competitiveness. This process may involve the transfer of knowledge, skills, technical documentation, materials, equipment, or software. The transfer can be made through technology licensing, franchising, joint development and production, international cooperation, etc. The main objective of the transfer of innovative technologies is to ensure the efficient use of resources and improve productivity by providing access to the latest technologies and knowledge. This can provide incentives for innovation and development in industries and regions where these technologies have not previously been used or were not available.

The transfer of innovative technologies is an important tool for ensuring economic growth and development of the country, as well as for improving competitiveness in the international market. Technology transfer is extremely important for the innovative development of Ukrainian business, as it can help increase production efficiency, improve the quality of products and services, reduce costs and increase competitiveness in the market. When transferring technologies from countries where the latest technologies are developed and successfully used, Ukrainian companies can gain access to new knowledge and practices that will allow them to improve their production processes and products. In addition, technological transfer can stimulate the development of research institutes and increase their

²⁰⁵ Ukrinform. Multimedia platform of foreign language of Ukraine (2022); Global Innovation Index 2022: WIPO; International Monetary Fund; United Nations Conference on Trade and Development: Transfer of technology; Public Data. Data from the World Bank.

competitiveness at the international level. Technology transfer can also have social effects, such as raising living standards and employment levels, if new technologies allow businesses to increase output and create new jobs²⁰⁶.

However, technology transfer is not a simple process, and for its successful implementation many factors must be considered, such as the cultural, legal and economic characteristics of the participating countries, technical capabilities and economic potential of enterprises. In addition, the success of technology transfer depends on how well-trained specialists are who will be involved in the introduction of new technologies and ensure their further implementation.

Ukraine can use the following models of transfer of innovative technologies for the future. The main directions are presented on Figure 4.

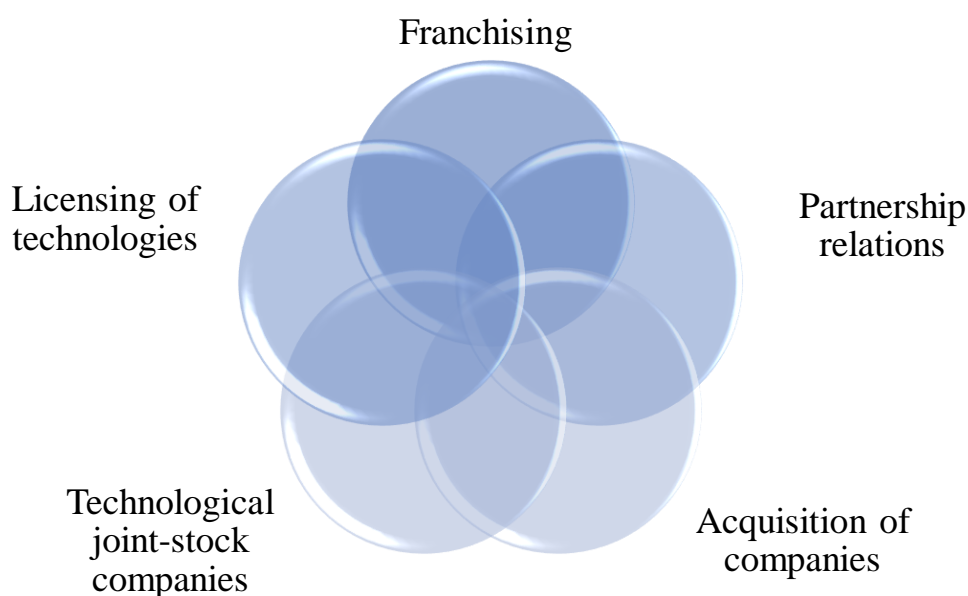


Fig. 4. Models and strategic solutions for the transfer of innovative technologies

Analyze the main content of the presented models and the possibilities of their use for the real sector.

Licensing of technologies. The model involves obtaining permission to use technology developed by another enterprise or organization. The license agreement allows enterprises to use the technology under certain conditions and for a certain period).

Partnership relations. This model provides for the creation of a partnership between Ukrainian and foreign enterprises for the purpose of exchanging

²⁰⁶ Public Data. Data from the World Bank. <https://cutt.ly/K2VX1AR>; Rothwell R. (2020). Towards the fifth-generation process, p. 7-31; World Intellectual Property Organization (2022).

technological knowledge and experience. This can be mutually beneficial for both parties as they can gain access to new markets, technologies, and resources²⁰⁷.

Franchising. This model involves the transfer of rights to use the brand and business model developed by another company for a certain period. Ukrainian enterprises can use this method to launch a new business based on an already successful model.

Technological joint-stock companies. This model involves the creation of a joint company between Ukrainian and foreign partners for the joint development and commercialization of new technologies. Each partner can contribute in the form of cash or technological equipment.

Acquisition of companies. This model involves the acquisition of a company that has valuable technologies and intellectual property.

The involvement of strategic management in the transfer of innovative technologies is important for business for several reasons:

- obtaining a competitive advantage – technological transfer can help the enterprise to gain a competitive advantage in the market, in particular, by improving productivity, product quality and reducing production times;

- increasing the efficiency of business processes – technologies can help the enterprise to improve the efficiency of business processes and reduce production costs, which positively affects profitability;

- development of new products and services – technologies can help the enterprise to create new products and services, which will ensure business development and increase profits;

- prevention of technology obsolescence – the involvement of innovative technologies can help the enterprise prevent the obsolescence of its technologies and the costs of their modernization;

- expanding the geography of business – innovative technologies can help the enterprise to expand the geography of its activities and enter new markets;

- increasing the level of competence of employees – the involvement of new technologies can help increase the level of competence of employees and ensure their professional growth²⁰⁸.

Therefore, the involvement of strategic management for the transfer of innovative technologies is important for business, especially during the period of martial law in our country and post-war recovery. Rebuilding Ukrainian businesses after the war can be a challenging task, as even if the physical destroyed buildings are rebuilt, companies may still struggle to maintain and increase profits without the right

²⁰⁷ Fiier O. et al. (2019). Risk managment in the sphere of state economic security provision using the example of professionsl liability insurance, p. 51-60.

²⁰⁸ United Nations Conference on Trade and Development: Transfer of technology; Public Data. Data from the World Bank; Rothwell R. (2020). Towards the fifth-generation process, p.7-31; World Intellectual Property Organization/WIPO (2022).

technology and resources. Therefore, the use of the transfer of innovative technologies can be a useful solution to support the recovery of Ukrainian business. Technology transfer is the process of transferring technology, knowledge, skills, and experience from one company or country to another, which helps to increase the efficiency and productivity of companies. This process may include transfer of knowledge and skills, development of new technologies and other innovative solutions. To ensure the successful transfer of technologies for the post-war recovery of Ukrainian business, several steps must be taken. First, it is necessary to conduct a detailed analysis of the needs of Ukrainian business to determine which technologies and innovative solutions can be useful for each industry. The next step is to find potential partners who can provide the transfer of necessary technologies and innovative solutions. These can be international organizations, scientific institutes, large companies, or other partners. After determining the needs and finding partners, technologies should be identified, and models of their involvement should be created to ensure innovative business development in the future.

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SUSTAINABLE DEVELOPMENT AS A CONCEPTUAL BASIS FOR THE RESTORATION OF TERRITORIES IN THE POST-WAR ECONOMY OF UKRAINE

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Abstract. The restoration of Ukraine is not a return to the pre-war state, but full development and integration into the European community based on sustainable development and considering the European Green course. Therefore, the purpose of the article is to develop conceptual provisions for the restoration of territories in the post-war economy of Ukraine based on sustainable development. The theoretical basis was the scientific works of domestic and foreign authors, certain provisions of the regulatory framework- legal acts such as the law of Ukraine "on amendments to certain legislative acts of Ukraine concerning the principles of State Regional Policy and the policy of restoration of Regions and territories", the resolution of the Cabinet of Ministers of Ukraine "on approval of the procedure for development, public discussion, coordination of programs for the comprehensive restoration of the region, the territory of the territorial community (it's part) and amendments to them", the Order of the Cabinet of ministers of Ukraine "issues of data collection for monitoring the implementation of Sustainable Development Goals". The article proposes the concept of conversion of restoration territories, as well as develops sets of indicators. The author's approach expands the theoretical and methodological basis and allows you to distribute regions considering the degree of compliance of the level of human life expectancy, the level of well-being and development of each member of society achieved by the national economy at a certain point in time.

Keywords: sustainable development, restoration of territories, post-war economy, assessment of territory restoration

The full-scale invasion of Russia has adjusted the social, economic, and environmental development of the regions of Ukraine. Since 2014, issues of post-war development have been constantly discussed in the public space. During 2022, various opinions are voiced regarding the volume of infrastructure damage, the estimated cost of their restoration and the directions and timing of the restoration of territories are outlined. Scientists are looking for estimated indicators of the result and effectiveness of recovery. In particular, of the distance of the economy of the National Academy of Sciences of Ukraine, the directions and deadlines for

implementation have already been outlined, which are fixed in the recovery strategy, including the restoration of the pre-war level of quality of life of the population (until 2027); achieving the main parameters of Eastern European countries (until 2032). Scientists of the Institute of economic and legal research of the National Academy of Sciences of Ukraine, within the framework of research 0122U002121 "development of Priority Development Territories in the context of armed conflict: assessment of results and efficiency", are working on creating a methodology for assessing the effectiveness of restoring affected territories²⁰⁹.

The key conceptual provisions presented for consideration of the results of the study on the restoration of territories in the post-war economy of Ukraine are based on the proposals contained in the "methodology for assessing losses and losses from armed conflict of the Vienna Institute for International Economic Research" (WIIW)²¹⁰, "Methodology for measuring regional human development" of the Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine with the participation of specialists from the state statistics service of Ukraine²¹¹, "draft plan for the restoration of Ukraine" of the National Council for restoration, "essays on the restoration of Ukraine" of the Center for Economic Policy Research (CEPR)²¹².

The conclusions were formed considering various opinions expressed by scientists in the framework of the expert discussion "strategy of post-war reconstruction of Ukraine" of the National Institute for Strategic Studies²¹³, the overwhelming majority of which believe that the post-war recovery of the Ukrainian economy should be based on the fundamental foundations of sustainable development, as well as considering further integration processes into European Society. The same position was expressed by more than 20 public organizations and a coalition that unites several regional communities. In particular, the public community has developed and published the principles on which the recovery of the Ukrainian economy should be based²¹⁴.

The conceptual basis for the restoration of territories in the post-war economy of Ukraine is based on the current Ukrainian legislation and does not contradict it. In particular, the basis of scientific and methodological proposals of this study was: the law of Ukraine "on amendments to certain legislative acts of Ukraine concerning the principles of State Regional Policy and the policy of restoration of Regions and

²⁰⁹ Martynovych N. (2022). A set of indicators for evaluating socio-economic results and the effectiveness of the reconstruction of territories destroyed by war, p.57-71.

²¹⁰ Astrov V. et al. (2022). Russia's Invasion of Ukraine: Assessment of the Humanitarian, Economic and Financial Impact in the Short and Medium Term.

²¹¹ Methodology for measuring regional human development (2012). Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine.

²¹² Draft Plan for the Recovery of Ukraine 2022 (2022). National Council for Recovery of Ukraine from the Consequences of War.

²¹³ Expert discussion "Strategy of post-war reconstruction of Ukraine" (2022). National Institute for Strategic Studies.

²¹⁴ Principles of green restoration of Ukraine. (2022). Eco-politics.

territories"²¹⁵, the resolution of the Cabinet of Ministers of Ukraine "on approval of the procedure for developing, conducting public discussion, coordinating programs for the comprehensive restoration of the region, the territory of the territorial community (it's part) and making changes to them", Decree of the Cabinet of Ministers of Ukraine "issues of data collection for monitoring"²¹⁶ the implementation of the Sustainable Development Goals"²¹⁷ and others. Relying on all the above, we can state the expediency, timeliness, and relevance of the chosen research area.

It is worth noting that the search for ways to restore territories in the post-war economy of Ukraine is complex and is a complex process since it is necessary to create an assessment system that would allow taking into account the full regional aspects and be consistent with the Sustainable Development Goals, as well as contain an optimally sufficient number of indicators, the assessment of which would contribute to the formulation of objective conclusions and establish the reason for (not) effective activities and determine the vectors of future development. Consequently, the results presented in the article were formulated based on generalizing a solid theoretical, methodological, and applied basis for the regional economy, demography, sustainable development, investment, and innovation activities.

The main judgments and conclusions of the article regarding the prospects for post-war socio-economic development of the regions of Ukraine were based on the generalization of foreign experience, which is highlighted in the works of T. Veblen, J. R. R. Tolkien. Hodson, J. R. R. Tolkien O'Donnell and P. Schmitter, R. Keohane and J. R. R. Tolkien. Naya, A. Steinoma, O. Young. The author's vision of methodological approaches to economic growth is based on the views of representatives of fundamental concepts: classical P. Rosenstein-Rodan, R. Nurks, X. Leibenstein, A. Hirschman, G. Singer, neoclassical A. Marshall, A. Pigou, Keynesian J. M. Keynes, monetarist K. Brunner, G. Simons, M. Friedman, I. Fischer, as well as the modern concept of Sustainable Development, which is highlighted in the research of K. Revortab P. Erber, V. Pearce, E. Barbier, A. Markandia. Works of F. Kotler, B. Hendersen²¹⁸, O. Chukurna, L. Sivolap, T. Nestorenko²¹⁹,

²¹⁵ On amendments to some legislative acts of Ukraine regarding the principles of state regional policy and the policy of restoration of regions and territories: Law of Ukraine dated 07.09.2022.

²¹⁶ On the approval of the Procedure for the development, public discussion, approval of programs for the comprehensive restoration of the region, the territory of the territorial community (its parts) and making changes to them. (2022). Resolution of the Cabinet of Ministers of Ukraine dated October 14, 2022.

²¹⁷ List of national indicators of sustainable development goals (2022): order of the Cabinet of Ministers of Ukraine of 21.08.2019 No. 686-p "Issues of data collection for monitoring the implementation of sustainable development goals", for which the calculation was made according to the methodology of the Economic and Social Commission for Asia and the Pacific Ocean (UNESCAP) in 2021.

²¹⁸ Henderson B. D. (2008). Product portfolio. BCG Review: digest.

²¹⁹ Chukurna O. P., Syvolap L. A., Nestorenko T. P. (2021). Economic mechanism of risk assessment of marketing strategy implementation, p.102-109.

Gavrylenko N., Grishchenko O., Kozitskaya N.²²⁰ allowed us to form the concept of territory conversion.

Despite the comprehensive interest of scientists, practitioners, relevant ministries, and state and local authorities, the question of both the procedure, assessment scales and their interpretation, and a set of assessment indicators remains open, given that the purpose of the article is to develop conceptual provisions for the restoration of territories in the post-war economy of Ukraine based on sustainable development.

The information base of the study was normative legal acts of Ukraine and the countries of the European Union, official reports of state and regional authorities, and research of domestic and foreign scientists in terms of rationing the post-war development of territories. During the research, the following scientific methods were used: general scientific knowledge (when establishing the essence of the category "restoration of territories of Ukraine"); logical analysis, induction, and deduction (when conceptualizing the conversion of territories with different functional purposes); systematization (when forming a set of indicators).

«From war to peace: problems and prospects of post-war reconstruction of Ukraine».

Celebrating the 31st anniversary of independence, Ukrainians should understand that the country will not be the same after the end of the war. The topic of power and society should already think about what the state should be like shortly. Whether it is a successful European country or a country with a dying economy that has not recovered from the war. We believe that the main exam for choosing the future of Ukrainians will be taken after the war. Now society and the authorities are maximally mobilized and united in achieving victory over the enemy. However, the existing socio-economic contradictions have not disappeared anywhere²²¹.

According to the authors, the key problems of post-war Ukraine will be reduced to the following: on the one hand, after the victory, society will demand from the authorities not only jobs and infrastructure restoration but also transparent mechanisms for using both states and attracting funds from other countries. This will also be required by investors and funds that will assist. On the other hand, Ukrainians must build a completely new economic model that includes more complex development systems than just commodity exports, as was the case before the full-scale invasion. This model must provide for the creation of a sufficient number of high-paying jobs, and production, being eco-friendly, focuses on creating added value, which in turn will contribute to improving the quality of life of the population.

Considering that in the work, the restoration of the territories of Ukraine is understood not so much as a return to the pre-war state, but as full development and integration into the European community based on sustainable development and considering the European Green course, which is also the key to fulfilling the

²²⁰ Gavrylenko N., Hryshchenko O., Kozytka N. (2022). The influence of digital transformations on the content of fiscal administration.

²²¹ Citizens' assessment of the situation in the country, trust in social institutions, political and ideological orientations of Ukrainian citizens in the conditions of Russian aggression (2022).

Copenhagen criteria for joining the EU. Consequently, sustainable development forms the conceptual basis for the restoration of territories in the post-war economy of Ukraine.

«From words to action: conversion concept, a new division of territories according to their functional purpose».

To solve these problems the creation of a transparent mechanism for using state and attracted funds for the development of Ukraine, it is necessary to develop a methodology for assessing the effectiveness of restoring territories, considering sustainable development.

The latter, in turn, provides for the formation of separate sets of indicators depending on the functional type of territories, which are enshrined in the law of Ukraine "on amendments to certain legislative acts of Ukraine concerning the principles of State Regional Policy and the policy of restoring regions and territories"²²². According to Article 112 of this law, "documents of state regional policy are developed using a territorial-oriented and security-oriented approach, which provides for the definition of functional types of territories."

For planning restoration and stimulating the development of regions and territories, as well as to introduce special mechanisms and tools by executive authorities and local self-government bodies, the following functional types of territories (hereinafter referred to as FTT) are defined: 1) restoration territories; 2) regional growth poles; 3) territories with special conditions for development; 4) territories of Sustainable Development". Relying on the specified regulatory legal act, namely the essence of territories, it is necessary to determine the goal and outline the indicators (Table 1).

As you can see, depending on the type of territory, the set of indicators differs. In addition, it should be noted that depending on the time and efforts of investors, the state, business, and ordinary citizens, the values of social, economic, and environmental results will also change, thereby causing conversion (from Latin *conversio* – transformation) of territories (Figure 1).

So, for example, thanks to the complex actions of these entities, the territories of restoration can pass into the category of regional growth poles, the latter after some time can transform into territories of sustainable development or territories with special conditions for development. The basis of the territory conversion concept shown in (Figure 1) makes up the BCG Matrix proposed in 1968 by the founder of the Boston Consulting Group Bruce D. Hendersen, which is a tool for Strategic Analysis and planning.

According to the theory of marketing, the construction of the BCG matrix is based on two concepts:

- 1) the life cycle,
- 2) the scale effect of production, which are essentially an imperative of the typologization of territories.

²²² On amendments to some legislative acts of Ukraine regarding the principles of state regional policy and the policy of restoration of regions and territories: Law of Ukraine dated 07.09.2022, No. 5323

Table 1 – Set of indicators for assessing socio-economic results and efficiency of territory restoration in the post-war economy of Ukraine

Name	Characteristics
1. Complex «territories of restoration»	Objective: to assess the results of restoration of the destruction of transport, energy, municipal, industrial infrastructure, and housing facilities due to the conduct of military operations, as well as to determine the migration growth to return to the basic level (at the beginning of the war). The structure of the complex consists of social and economic results, which are reflected based on tracking the dynamics of population movement (population return) and the pace of restoration of infrastructure facilities to the level of February 2022.
2. Complex of «regional growth poles»	Objective: to evaluate the result and effectiveness of the development of territories with significantly better geographical, demographic, and socio-economic development conditions, to stimulate growth of adjacent territories, regions, and/or the state. The complex consists of economic growth, social development, and environmental status and includes 9 criteria, 24 rates, and 21 indicators:
3. Complex of «territories with special development conditions»	Objective: to evaluate the result and effectiveness of socioeconomic development of territories where unfavorable conditions have developed due to the existence of natural, demographic, international, security, and other objective restrictions on the use of potential to give an impetus to equalize the asymmetry and change the vector towards intensive development. The complex consists of economic growth and Social Development, which is evaluated according to 8 criteria, 55 rates, and 43 indicators.
4. Complex of «territories of sustainable development»	Objective: to evaluate the result and effectiveness of the development of territories capable of balanced development in the economic, social, and environmental spheres with existing socio-economic potential to ensure the existence of future generations. The complex is formed by selecting a limited number of indicators: 5 in the economic and institutional component and six each in the social and environmental component, which offer from one to eight rates and indicators.

Source: compiled by the authors based on²²³

This approach allows qualitative indicators to be reflected in quantitative terms, creating a reasonable basis for differentiating Territories depending on priorities, which in turn provides a substantive solution to urgent regional problems of post-war reconstruction. Because the regional system operates under the constant influence of various factors that cause both positive and negative consequences (one of these is war), The Matrix method allows you to estimate many parameters

²²³ Martynovych N. (2022). A set of indicators for evaluating socio-economic results and the effectiveness of the reconstruction of territories destroyed by war, p.57-71.

(variables). The relevance of using the matrix approach is also due to the possibility of creating databases because all information is processed and stored in matrix form.

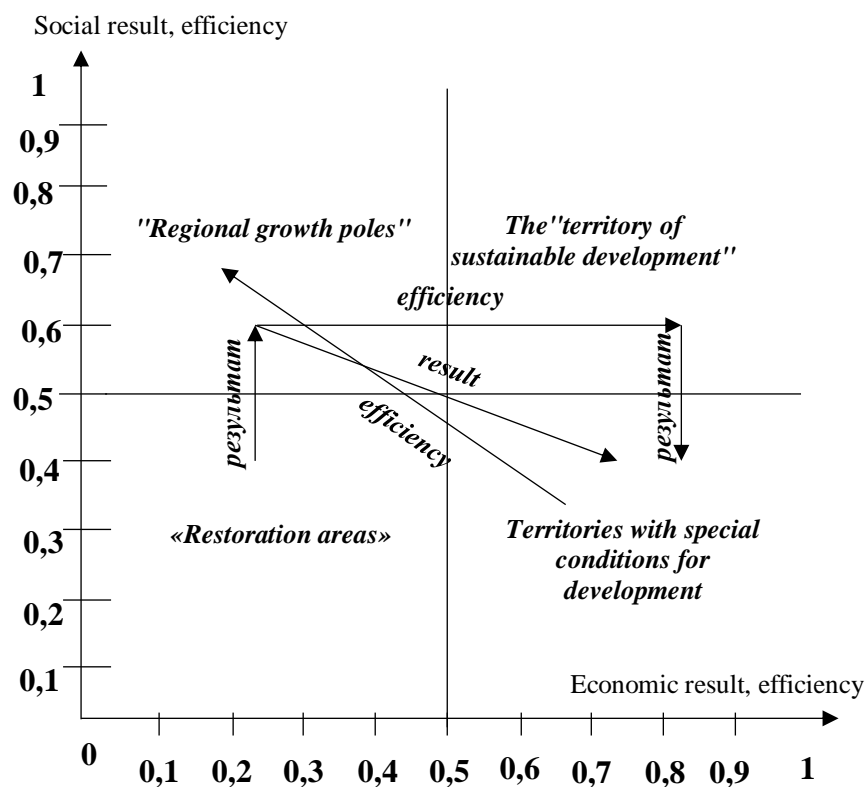


Fig. 1. Territory conversion concept

Source: compiled by the authors based on ^{224 225 226}

It is worth noting that the Matrix method is universal – this explains its popularity in EU countries. Thus, within the framework of the regional policy of the EU countries, based on the Matrix method, territories are typologized and separated by development periods by highlighting the stages of the life cycle of territories in the first approximation. This typologization is based on 2 indicators – output per capita and population density of the territory. Within the framework of the author's proposal, when dividing territories by functional purpose, we suggest using such indicators as:

1) GDP at purchasing power parity per capita (real GDP), which is a measure of output per capita in dollars of constant purchasing power when determining which the impact of inflationary processes is leveled, (x-axis);

2) The Human Development Index (HDI) is an integral indicator used in interstate comparison and measurement of the standard of living, literacy, education, and longevity, as the main social characteristics of the studied territory (Y – axis).

²²⁴ Chukurna O. P., Syvolap L. A., Nestorenko T. P. (2021). Economic mechanism of risk assessment of marketing strategy implementation, p. 102-109.

²²⁵ Gavrylenko N., Hryshchenko O., Kozytka N. (2022). The influence of digital transformations on the content of fiscal administration.

²²⁶ Henderson B.D. (2008): Product portfolio. BCG Review: digest, p. 7-8.

From a practical point of view, based on the Matrix method, it is possible to determine the rating of regions both by individual indicators and by a set of indicators, to conduct diagnostics of socio-economic development, to assess the degree of socio-economic efficiency of restoring destroyed territories through war, to build a set of strategic maps for managing socio-economic efficiency of restoring destroyed territories through war, which in turn allow modeling (correlation and regression model) the state of the territory for each set of indicators.

Thus, based on the generalization of the theoretical and methodological basis, the scientific problem of the conceptual foundations of the restoration of territories in the post-war economy of Ukraine is solved. This made it possible to form several conclusions and proposals, the main ones of which are as follows:

1) it is determined that the post-war period will be the next challenge for Ukrainians, which will manifest itself in public dissatisfaction due to the lack of transparent mechanisms for using both states and attracting funds from other countries. The necessity of building a fundamentally new economic model based on the rejection of raw material exports is outlined. It is proved that sustainable development forms the conceptual basis for the restoration of territories in the post-war economy of Ukraine.

2) a set of indicators for assessing the socio-economic results and efficiency of territory restoration in the post-war economy of Ukraine has been formed, which is based on the proposals of the Center for Economic Policy Research (CEPR) (phased recovery), a list of national indicators of Sustainable Development Goals, methodological recommendations for calculating the resource intensity of gross domestic product at the level of the national economy for the main groups of resources, labor productivity, as well as the differentiation of territories (functional types) fixed in the updated state regional policy.

3) Conceptualized is the transformation of territories that occurs due to complex actions of subjects, the regional system, ensuring the transition from one state to another (from the territory of restoration to the category of regional growth poles, the latter after some time can transform into territories of sustainable development, etc.). The practical value of the Matrix method is proved, the essence of which is the possibility of determining the rating of regions, both by individual indicators and by a set of indicators, conducting diagnostics of socio-economic development, determining the degree of socio-economic efficiency of restoring destroyed territories through war, building a set of strategic maps for managing socio-economic efficiency of restoring destroyed territories through war, which in turn allow modeling (correlation and regression model) the state of the territory for each set of indicators.

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DIRECTIONS OF DEVELOPMENT OF FINANCIAL INNOVATIONS IN UKRAINE

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Abstract. As a result of the research, it was found that today there are several characteristic general directions of development of modern financial innovations in Ukraine: securitization; liberalization of financial markets; globalization of financial markets; digitization. All these directions have internal interrelationships, and in the process of development of one of them in the national economy, the development of the others is necessarily taking place.

The experience of Poland regarding the introduction and spread of innovations in the agricultural sector has been analyzed, the main common problems for agrarian financial innovations of Ukraine and Poland have been identified. Barriers to the development of financial innovations in the agricultural economy of Ukraine have been researched and identified, as well as their own comments and suggestions regarding the development of financial innovations in the agricultural sector have been formulated.

Keywords: financial innovations, securitization, liberalization of financial markets, globalization of financial markets, digitalization, financial technologies.

Financial innovations are the main driving force of global economic development and a key factor in the improvement and development of the financial systems of the developed countries of the world. In recent years, Ukraine has come very close to economic and financial integration with European countries, and therefore the development of financial innovations is taking place at an accelerated pace. And although the legislative framework is not fully formed, new financial instruments, methods and processes are already being introduced into the domestic economy, which determines the relevance of scientific research on modern directions of development of financial innovations in Ukraine in general and in its agricultural sector.

In recent years, financial innovations have been actively studied in the works of domestic and foreign scientists. Among them, we can single out the scientific publications of the following scientists: R.M. Levich, E. Harold Corrigan,

Ch. S. Sanford, J. George, J. Votya, H.P. Behr, H. Defey, M. Solivoda, A. Abalkina, H.M. Azarenkova, O. Borysiuk, T. Zadorozhna, R. Leshchenko, O.S. Novak, I.M. Parasiy-Vergunenko, N.M. Panteleeva, O.M. Petruk, O. Pomazun, V. Trokhymenko. However, in economic theory, there is still a lack of fundamental research that would give an assessment of the development of certain areas of financial innovation in the field of the domestic economy.

The purpose of the study is the process of development of financial innovations the key directions of such development in Ukraine.

The development of financial innovations, originating from the 1960s, has now spread to all developed countries and is provoking serious changes in the financial picture of the world. The variety of forms of modern financial innovations determines the wide differentiation of the integration processes associated with them in the financial and banking systems of different countries. In the same way, the speed of introduction of certain financial innovations into the national economies of states also differs significantly. All this complicates the scientific substantiation of the modern development of financial innovations and requires thorough scientific research of precisely those areas of development of financial innovations that are characteristic of Ukraine, and which are at one or another stage of introduction into the domestic financial system.

First of all, it should be noted that the concept of "innovation" is defined by us as a creative process of creating new consumer values, as well as the result of such a process in the form of new types of products, goods, works, services, technologies, marketing ideas, financial products and services, technical solutions, other ideas, the application of which requires users to change the usual stereotypes of activity, skills.

In a broader sense, innovation is progressive technical-technological, socio-economic changes, innovations in financial, research and other spheres, the emergence of new methods of production, types of products and services, the development of new sales markets, any improvement that provides cost savings or creates conditions for such savings²²⁷.

To understand the state of innovation development in Ukraine, we will analyze the number of innovatively active enterprises by economic sector and the dynamics of their number for 2016-2020.

The development of innovative activity in Ukraine has decreased in recent years. The number of innovatively active enterprises decreased in all sectors of the economy in 2018-2020. The number of innovatively active industrial enterprises in 2018-2020 decreased by 2.6 times, compared to 2016-2018, and their share in the total number of industrial enterprises decreased from 29.5% to 12.9%. In the processing industry, the situation is similar: the number of innovatively active enterprises decreased by 2.46 times, and their share decreased by 18.7 percentage points. But an even stronger reduction in innovation affected enterprises of financial and insurance activities: their number decreased from 222 to 12, and in percentage terms – by 31.8 percentage points.

²²⁷ Parasiy-Vergunenko I. M. (2015). Organizational and methodological aspects of the analysis of innovative development of enterprises, p.181-186.

Therefore, it can be concluded that the innovative activity of enterprises has decreased in all sectors of the economy. However, in our opinion, the question here is also in the methodology by which it is determined what exactly falls under the concept of "innovation". Methodological explanations to the Statistical Yearbook of Ukraine for 2020 give us the following definition: innovations – newly created (applied) and (or) improved competitive technologies, products, or services, as well as organizational and technical solutions of a production, administrative, commercial or other nature, which significantly improve the structure and quality of production and (or) the social sphere²²⁸.

From the given definition, it is not entirely clear whether financial innovations are included in the concept of "innovation" or not. Therefore, we cannot know for sure whether the reflected banks and other financial institutions. Most likely, statistical data do not consider, for example, companies engaged in financial technologies (so-called fintech companies), startups (especially at the initial stage of their development) and/or do not cover all the multifaceted aspects of their varieties. In our opinion, the need to collect and publish statistical data on financial innovations in Ukraine has increased dramatically in recent years.

Financial innovation is the development of new financial products and market instruments. In our opinion, one of the most complete and detailed definitions of the concept of "financial innovations", with which we fully agree, is given in his works by N.M. Panteleeva, who understands financial innovation as "the result of a creative search for a new approach to solving a problem in the financial industry, which is implemented through the creation and diffusion of new financial products, services, tools, technologies, processes and organizational forms, oriented on effective management of financial resources and risks, ensuring financial stability and competitiveness in conditions of variability, uncertainty and information asymmetry of the economic environment"²²⁹.

Considering the details of the process of integration of financial innovations into the national economy, which are quite strongly differentiated in different countries, and having studied the scientific literature on these issues we can nevertheless single out several characteristic general directions of development of modern financial innovations in Ukraine:

- 1) securitization;
- 2) liberalization of financial markets;
- 3) globalization of financial markets;
- 4) digitization.

All these directions have internal interrelationships, and in the process of development of one of them in the national economy, the development of the others is necessarily taking place. Let's consider each direction in more detail.

1) securitization – in a broad sense, this is the replacement of traditional forms of financing, mainly bank lending, with financing based on the issue of securities. In

²²⁸ Statistical Yearbook of Ukraine for 2020 (2021). State Statistics Service of Ukraine.

²²⁹ Panteleeva N.M. (2014). Financial innovations in the banking system: theory, methodology, practice.

a narrow sense, securitization is an innovative financing technique by transforming part of the financial assets of a business entity into highly liquid instruments of the capital market²³⁰. It is a more attractive financial instrument than bank loans.

The mechanism of asset securitization is as follows. The originator company (from the English originate – to create, generate) generates assets in the process of carrying out current business activities (for example, by issuing loans, supplying goods, providing services, leasing property, etc.). As a result of such activity, the originator has assets – claims against third parties (debtors). Such assets can be, for example, a loan portfolio, mortgage, receivables. These assets are sold to an intermediary specially created for these purposes (in global practice, the intermediary is a Special Purpose Vehicle, SPV) and are completely written off from the originator's balance sheet. At the same time, the originator company converts its claims (illiquid assets: loans, receivables) into liquid income securities. Originators can be banks and other credit and financial institutions, state authorities²³¹.

In other words, the essence of asset securitization is that a certain part of income assets (mortgage or consumer loans, car loans, leasing assets, commercial real estate, collateral objects, etc.) is withdrawn from its balance sheet and refinanced by issuing securities, which he sells on the open market. The purchase of securities by investors gives them the right to receive income in the form of a fixed interest, the source of which is interest and the principal amount of payments on securitized assets (from the cash flows of the assets of the pool)²³².

It should be emphasized that securitization is an effective tool for financing the activities of agricultural enterprises. Thanks to the instrument, large creditors of the agricultural sector will be able to refinance their loans, including agricultural receipts, through access to capital markets, to reduce credit risks and increase the volume of financing for their agro-producer clients. The direct user of securitization is creditor companies, but the final beneficiaries of this instrument are agricultural producers. Practice shows that in saturated and mature markets, lenders use securitization to increase cooperation with customers and improve financing conditions. It is universal for various sectors of the economy and in global practice. In general, with the introduction of securitization, the cost of financing in the sector decreases. In developed countries, it is used in the markets of real estate, auto loans, consumer loans, etc.²³³

The successful experience of implementing this tool in the agricultural sector was shown by Brazil: in the 90s, the country faced a shortage of credit for farmers and a course of securitization was announced. Creditors began to use receivables from agricultural receipts as collateral for issuing securities. Today, the financing of

²³⁰ Levich R.M. et al. (1988). *Financial Innovations in International: out-of-print volume from the Financial Markets*, p.215-277; Baer H.P. (2006). *Securitization of assets*; Petruk O. M., Novak O. S. (2012). *Management of the risks of securitization of investment funds*, p.86-90.

²³¹ Petruk O. M., Novak O. S. (2012). *Management of the risks of securitization of investment funds*, p.86-90.

²³² *Securitization of agricultural assets: Position of the Land Law Center of the Academy of Sciences of the National Academy of Sciences of the Russian Academy of Sciences* (2021).

²³³ Leshchenko R. (2021). *Securitization for Ukrainian farmers*.

the agricultural sector in Brazil reaches tens of billions of dollars. This allows the country to enter the TOP-5 world exporters of agricultural products for a long time.

With the potential of agricultural production that Ukraine has, such a financial innovation as securitization will allow it to become one of the leading positions in the world in the production and export of agricultural products. And over the past five years, the mechanism of agricultural receipts has already confirmed its effectiveness in Ukraine.

In 2017, agricultural enterprises issued agricultural receipts in the amount of UAH 1.2 billion, and in 2018 – 4.3 times more, for UAH 5.2 billion. During 2021, farmers issued 1,706 agricultural receipts with a total value of UAH 15 billion. The trend line shows a rapid increase in the volume of funds raised with the help of agricultural receipts: the average annual increase is UAH 3.54 billion. Most agricultural receipts were issued by small and medium-sized enterprises. Thus, securitization will allow for easier access to credit resources for small firms and will be in line with the already implemented and effective today's soft credit programs and loans.

Such a financial instrument as agrarian receipts in the conditions of war, unfortunately, is not used to its full extent. Therefore, the government plans to introduce another financial innovation: draft law No. 2805-d has already been developed, which aims to facilitate access to work with agrarian receipts. If it is adopted, users will be able to independently carry out operations with agricultural receipts directly in the Register of Agricultural Receipts through online access with electronic digital signatures without mandatory notarization. Previously, the Register of Agricultural Receipts had already been technically updated, as well as integrated with the necessary state registers for automatic data verification. Therefore, the accelerated adoption of draft law No. 2805-d will simplify access to financing for agricultural producers, which will greatly support the industry in difficult wartime, and will also contribute to its recovery in the post-war period²³⁴.

The market of agricultural receipts grows very dynamically with each season. It is expected that this trend will continue for the next few years. So far, about 1.5 thousand farmers have issued agricultural receipts. With such receipts, producers used the future harvest as collateral to raise financing and invest in production in time. All these agricultural receipts can become the basis for the development of securitization, which will be a breakthrough for the development of the agricultural sector, as well as one of the most modern financial innovations in the field of agriculture introduced in Ukraine over the last year.

2) liberalization – a change in the established practice of the domestic financial market either through explicit deregulation or through a change in the principles of its operation. It is a stimulating factor of economic growth and has direct and indirect consequences for the economy.

As we can see, the positive impact of liberalization on economic growth is carried out through the movement of capital and technology to Ukraine. The stimulating effect of liberalization is manifested both in the growth of savings and the

²³⁴ Government portal: The single web portal of executive authorities (2022).

reduction of the cost of capital, and in the increase in the level of technology of the economy, in particular the financial sector, and indirectly causes the deepening of the specialization of production, the increase of financial flows and the general digitization of the country.

Analyzing the development of the banking services markets of the CIS countries at the current stage of the evolution of global economic relations, it is worth paying attention to significant differences in the levels of their liberalization. It is about the fact that the banking systems of the CIS countries are sufficiently differentiated in terms of their degree of openness. The most liberalized are the banking services markets of Kyrgyzstan, Georgia, Armenia, and Ukraine, where the share of foreign capital reaches 50-60%. Tajikistan and Azerbaijan are next in terms of the level of openness of the banking services market (about 30%). The banking systems of Uzbekistan, Kazakhstan and Belarus are the most closed²³⁵.

As for the Ukrainian banking system, it is now completely open to the entry of foreign capital. Current legislation makes it possible to create banks in Ukraine with 100% foreign capital, but with a mandatory requirement – they must be subsidiary banks operating in the legal field of Ukraine²³⁶. This is confirmed by the significant increase in the number of banks with 100% foreign capital over the past five years.

Currently, the number of commercial banks with 100% foreign capital has been steadily increasing since 2015. As of January 1, 2022, 23 banks with 100% foreign capital were operating in Ukraine, which is 35.3% more than in 2015. The specific weight of banks with foreign capital in the total number of banks in Ukraine is 46.5%, which indicates a high level of liberalization of financial services in Ukraine.

3) the globalization of financial markets is a stage of their development characterized by liberalization and deregulation, the reduction of restrictions on the international movement of capital, the standardization of financial products, as well as the development of technologies that facilitate the cross-border movement of capital and accelerate the spread of information, in which an extremely close connection is formed "connection between local financial markets, as a result of which important events on one of them are reflected on all others²³⁷.

But globalization is not only a process of growing economic interdependence between the countries of the world due to an increase in the volume and variety of cross-border operations and international capital flows, but also one of the important directions of the development of financial innovations. As national barriers become less visible and financial markets become more integrated, the world's financial system faces new challenges that are being addressed through financial innovation. In connection with the weakening of national financial barriers, the liberalization of the financial services market is rightly considered one of the manifestations of financial globalization, and these two concepts are considered inextricably linked.

²³⁵ Abalkina A. (2008). Preconditions and Prospects for Banking Integration in the Eurasian Economic Community, p.102-114.

²³⁶ Trokhymenko V. (2011). Liberalization of the market of banking services as a manifestation of financial globalization, p.50-53.

²³⁷ Zadorozhna T. (2020). Globalization of financial markets: essence and impact on the regulation of national securities markets, p.81-89.

Table – Number of commercial banks in Ukraine from 2008 to 2022²³⁸

	Number operating banks	Of them with foreign capital	In t.s. with 100% foreign capital
на 1.01.2008	175	47	17
на 1.01.2009	184	53	17
на 1.01.2010	182	51	18
на 1.01.2011	176	55	20
на 1.01.2012	176	53	22
на 1.01.2013	176	53	22
на 1.01.2014	180	49	19
на 1.01.2015	163	51	19
на 1.01.2016	117	41	17
на 1.01.2017	96	38	17
на 1.01.2018	82	38	18
на 1.01.2019	77	37	23
на 1.01.2020	75	35	23
на 1.01.2021	74	33	23
на 1.01.2022	71	33	23

In confirmation of the relationship between liberalization and globalization, G. Defey notes that the mastery of the financial and credit sphere of financial innovations relates to the liberalization and deregulation of financial markets, which take place against the background of their globalization. Therefore, the growth of competition from banks and various segments of the financial market has objectively led to a decrease in the traditional role of banks as lending institutions. At the same time, signs of such competition affect the profitability of traditional banking operations²³⁹.

4) digitalization – the process of transformation of traditional forms of the financial market with the help of electronic technologies into the latest digital systems, which in the new economic theory are united by the term FinTech – literally translated "financial technologies" – a term used to denote the introduction of digital technologies in the market of financial services, in order to improve the quality of financial services for customers and improve financial transactions: speed, reliability, encryption, etc.

In other words, FinTech is a symbiosis of finance and new technologies using mobile applications and algorithms²⁴⁰. Today, FinTech is the newest branch of the

²³⁸ The number of commercial banks in Ukraine: performance indicators of the banking sector of Ukraine (2022).

²³⁹ Defey G. (2001). The blurring of banking. The world's new financial landscape, p.117-137.

²⁴⁰ Borysyuk O., Shmatkovska T., Datsyuk-Tomchuk M. (2021). Drivers and barriers to fintech development in the financial market, p.44-53.

economy, which unites financial companies that are focused on meeting the needs of customers with the help of new software for financial transactions, offering them efficient, convenient, automated, transparent online products.

Currently, the global market for technological solutions for the financial sector is one of the fastest growing in the world. As for the Ukrainian Fintech market, according to UAFIC, as of the end of 2021, there are 196 fintech companies, the vast majority of which are providers of payment services and electronic transfers, innovations in the field of technology and infrastructure (the direct product is the creation of IT solutions for financial companies and banks), consulting and analytical systems²⁴¹.

According to forecasts, the following areas of FinTech will be the most common in the coming years: bitcoins and cryptocurrency, RegTech (regulatory technology), innovations in the banking sector, SupTech (super-vising technology), banking and open application programming interface (API), mobile devices, voice user interface, fintech development in the B2C market. It is assumed that the biggest problem fintech companies will face will be cyber attacks²⁴².

Among the FinTech innovations that have been successfully operating in Ukraine since 2019 for the agricultural sector, I would like to single out Agrifinance – a platform that provides farmers with financing quickly and easily online. Its features are that it allows individual entrepreneurs, as well as representatives of small and medium-sized businesses in the field of agriculture, to get a loan online without paper documents. The developed technology allows lending to farmers without the client providing information. To approve the application, only the EDRPOU of the enterprise and the TIN of the founders are required.

It is worth noting that it is particularly difficult to implement financial innovations in the agricultural sector in any country. This is due to the specifics of the industry and usually requires more time for the successful implementation of fintech projects. In particular, the Polish scientist Skornicki listed the following factors that can be considered as barriers to the innovativeness of Polish agriculture. In our opinion, they are fully characteristic of the agricultural sector of Ukraine:

- specifics of agriculture,
- fear of novelty, high average age of farmers
- significantly lower level of education compared to urban residents and
- deficit of own funds (in addition, low level of debt).

The World Bank emphasizes some advantages associated with the use of "new technologies" in financing agriculture: firstly, "lower costs per unit of production" and "higher volume of productivity"), secondly, the use technology is an indirect improvement in operations through better risk management. From the Polish perspective, the technology can be used to create local data repositories that can be aggregated through data consortia to form broader data sets and more statistically meaningful risk reduction analysis.

²⁴¹ Fintech market development in the world and in Ukraine. (2022), p.21-127.

²⁴² Pomazun O. (2018). Modern state and development trends of the fintech industry, p.67-69.

The process of development of financial innovations in Ukraine takes place in such directions as: securitization, liberalization of financial markets, financial globalization, digitalization, and financial technologies. All these directions have internal interrelationships, and in the process of development of one of them in the national economy, the development of the others is necessarily taking place.

Starting from 2019, the mechanism for implementing securitization in the domestic financial sector is being actively developed and refined. A project with the support of the Swiss IFC Confederation "Development of access of the agricultural sector of Ukraine to capital markets" is already operating, which will help create a favorable environment and infrastructure for the spread of securitization. And we can say that currently in Ukraine there is an urgent need to legislatively regulate the issue of securitization of non-bank assets.

The process of liberalization and globalization of financial markets in Ukraine has been going on for a long time, and the development of financial innovations in this direction is taking place in full, which has a positive effect on the entire financial system of the state.

In the direction of digitization and development, Ukraine has been moving quite rapidly in recent years and already has certain assets. And although financial technologies are introduced somewhat more slowly than in developed countries, it can be confidently stated that the domestic industry will at least double in the next few years and will be replenished with new financial products and new participants in the FinTech market.

The advanced experience of Poland in the introduction and spread of financial innovations in the agricultural sector can be used to a certain extent in relation to domestic agricultural enterprises, and especially for the attraction of current financial resources in farms with small land area. We have researched and identified barriers to the development of financial innovations in Ukrainian agriculture, as well as formulated our own observations and proposals regarding the Ukrainian situation in the agricultural sector.

Further research will be aimed at developing effective cases of the application of financial innovations in the domestic economy, as well as at a more detailed study of the development of the blockchain and cryptocurrency market of Ukraine.

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USE AND ROLE OF INFORMATION TECHNOLOGIES IN THE MODERN WORLD

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Abstract. Nowadays it is very difficult, even almost impossible to imagine your life without various modern technologies, gadgets, and electronic devices. They have become an integral part of people's lives and are used in various human activities, in all spheres of human life, such as economic, political, social. Technological progress continues to develop, and every day one can observe novelties and improvements in electronic technology, new discoveries in the information sphere, and the great influence of information and Internet technologies in people's lives. Information technologies represent all the accumulated experience of mankind in a universal form suitable for practical use. They are used in science, business, education, work, even industry and materials production, medicine, architecture, modeling, and many other areas of human activity.

Keywords: information technologies, convergence, innovative developments, information services market.

In today's world, everything is changing very quickly, fundamental transformations are taking place in all spheres of human life without exception, the main goal of which is to significantly increase the quality and level of his life, to achieve social well-being and well-being. In this context, today we are witnessing a rapid increase in the role of information in our lives, an exponential increase in the volume of its consumption, and the dominance of its importance over other resources when making management decisions, regardless of the level of management. Indeed, timely acquisition of important information provides significant competitive advantages to any business entity, allows it to be one step ahead of its competitors. However, not only business today needs objective information, as it is impossible to present a sphere of activity within the economy, the effectiveness of which would not depend on the consumption of the latest knowledge, operational data, technologies, and other forms of information resources. That is why any research in the field of specifying the influence of information on the possibilities of economic recovery is potentially relevant, especially for Ukraine in its current state. At the same time, it

should be noted that the usefulness, intensity and efficiency of the use of information and the latest knowledge increases due to the use of certain information technologies. Without a doubt, information technology today plays a crucial role in the modern world²⁴³. They occupy a unique position in our society and not only influence its economic and social institutions, but are also the engine of global economic growth, penetrating into all areas of production activity and making it possible to build effective management systems. Thus, there is an increase in the volume of work performed, a reduction in design time and an increase in the quality of design work.

This topic is now more relevant than ever, since the information society involves the widespread use of various information technologies in all areas of our activity. For example, at the moment in our society systems of distribution, storage and processing of information, which are based on the work of computers, play a huge role. More and more inter-regional and international relations are being formed, which makes it possible to exchange information over long distances in the shortest possible time. In addition, the number of people professionally involved in the collection, storage and processing of information is growing every day.

IT technologies are innovative technologies that are the driving force of modern civilization. Information technology is a class of areas of activity related to technologies for managing and processing a huge flow of information using computer technology²⁴⁴. The role of information technologies in the development of society is to increase the processes of obtaining, disseminating, and using the acquired knowledge by society. Information is one of the main, decisive factors that determines the development of technology and resources in general. In this regard, it is very important to understand not only the relationship between the development of the information industry, computerization, information technology and the informatization process, but also to determine the level and degree of influence of the informatization process on the sphere of management and intellectual activity of a person.

Information technologies make it possible to activate and effectively use the information resources of society, which today are the most important strategic factor in its development. In recent years, information processes have taken an increasing place in the life of human society. Information technology allows you to optimize and, in many cases, automate information processes that are important elements of other, more complex production or social processes. Modern society is at a stage of development when almost all spheres of public life and state activity depend on the quality and security of information technologies and resources. The use of unified world information systems ensures the introduction of information technologies into education: a single educational space is being formed, a person's need for communication and access to common intangible resources is increasing.

²⁴³ Asaul A. et al. (2019). The Latest Information Systems in the Enterprise Management and Trends in their Development, p. 409-412.

²⁴⁴ Haustova V.E. et al. (2022). Promising directions of development of the IT sphere in the world, p.3-19.

Now, information technologies are widely used to improve the quality of education and medical care, as well as to develop the information and telecommunications structure. Even now, Western companies can combine all industries into one system and manage it with the help of modern information technologies. Many Western experts believe that the one who owns the information owns the whole world. That is why they focus on information management. Now, there are several trends that characterize the state of information technology:

- the presence of a large number of databases containing information on almost all types of activities of the company;
- creation of technologies that provide an interactive access for an ordinary user to these information resources;
- increase in functionality and creation of local, multifunctional problem-oriented information systems for various purposes based on powerful personal computers and local area networks;
- inclusion in information systems of various technological tools and specialized user interfaces for interaction with expert systems.

Modern information technologies, with their rapidly growing potential and rapidly declining costs, open great opportunities for new forms of labor organization and employment within both individual corporations and society as a whole ²⁴⁵. The range of such opportunities is expanding significantly – innovations affect all spheres of people's lives, family, education, work, geographical boundaries of human communities.

Today, information technology can make a decisive contribution to strengthening the relationship between the growth of labor productivity, output, investment, and employment. The ability to apply modern information technologies in their activities is becoming one of the main components of the professional training of any specialist. Thanks to information technology, the successful activities of many companies are carried out. The more modern information technologies are used in professional activities, the more efficient and productive the labor process. Software products and information technologies make it possible to ensure reliable and safe operation of both computer equipment and the employee's information system. They allow you to process, sort and store the necessary information and data, help facilitate the functions of the employee by automating certain labor processes efficiently and quickly. The number of automated workplaces is increasing every day, as automated processes allow professional activities to be carried out more accurately, clearly, and quickly.

Modern workstations allow not only to process and store data, but also perform several auxiliary professional functions that form a certain service²⁴⁶. The service maintains databases and performs automated copying, restoration, archiving, import / export of data, work that is directly related to professional activities, such as

²⁴⁵ Mandych O.V., Naumenko I.V., Romaniuk I.A. (2019). Formation of the policy of product distribution in integrated structures, p. 83-87.

²⁴⁶ Urban O.A., Dzyamulych M.I., Matviyuk V.V. (2019). Theoretical foundations of the development of IT services in the conditions of globalization, p.137-144.

preparing correspondence using a text editor, creating electronic databases and spreadsheets, sending mail via electronic channels. A specific information technology is determined because of compilation and synthesis of basic technological operations, specialized technologies and means of implementation. A society with a high level of development and use of information technologies, developed infrastructures that provide the production of information resources and the ability to access information is called the information society. For modern society, the information industry is becoming the most important economic factor. This industry is based on basic information technologies that use the achievements of various areas of the economy.

Today, basic information technologies have an independent scientific and applied value, providing ample opportunities for extracting, formalizing, modeling, systematizing, integrating, transporting, processing, and applying information and knowledge. The field of information technologies, including basic ones, has become an important area of production activity, which has all the features of industrial production with a stable growth dynamic²⁴⁷. Multimedia technologies, geoinformation technologies, information security technologies, CASE technologies, telecommunication technologies, artificial intelligence technologies are considered in the context of the fundamental principles and methods of their creation, illustrated by reviews of samples existing on the market.

Now, there are 5 main trends in the development of information technology:

1) the complication of information products and services. An information product in the form of software and hardware, databases and data storages are constantly evolving and becoming more complex. Just yesterday it was impossible to imagine most of the services offered today for personal computers, television, and security systems. Along with this, the information technology interface, with all the complexity of the tasks being solved, is constantly being simplified, thereby making the interactive interaction between the user and the system more and more comfortable;

2) the ability to interact. With the growing importance of an information product, the ability to carry out an optimal exchange of this product between a computer and a person or between information systems acquires the status of a leading technological problem. Also, this problem concerns the compatibility of hardware and software, processing, transmission, and formation of the required information. Modern software and hardware and data exchange protocols make it possible to solve them in an increasing volume;

3) elimination of intermediate links. The development of interoperability unambiguously leads to simplification of the delivery of an information product to the consumer. Intermediaries become unnecessary if it is possible to place orders and receive what is needed directly with the help of information technology;

4) globalization. Various companies can now, with the help of information technology, conduct business on the world market, that is, anywhere, immediately receiving comprehensive and all the necessary information. Therefore, the possibilities of the information market become limitless. There is an

²⁴⁷ Babko N.M. et al. (2020). Consumer behavior: education. manual.

internationalization of software and information product market. The globalization of the information product market aims to gain as much benefit as possible by distributing fixed and semi-permanent information costs over a wider geographical area. This becomes a necessary element of strategy for most companies;

5) convergence. Differences between industrial products and services, information products and means of obtaining them, their use in everyday life and for business or professional purposes disappear. The transmission and reception of audio, digital and video signals are combined in the same devices and systems. It is this trend that leads to the emergence of more and more promising and useful products for the user.

Information technologies are constantly evolving, opening fundamentally new opportunities for us in various fields of activity (be it enterprise management, management decision support, medicine, or education). The main incentives for their development are the socio-economic needs of society. Now interregional and international communication systems are actively developing, a global network community is beginning to form, and at the same time, a market for information services is being formed.

Whether promoting social progress or commercial leadership, to unlock the economic growth that digitalization promises, companies and governments must act quickly, decisively, and strategically along three important dimensions.

First, a properly developed strategy that clearly defines the main competitive priorities of the enterprise based on the introduction of information technologies is a critically important aspect. The most successful enterprises clearly understand their purpose and place in a changing market environment, realizing how they create added value²⁴⁸. As a result, they remain true to their unique characteristics, can introduce innovative developments to build up their own capacities, which, at the same time, are rethinking and are able to find directions for diversification of production (providing services) to thrive in today's digital world. A properly formed strategy should be bold in terms of planning the profitability of the enterprise, but at the same time, based on a practical component, determining the possibility of real transformations, and stimulating the implementation of sustainable and inclusive growth.

Second, it is important that governments put the user of information systems and technology at the center by providing the necessary access to the Internet. It is necessary to understand the behavior, needs and problems of users of information systems and technologies to create better technological solutions, solve pressing problems and achieve significant socio-economic changes. Continuous listening to mass feedback and recommendations of users and implementation of strategies and solutions based on a deep observational understanding of the needs of citizens and consumers will contribute to the introduction of effective innovations and greater economic success.

²⁴⁸ Zakharova O.V., Kalashnyk O.V. (2019). Features of the selection of IT specialists: the latest approaches, p. 64-73.

Third, digital leadership requires quick action and prompt response to the challenges of a changing market environment. Organizations and businesses that quickly create or acquire the necessary capabilities to be "first and fast" will have the best competitive advantages in the future to ensure efficient business operations in an increasingly information technology-driven marketplace. It should be noted that ensuring the mobilization of rapid management decisions and actions can be particularly difficult for most governments and state-owned enterprises, but many established, historically successful business structures also face such a problem.

Implementation and observance of the specified dimensions determines the strategic directions for significant socio-economic growth²⁴⁹. Governments and business leaders have enormous economic opportunities by fully utilizing the potential of digital technologies. Information and communication technologies undoubtedly have a huge impact on the development of not only enterprises, but also the economy in general, because of the significant expansion of the sphere of activity dealing with issues of generation and design of communication and information technologies. There is an increase in investments in the sector of information and communication technologies, which improves the level and quality of their products, lowering the price policy, as well as the popularization of the Internet and the development of electronic commerce. At the same time, an effective management process, as a complex task, requires optimal interaction of various types of resources. Considering the current trends of globalization in the development of the economy, information resources play a key role in the activities of any subject of the market economy, ensuring the automation of the enterprise's business processes and clearer and more flexible management²⁵⁰. The introduction of information technologies into the process of enterprise management can ensure its competitiveness, and therefore the opportunity to take the most advantageous position in the marketing environment, which is constantly changing and being formed under the influence of various external and internal factors.

During the war in Ukraine, another source of public-private investments in the development of the information environment was quite actively used, namely the provision of free educational services for the intensive training of IT specialists in various professions. For Ukrainians today, there is a whole range of such courses and projects, the most powerful and highlighted in mass media are: grant project "eRobota"; innovative charity pilot project "IT Generations"; an educational project from the Projector Institute; the IT-Sprout project; a training program from the Skillsetter educational platform, etc. Each of the listed projects is aimed at overcoming the shortage of a certain profession in the IT sphere and simultaneously reducing the unemployment rate of the population, which is caused by both the consequences of the war and the trends of the penetration of the principles of

²⁴⁹ Romaniuk I. et al. (2020). Analysis and forecast of marketing strategies and PR in the conditions of the coronavirus pandemic, p. 101-108.

²⁵⁰ Korolev D.V. (2020). Trends and problems of the development of information technologies in Ukraine: personnel aspects, p. 121-126.

digitalization into all areas of the regional economy, the general unsatisfactory socio-economic situation, and the unsatisfactory standard of living people.

Thus, as a result of the need for simultaneous processing of a large amount of operational and analytical data characterizing real financial and production-economic processes, there is a need to use automated information systems and technologies to accelerate management decision-making²⁵¹. Their introduction leads to a change in the forms and methods of enterprise management, providing a more voluminous and operational organizational structure of management and gaining more and more importance as the most important tool of scientific, technical, and socio-economic development of society.

The current state of functioning of the Ukrainian economy takes place under the influence of a significant number of limiting and negative factors, the main of which is the war. The period of the war clearly showed that to preserve the economy and create opportunities for its further reproduction, it is not enough to focus on the use of traditional methods only, it is necessary to look for new approaches that will allow to obtain the expected result, but with less expenditure of time and resources. One of such tools is information technology, the application of which can allow to fundamentally change the production and economic system of the economy by adding to it such characteristics as greater economic efficiency, rationality, stability, endurance and insurance against undesirable conditions and influences. In order to achieve these features in practice, a mechanism for meeting the needs of a sufficient number of motivated and experienced IT specialists must be created in the country. It is possible to solve this problem by reforming the educational system, creating a stable demand for information technologies in the country's business environment, providing sufficient investment resources and building a network of effective employment of specialists of various professional levels within the Ukrainian IT sphere. Only on such a basis will it be possible to achieve noticeable results in the matter of recovery and recovery of the economy of Ukraine in the post-war period. Therefore, it is necessary to start now, so that by the time Ukraine wins the war at the level of the regions of the country, their own experience in this important issue has already been gained.

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ENSURING SUSTAINABLE DEVELOPMENT OF TERRITORIAL COMMUNITIES OF UKRAINE IN THE CONTEXT OF SELF-FINANCING

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Abstract. The main goals of sustainable development and their tasks are analyzed. The goal related to ensuring the development of territorial communities is highlighted. The policy of decentralization in Ukraine and its main aspects are considered. It is proved that the budget system of the state is the financial basis for the activities of state and local authorities, which is associated with the economic and social development of territories. The reforms of local self-government, which are the main creation of an effective mechanism for forming the community budget in the system of extrabudgetary relations, considering the peculiarities of the socio-economic situation and the conditions for the development of administrative-territorial units, are considered. The structure of effective budget management is considered. A rational model of decentralization is given. Financial indicators of budget execution of territorial communities by regions of Ukraine are analyzed.

Keywords: sustainable development, territorial communities, decentralization, finance, budget.

In autumn 2015 within the framework of the 70th session of the UN General Assembly, the UN Summit on Sustainable Development was held. The final document of which was "Transforming Our World: The 2030 Agenda for Sustainable Development". This document included 17 sustainable development goals and 169 tasks²⁵². These goals and tasks in the next 15 years will stimulate activities in areas that are critical to humanity and the planet.

Thus, in 2019, the President of Ukraine supported the achievement of the Sustainable Development Goals and the results of their adaptation, taking into account the specifics of Ukraine's regional development. In December 2020, The Cabinet of Ministers of Ukraine amended the document, which established that the need to achieve the Sustainable Development Goals is considered in the process of forming and implementing the state policy of Ukraine. Thus, at the state level, these sustainable developments are enshrined as guidelines for the development of program and forecast documents.

One of the priority goals of sustainable development is 11 goal – Sustainable development of cities and communities. The achievement of this goal is ensured by the implementation of 6 tasks²⁵³:

11.1. Ensure the availability of housing;

²⁵²Transforming Our World: The 2030 Agenda for Sustainable Development.

²⁵³ SDG 11. Sustainable development of cities and communities.

11.2. To ensure the development of settlements and territories exclusively on the basis of integrated planning and management with the participation of public authorities;

11.3. Ensure the preservation of cultural and natural heritage with the involvement of the private sector;

11.4. To ensure timely notification of the population about emergencies using innovative technologies;

11.5. Reduce the negative impact of pollutants, including on the environment of cities, through the use of innovative technologies;

11.6. Ensure the development and implementation of local development strategies aimed at economic growth, job creation, tourism development, recreation, local culture and the production of local products.

It should be noted that issues related to ensuring sustainable development of communities in Ukraine have been actively dealt with within the framework of decentralization policy since 2014²⁵⁴.

As a result of the reform of the territorial structure in Ukraine, three levels of local self-government should be formed: a region, a district and a community consisting of several united settlements. At the community level, powers should be transferred in accordance with its competence in accordance with the principle of subsidiarity. Among them are primary and secondary education, primary medicine, housing and communal services, construction, local roads, infrastructure. Powers between the three levels of local self-government should be clearly demarcated. Executive power will pass from local administrations to executive committees of local councils, and administrative control within the outlined communities.

The association opens the possibility of using the resources of the State Regional Development Fund (SRDF). According to the law, it is 1% of the planned revenues of the state budget of Ukraine. As stated on the fund's website, "the creation of the SRDF allows us to launch in Ukraine the beginning of financing of regional development projects on a competitive basis and in accordance with regional development strategies and action plans for their implementation." Also, the projects submitted by communities should correspond to the priorities indicated in the regional development strategy, the adoption of which is required by the law "On the Principles of State Regional Policy"²⁵⁵.

Thus, the decentralization reform is one of the few reforms in Ukraine that has a plan, strategy, and a clear concept. The peculiarity of the reform is the implementation in the context of decentralization of several reforms in the field of public administration at the same time²⁵⁶:

1. reform of the territorial organization of power;
2. reform of local self-government;
3. regional policy reform.

²⁵⁴ Decentralization in Ukraine.

²⁵⁵ Ministry for Communities and Territories Development of Ukraine.

²⁵⁶ Decentralization reform in Ukraine.

Thus, the rational ordering of the territorial structure will allow balancing powers, resources, and responsibilities. In Ukraine, decentralization reform has already begun and is progressing at a slow pace. It is aimed at improving the quality of life of the population and ensuring the reproduction of natural systems based on effective integrated economic and social development of the region, which is achieved through the rational organization of the territorial economy.

Decentralization has made local budgets independent of the state budget and created opportunities for planning the development of territories, the possibility of implementing real projects.

The budget system of the state is the financial basis for the activities of state authorities and local self-government bodies, which is associated with the economic and social development of territories. A great influence on the development of social security of the population, education, culture, health care, housing and communal services have local budgets, community budgets. Financial security of the needs of local self-government is one of the main priorities of budget policy. An important area of local finance is to improve the mechanism for planning budgets of territorial communities. Formation of local budgets since the introduction of a set of modern financial methods and approaches, focused on the creation of an effective mechanism for community budget planning is an effective tool for improving the quality of local government resource management.

It is important, in the context of decentralization of power, the reform of local self-government is to create an effective mechanism for forming the community budget in the system of interbudgetary relations, considering the peculiarities of the socio-economic situation and the conditions for the development of administrative-territorial units. Most of the scientific works on the financial support of local self-government are devoted to the definition and generalization of methodological and institutional foundations for the formation and implementation of local budgets²⁵⁷. At the same time, there is a need in the context of decentralization of local self-government, strengthening the role of regions to pay attention to the planning of community budgets, which will ensure the efficiency of the community budget, improve the quality of planning revenues, expenditures, the effectiveness of interbudgetary regulation, increase the degree of economic development of territories.

Local budgets, including budgets of territorial communities, are independent, they are not included in the State Budget of Ukraine and other local budgets. On the part of the state, at the legislative level, full budgetary independence and financial independence of local budgets are ensured.

Communities will respond²⁵⁸:

²⁵⁷Nesterovich V.F. (2019). Methodology of comparative analysis of participatory democracy at the level of local self-government, p. 44-50; Lunina I.O. (2016). Budget decentralization in Ukraine in the context of European trends, p.155-171; Sakhno, T. A. (2020). Economic support for the activities of amalgamated territorial communities, p. 135-142; Belyavtseva V.V., Dymchenko O.V. (2019). Decentralization as the basis of the new system of administrative-territorial structure of the country, p. 567-573.

²⁵⁸ Bibik N.V., Yesina V.O., Rudachenko O.O. (2020). Information and analytical principles of budgeting management in amalgamated territorial communities, p.107-116.

- for local economic development, development and maintenance of local infrastructure;
- planning the development of community territories;
- construction issues;
- improvement of territories;
- social assistance;
- culture and physical culture;
- medical care; secondary and preschool education, municipal police, passenger transportation, housing and communal services.

It is planned to increase the share in local budgets to 30% due to:

- parts of personal income tax (up to 25%);
- parts of corporate income tax (from 10 to 25%);
- economic tax (partially);
- single tax (in full);
- other taxes and fees.

Planned:

- introduction of servicing of expenses of the II basket from the treasury (after economic stabilization);
- 100% financial support for delegated powers without attracting their own income;
- the possibility of using the economy of financial resources of local budgets from credit funds and leasing equipment to repay the relevant credit resources;
- improvement of the budget planning system.

The formation of budgets of all levels is carried out because of indicators of the domestic product, the structure of which reflects the ratio of the main parameters and factors influencing the country's economy.

The main purpose of managing budget resources at the territory level is to ensure appropriate amounts of budgetary resources sufficient for local authorities to perform their functions, tasks, and obligations. Since the budget potential of the country's communities is significantly different, there is a need for financial support of local budgets, the conditions for the formation of which are characterized by an insufficient level of economic development and tax potential. An important role in this is played by inter-budgetary relations, as they are a tool for redistribution of budget funds and the balance of budgets of all levels and timely financing of budget expenditures for the socio-economic development of territories depend on their effectiveness.

Looking at the differences in the economic condition of administrative-territorial units and the existing financial disproportions, it is expedient to apply balanced approaches in the formation and execution of revenues and expenditures of local budgets.

The functional structure of effective budget management is determined by the principles of its construction:²⁵⁹

²⁵⁹ The ten principles of good budgetary governance at a glance (OECD).

1. Managing budgets within clear, credible, and predictable fiscal policy constraints.
2. Close coordination of budgets with medium-term strategic priorities of the government.
3. Development of the concept of a capital budget to meet the needs of community development in a cost-effective and consistent way.
4. Ensuring openness, transparency and accessibility of budget documents and data
5. Ensuring an inclusive, realistic discussion on budgeting with the participation of performers.
6. Presentation of exhaustive, accurate and reliable accounting of public finances.
7. Active planning, management, and control of budget execution.
8. The belief that performance, evaluation and value for money are an integral part of the budget process.
9. Identifying, assessing, and judiciously managing longer-term sustainability and other financial risks.
10. Promoting the integrity and quality of budget forecasts, fiscal plans, and budget execution through strict quality control, including independent audits.

Effective management of local budget resources and effective financial management in general involves the implementation with a sufficient degree of completeness of such basic management principles as integration with the overall system of functioning of the budget process, the complex nature of the development, adoption and evaluation of management decisions on the formation and execution of the community budget, transparency of the community budget planning mechanism, focus on strategic goals of economic development of territories²⁶⁰.

In order to ensure the implementation of an effective mechanism for forming a community budget in the system of inter-budgetary relations, it is expedient to use such methods and tools as analysis and economic assessment of the features of the mechanism of community budget formation, perspective forecasting of the revenue side of the community budget, methodological approaches to planning and execution of community budget revenues and expenditures, balance of the community budget in the system of inter-budgetary relations.

The experience of forming local budgets of countries with developed and transformational economies shows that in each country of the world the structure of local budgets has national characteristics dependent on the nature of the state system, the structure of the economy, while one of the main features of the formation of budgets of European countries is the principle of budget decentralization²⁶¹.

²⁶⁰Yesina V. et al. (2021). Analysis of the budget potential of local authorities: on the example of the Kharkiv region, p. 467-478.

²⁶¹ Dymchenko, O., Smachylo, V., Rudachenko, O., Shkurupii, K. (2022). Entrepreneurial component in the formation of financial capacity of territorial communities of the Kharkiv region, p.31-35.

The implementation of this principle contributes to the construction of effective relationships between central and local governments, contributes to increased economic responsibility and efficiency.

Thus, an effective model of decentralization of power is proposed, where local governments, as well as central executive bodies should exercise control and financial activities of the region (Figure 1).

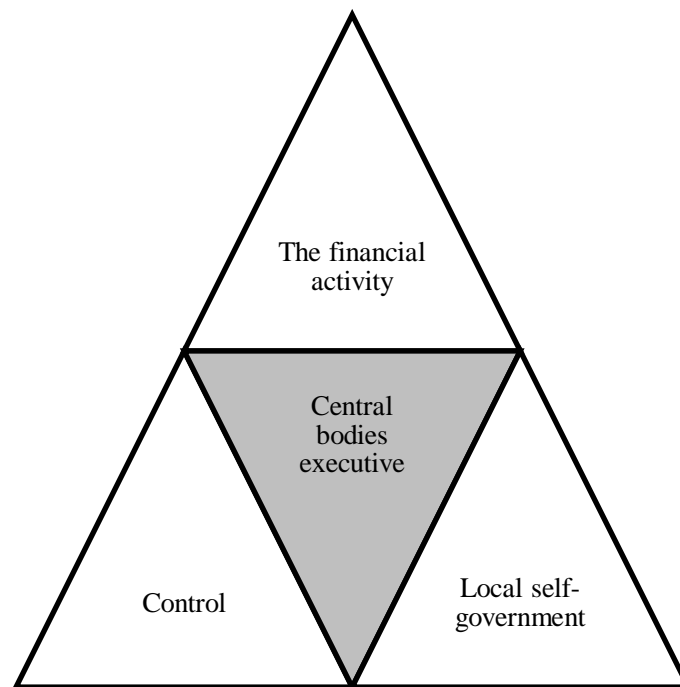


Fig.1. Rational model of decentralization

Thus, decentralization is a series of actions invested in the transfer to local self-government bodies of several functions, powers and control in the field of financial activity (movement of financial flows), streamlining the territorial structure, solving environmental problems, the socio-cultural sphere (the definition was compiled by the author).

Also, it is necessary to ensure the financial stability of administrative-territorial units since improving inter-budgetary relations as one of the important levers for achieving territorial development.

In the context of decentralization of local self-government bodies, implementation of the Laws of Ukraine, the role and importance of the administrative-territorial community is increasing. At the same time, the process of forming the community budget is influenced by national factors, which include changes in the institutional environment, financial and budgetary policy, and the socio-economic state of the country.

In order to give an idea of the degree of financial independence and self-sufficiency of communities, the indicators of implementation of the budgets of the territorial communities (TC) for 2020 are analyzed.²⁶² As for December 2020, namely: the average budget income per 1 resident, the ratio to the budget, expenses without transfers for maintenance to the total income of the fund as a percentage of the total labor costs (Table 1).

Table 1 – Financial indicators of the implementation of budgets of TC by regions of Ukraine in 2020

Region	Number of TC	Average budget revenues per 1 resident, UAH	The share of budget subsidies (average of the base (+), reverse (-) subsidy in income, %	Expenditures without transfers in the income of the general fund for the maintenance of the management apparatus, %	The amount of salary with deductions in expenditures of the general fund, %
Vinnitskyi	37	3206,5	4,02	27,2	74,2
Volynskyi	50	2588,0	9,08	31,3	77,9
Dnepropetrovskyi	62	4402,7	9,59	25,2	70,4
Donetskyi	10	5103,0	4,09	29,3	67,8
Zhytomyrskyi	53	3135,4	5,76	30,2	75,9
Zakarpatskyi	6	3367,9	-5,31	26,3	76,8
Zaporizhskyi	44	3092,9	4,76	29,6	73,5
Ivano-Frankivskyi	30	1648,8	1,04	46,7	79,6
Kievskyi	16	4600,6	0,25	21,2	61,0
Kirovogradskyi	20	4569,4	-1,59	23,3	64,8
Luganskyi	9	2770,5	18,84	35,5	74,8
Lvivskyi	40	2525,0	10,81	37,4	77,6
Mykolayivskyj	29	3543,6	3,76	21,2	75,1
Odesskyi	28	3562,0	6,02	23,4	70,7
Poltavskyi	45	4988,4	-0,83	24,4	68,1
Rivnenskyi	32	2316,2	9,76	36,0	79,8
Sumskyi	30	3617,1	2,56	26,5	71,0
Ternopilskyi	49	2238,2	9,11	34,2	76,3
Kharkivskyi	17	4497,7	2,36	23,0	63,2
Khersonskyi	28	2747,9	6,22	32,3	89,9
Khmelnitskyi	45	2750,4	5,56	27,8	75,7
Cherkasskyi	54	3365,3	-4,54	31,1	74,7
Chernivetskyi	33	1714,9	13,65	37,6	82,1
Chernihivskyi	39	3382,1	2,14	27,4	74,4

²⁶² Decentralization reform in Ukraine.

Among 806 TC, the average income per resident in the general fund is the highest in Donetsk region (10 TC, 5103.0 UAH) and Poltava (45 TC, 4988.4 UAH). The lowest value of the indicator is in Ivano-Frankivsk (30 TC, 1648.8 UAH) and Chernivtsi region (33 TC, 1714.9 UAH). Outside the regions of Ukraine, there is a noticeable difference between the minimum and maximum indicators – the Donetsk and Chernivtsi regions. Table 1 reflects the level of financial resources and the ability of territorial communities to properly use the available financial potential for their further development.

As of 2022, there are a total of 1439 communities in Ukraine, which cover 27833 settlements, with a total area of 553818 km² and a population of 38122555 people²⁶³. However, there is no information with the distribution by individual regions of Ukraine on official sources.

When analyzing budget revenues separately for their components, it is important to pay attention to the community's revenues, which are replenished with taxes and fees.

Thus, the decentralization reform provides for concrete steps to improve the quality of life in the communities, it has a clear framework and the conceptual content. During its implementation, several reforms are being implemented – local self-government, territorial organization of power and regional policy.

The achievements of the reform are to improve the management structure and ensure sustainable development of communities.

However, it should be borne in mind that the success and effectiveness of the decentralization process also depend on the overall course of administrative reform, infrastructure development, law enforcement reform and anti-corruption. In addition to fiscal decentralization and the development of legislation in the field of self-government, the decentralization process depends on social and legal reforms that are carried out in Ukraine.

The decentralization process can be considered not only as an instrument of economic and social efficiency and improvement of life in communities, but also as part of the policy of sociocultural development of Ukraine, the inclusion of cooperation projects within the framework of regional cooperation in the common socio-cultural policy of the state, the formation of national unity based on pluralism, democracy, full respect for the rights of citizens.

At the same time, the process of decentralization and amalgamation of communities is accompanied by numerous risks and challenges that must be considered for the successful implementation of the reform.

There are concerns about the loss of representation at the level of the communities because of elections and the strengthening of political monopolies that control resources in communities. Some experts also talk about the facts of

²⁶³ State budget web portal for citizens.

criminalization of the electoral process during elections in local communities and the use of administrative resources. The relevant risks can be minimized by establishing clear rules and procedures for monitoring the observance of citizens' rights and the response of the competent authorities to the facts of violation of voters' rights during the entire election process.

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DEVELOPMENT OF SKILLS IN SOCIAL ENTREPRENEURSHIP IN THE FIELDS OF GREEN ECONOMY AND DIGITALIZATION TO INCREASE YOUTH EMPLOYMENT DURING THE RECONSTRUCTION OF UKRAINE

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Abstract. The need for the development of entrepreneurial skills among young people, considering aspects of the green economy and digitalization, which can be provided through social entrepreneurship, has been identified. It is proposed to implement this within the scope of the activities of universities both at the formal and informal levels of education. The possibility of implementing the "School of Social Entrepreneurship" project was considered using the example of Beketov Business Incubator, which is aimed at two target audiences – students and teachers.

Keywords: social entrepreneurship, green economy and digitalization, entrepreneurial skills, small and medium enterprises, social startups, informal education, Sustainable Development Goals

Ukraine is currently suffering from Russia's military aggression, which is causing new social problems in the field of ecology (pollution of Ukraine with explosives and bombing waste) and digitalization (transfer of business to the online space, which requires skills of digitalization of business owners and consumers). In addition, the war has led to rising unemployment among Ukrainian citizens, especially vulnerable groups and women who have been forced to leave the country but are willing and able to work online.

The intensification of gender inequality and the impact of the war on the international labor market is also noted in the ILO report²⁶⁴.

Humanitarian and social support of Ukraine by the countries of the world is important, but only a strong economy, development of small and medium business will create conditions for economic growth and well-being of the country's population. Thus, the development of social entrepreneurship is the key to addressing the challenges facing Ukraine in ensuring the employment of socially vulnerable groups, including youth, reconstruction of the country's infrastructure considering the principles of green economy, development of small and medium business.

Taking into account the significant migratory fluctuations of the population and the number of internally displaced people, in April 2022 the number of unemployed amounted to 283.4 thousand people (52% of them are women)²⁶⁵. Most

²⁶⁴ ILO Monitor on the world of work.

²⁶⁵ Official website of the Ministry of Finance of Ukraine.

Ukraine's population has become socially vulnerable due to Russia's military aggression, which is actualizing social entrepreneurship. The issue of employment and self-employment is attracting a lot of attention from the state of many countries. Youth unemployment is currently a pressing problem. The highest youth unemployment rate is 40,000 people. In addition, military aggression has caused significant damage, requiring the reconstruction of the country's infrastructure and the Kharkiv region, which has suffered the most from shelling (according to preliminary government estimates, the recovery is estimated at \$600 billion). In the Kharkiv region, about 5,000 buildings were damaged (according to²⁶⁶). Reconstruction should be based on the principles of green economy and digitalization, which should ensure higher sustainability.

Therefore, the urgency of increasing the involvement of citizens in the socialization of entrepreneurial processes by creating social enterprises that are able to solve problems with business tools is extremely high.

In accordance with the State Strategy for Regional Development for 2021-2027²⁶⁷ and the Action Plan for 2021-2023 for the implementation of the State Strategy for Regional Development for 2021-2027²⁶⁸ strategic goals are to promote the formation of business development infrastructures, such as business centers, business incubators, school startups, etc.; development of entrepreneurship in the digital economy; ensuring the promotion of entrepreneurship in the regions through the implementation of educational programs on entrepreneurship in schools and institutions of higher education. According to the Kharkiv Region Development Strategy for 2021-2027²⁶⁹ and the Action Plan for 2021-2023 on the implementation of the Kharkiv Region Development Strategy for 2021-2027²⁷⁰ is the development of entrepreneurship in the Kharkiv region.

Thus, developing entrepreneurial skills among young people in the field of green and digital economies and management and career planning, as well as provide a high level of theoretical and practical experience for teachers is main goal in nowadays.

Currently, formal education mainly focuses students on employment as an employee, rather than self-employment as an entrepreneur. The presence of social problems, problems in the green and digital economy and, above all, Russian military aggression, has led to the urgency of the development of social entrepreneurship, which is focused on solving society's problems (social problems) with business tools.

²⁶⁶ Solodovnik M., Novosel O. Za 100 dny viiny na Kharkivshchyni poshkodzeni ponad 5 tys. budivel.

²⁶⁷ Postanova Kabinetu Ministriv Ukrainy (2020). Pro zatverdzhennia Derzhavnoi stratehii rehionalnoho rozvytku na 2021-2027 roky.

²⁶⁸ Plan zakhodiv na 2021-2023 roky z realizatsii Derzhavnoi stratehii rehionalnoho rozvytku na 2021-2027 roky.

²⁶⁹ Stratehiia rozvytku Kharkivskoi oblasti na 2021-2027 roky.

²⁷⁰ Plan zakhodiv z realizatsii stratehii rozvytku Kharkivskoi oblasti na 2021-2027 roky.

If the theoretical elements of entrepreneurship are partially accounted for by students of various specialties within formal education, the practical skills in social entrepreneurship, career management are almost undeveloped, which creates the need for additional training (mostly non-formal). The emphasis on non-formal education (outside educational programs) is associated with a long process of reviewing educational programs, which does not allow the rapid implementation of new educational components. In addition, Russian military aggression has negatively affected the networking and exchange of experiences, which creates a need for communication and cooperation between young people in different countries in the field of entrepreneurship and simplifies the international orientation of social startups.

University teachers who teach disciplines that develop entrepreneurial competence and career management skills, having found themselves in a state of military aggression, have lost the opportunity to constantly develop their teaching skills, training, exchange of experience. In addition, by its nature, teaching requires constant learning and communication, learning best practices and finding ways to implement them in the new economic conditions of Ukraine, learning modern tools for doing business at the European level and methods of transferring practical and theoretical knowledge to students.

Several blocks of problems can be distinguished:

- insufficient level of digitalization and digital awareness among young people and teachers in the context of business digitalization;
- Insufficient level of entrepreneurial abilities and skills in the field of green and digital economies, career planning and management, which motivate to start a social entrepreneurship entity;
- Insufficient knowledge level of methodological tools and practical training of university teachers in teaching disciplines related to the acquisition and development of entrepreneurial skills and career planning and management skills in students;
- low level of practical experience of teachers, namely partial or complete lack of international internships, participation in trainings, seminars and exchange of experience.

That is why it is necessary to develop entrepreneurial skills in the field of green and digital economy, career management skills among university youth and pedagogical skills of university teachers, who ensure the development of entrepreneurial competences by conducting the School of Social Entrepreneurship to increase youth employment during the reconstruction of Ukraine after Russian military aggression.

O.M. Beketov National University of Urban Economy in Kharkiv (NUUE) formed the university ecosystem, which is based on the concept of SMART specializations. It includes: BEKETOV STARTUP SCHOOL; Beketov Business

Incubator; Beketov Science Park; Megapolis Technology Transfer Center.
<https://bs.kname.edu.ua/> NUUE

O.M. Beketov National University of Urban Economy takes a comprehensive approach to the development of entrepreneurial skills among young people and forms a holistic university ecosystem that promotes this and within which the Beketov startup school (BSS) operates. In its activities, BSS places significant emphasis on social startups and SMART areas, within which it is possible to implement social startups in the areas of green economy and digitalization²⁷¹. Such BSS activities are based on programs, strategies, and research²⁷²; which focus on the development of social entrepreneurship, as well as contribute to the goals of sustainable development²⁷³.

Representatives of the University actively cooperate in the framework of international projects for the development of entrepreneurial skills «Entrepreneurship University" 2020-2022. (<https://bs.kname.edu.ua/>) and others.

Thus, it is necessary to develop entrepreneurial skills among young people and improve the qualifications of teachers teaching entrepreneurial disciplines. It is expedient to achieve the set goals both through the development of educational programs (formal level) and through informal education. Informal education is implemented through the Beketov startup school.

According to the second way, it is necessary to organize training in social entrepreneurship (School of Social Entrepreneurship) based on Beketov startup school. Thus, the application of the project approach – the implementation of the School of Social Entrepreneurship project – will allow the development of informal education at the university. The proposed project corresponds to: 1) the Sustainable Development Goals by 2030 that were adopted in September 2015 at the 70th session of the UN General Assembly in New York: 4 – quality education; 7 – available and clean energy; 8 – decent work and economic growth; 11- sustainable development of cities and communities; 12 – responsible consumption and production; 17 – partnership for sustainable development²⁷⁴; 2) EU Directives; 3) National Economic Strategy of Ukraine for the period up to 2030²⁷⁵, among the main guidelines, principles and values of which are the following (corresponding to the project):

²⁷¹ Beketov Startup School.

²⁷² 50 Social Entrepreneurs Changing the World; Kruse Ph., Wach D., Wegge J. (2021). What motivates social entrepreneurs? A meta-analysis on predictors of the intention to found a social enterprise, p. 477-508; 40 Social Entrepreneurs to Watch for in 2022; Social Entrepreneur: Definition and Examples.

²⁷³ Smachylo V. (2020) Analiz rynku pratsi v konteksti suchasnykh vyklykiv. Innovatsiini zasady upravlinnia liudskymy resursamy: mozhlyvosti, vyklyky, priorytety dosiahnennia sotsialno-ekonomichnoi bezpeky, p.173-187; Бабаєв В.М. и др. (2022). Регіональні особливості розвитку стартап екосистеми: підприємницький аспект, с.58-63.

²⁷⁴ Sustainable Development Goals.

²⁷⁵ Postanova Kabinet Ministriv Ukrainy 03.03.2021 r. № 179 (2022). Pro zatverdzhennia Natsionalnoi ekonomichnoi stratehii na period do 2030 roku.

decarbonization of the economy; efficient digital service state and compact state institutions; gender equality; economic freedom; free and fair competition, equal access for business; development of entrepreneurship, innovation and talent; barrier-free movement of capital on the territory of Ukraine; institutional capacity; national security through partnership and investment.

The project «School of Social Entrepreneurship» pursues two main goals:

- to develop entrepreneurial skills in the field of green and digital economy and career management skills among the youth of the partner universities of the project through the implementation of the School of Social Entrepreneurship;

- to form the skills of teaching disciplines that ensure the development of entrepreneurial competences among students, teachers of higher educational institutions, through internships, trainings, and exchange of experience.

Accordingly, it is expedient to develop entrepreneurial skills through two audiences. First, students and young people who will undergo training and prepare social start-up projects under the mentorship of teachers. The second group – teachers of entrepreneurship disciplines, they will not only improve their qualifications in social entrepreneurship, but also develop the skills of teaching disciplines. This will improve the quality of teaching, which will have a positive effect on students.

The needs of target group 1 should be met through the School of Social Entrepreneurship realization using a mixed format (online classes and events), which includes: online course, education, training sessions that cover the need to develop social skills entrepreneurship and career management; mentoring and presentation of a social startup project on a crash test provides practical application of theoretical knowledge on the creation and development of a social startup; holding round tables, forming teams, provide networking, best practices studies, cooperation and international orientation of social business.

The needs of target group 2 are provided through: training, which allows to develop teaching skills and update applied tools in the field of entrepreneurship and career management; independent elaboration of educational materials, experience allows to present in the open new products for social entrepreneurship; the round table will promote networking and exchange of best practices in the field of teaching disciplines that form entrepreneurial competencies in students.

This project is designed to develop entrepreneurial skills in young universities with their focus on creating social startups that focus on green and digital economics, as well as career management skills. It combines training in this field of students, which should be carried out through training, mentoring, online course, Demo Day of startups (preparation of competitive business plans of social startups and their presentation and evaluation), round tables (exchange of views, best practices, networking), training visit (exchange of experience, study of best practices and its generalization in the publication, refinement of startups, networking,) and training of

teachers through training, self-study of materials and presentation of results at a round table and monograph.

The development of these skills among young people will contribute to effective employment and self-employment, the creation of new social businesses focused on rebuilding Ukraine's infrastructure after the military aggression on the principles of the green and digital economy, the development of digitalization skills. Teacher training will help to spread and improve the quality of teaching disciplines that develop entrepreneurial skills and career management skills among students of different educational institutions, which provides greater coverage and sustainability.

Achieving goals involves the acquisition of certain results, in particular: educational programs for young people and university teachers have been developed; an online course on social entrepreneurship and career management with open access has been developed; methodological support for training in social entrepreneurship and career management has been developed; trainings for university youth within the School of Social Entrepreneurship (Beketov Startup School) on social entrepreneurship and career management in the green and digital economics with issuance of certificates have been conducted; teams of startup projects in the areas of the green and digital economy have been prepared; teams of social startup projects have been mentored; have been held an online roundtable for the participants of the project on the exchange of experience in social entrepreneurship and career management in the areas of the green and digital economy in the participating countries; have been held Demo Day of social startups; an almanac of social projects with its subsequent publication has been issued; have been conducted training and certification of university teachers to improve their skills in the field of teaching disciplines that develop entrepreneurial skills, career management skills, digitalization; have been held a round table online for project participants on the exchange of experience in teaching disciplines that develop entrepreneurial skills, career management skills, digitalization; have been published the results of research of teachers in the field of entrepreneurship and career management on the results of independent work in the form of a monograph.

The project contributes to the global goal – to promote the active participation of young people in the democratic life of society. It is the youth of Ukraine who is currently suffering from Russian aggression who need to be supported in the development of entrepreneurial skills with a focus on creating social startup projects that focus on solving the problems of green and digital economy, as well as skills of career management. The project will promote social cohesion, increase youth opportunities for self-employment and sustainable development in the future, promote digital literacy in the context of entrepreneurship.

Topics of social entrepreneurship will include issues of gender equality, environmental sustainability, involvement of vulnerable groups (youth, women and other categories, including victims of russian military aggression, combatants).

By participating in this project, young people will have the following opportunities:

- implementation of innovative solutions in the digital and green economy;
- constructing social networking with young people to strengthen youth social entrepreneurship;
- gaining European experience in building a democratic society by participating in trainings involving representatives of public organizations, local governments, youth councils;
- taking part in the youth social entrepreneurship, ecological activities;
- gaining entrepreneurial skills and access to entrepreneurship and startup ecosystem & fundraising;
- joining the best European practices of social entrepreneurship.

The implementation of the project will provide additional benefits and advantages:

- reconstruction of the destroyed infrastructure of Ukraine on the basis of green economy and digitalization;
- deepening cooperation and networking with public organizations, city and regional authorities on social entrepreneurship and solving social problems with the participation of young people;
- there will be social networking between different social groups and mutual cultural enrichment between representatives of different countries;
- increasing self-employment and employment among young people and vulnerable groups, including IDPs and refugees suffering from Russia's military aggression;
- reducing the burden on the budget in the field of social benefits by providing employment for socially vulnerable groups;
- improving the quality of life of Ukrainians, which has significantly decreased due to Russia's military aggression;
- promoting the Sustainable Development Goals in the fields of ecology, energy saving, decent work, quality education, and gender equality.

Thus, the development of entrepreneurial skills in the field of green economy and digitalization will ensure the development of social entrepreneurship, employment and will have a positive impact on solving environmental and social problems of humanity in accordance with the Sustainable Development Goals. Universities can contribute to this through formal and non-formal education. The latter, based on the project approach, allows to improve the qualifications of teachers in teaching academic disciplines in the field of entrepreneurship, as well as to strengthen the entrepreneurial skills of students.

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**ATTRACTING INTERNATIONAL AID
IN POST-WAR COUNTRIES OF THE WORLD**

**ЗАЛУЧЕННЯ МІЖНАРОДНОЇ ДОПОМОГИ
В ПОВОЄННИХ КРАЇНАХ СВІТУ**

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Abstract. The relevance of the implementation of the Sustainable Development Goals in cooperation with international organizations was noted. World practices of support and reconstruction of countries affected by wars were studied. The participation of international donor organizations in supporting countries that have suffered the devastating consequences of military conflicts has been systematized. Aid programs and their content, as well as their key prerequisites and priorities, positive and negative implementation processes and their results are considered. The problems of using international aid have been summarized.

Keywords. International aid, aid programs, post-war reconstruction, industry, grants, loans.

Анотація. Відзначено актуальність реалізації Цілей сталого розвитку при співпраці з міжнародними організаціями. Досліджено світові практики підтримки та відбудови країн, які постраждали внаслідок воєн. Систематизовано участь міжнародних організацій-донорів у підтримці країн, що зазнали руйнівних наслідків воєнних конфліктів. Розглянуто програми допомоги та їх зміст, а також їх ключові передумови і пріоритети, позитивні та негативні аспекти впровадження і результати виконання програм. Здійснено узагальнення проблем використання міжнародної допомоги.

Ключові слова: міжнародна допомога, програми допомоги, повоєнне відновлення, промисловість, гранти, кредити.

Країни, які постраждали внаслідок воєн, якнайбільше потребують різних видів допомоги від міжнародної спільноти, оскільки самотійно не можуть

впоратися з катастрофічними наслідками конфліктів. Пріоритети міжнародної допомоги повинні базуватись на реалізації Цілей сталого розвитку, що забезпечить збалансованість, справедливість, економічне, промислове, інфраструктурне зростання, партнерство заради стійкого розвитку не тільки окремої країни, а й її сусідів задля протидії екологічним катастрофам, підтримці демократичних реформ та відновленню економік. Міжнародна допомога включає гуманітарну допомогу, науково-технічну, міжнародну технічну допомогу, зокрема у вигляді технічних засобів чи фінансових ресурсів: субсидій, грантів, кредитів на погашення зовнішньої заборгованості на пільгових умовах²⁷⁶. Вона може надаватися для підтримки в чітко визначених сферах діяльності, або для вирішення різноманітних суспільних проблем. Участь міжнародних донорських організацій та фондів в країнах, що зазнали кризових чи конфліктних ситуацій, проявляється, насамперед, у наданні гуманітарної допомоги. Мотивацією міжнародних донорських організацій стає можливість знизити потенційні загрози для своїх країн щодо нелегальної міграції, мінімізувати наслідки бойових дій та терактів, запобігти екологічним катастрофам та поширенню захворювань, а також можливість підтримати демократичні реформи та економічну діяльність в цих країнах.

Міжнародна солідарність та економічна інтеграція свого часу відіграла важливу роль у повоєнному відновленні Європи (табл.1). Повоєнне відновлення країн Західної Європи та Східної Азії викликало створення таких міжнародних інституцій як Міжнародний Валютний Фонд (МВФ) та Світовий Банк, UNCTAD та UNIDO.

Таблиця 1 – Програма відновлення європейської економіки («План Маршалла»)

Країни, яким надається допомога	Ключові передумови і пріоритети надання допомоги	Програми допомоги та їх зміст
<p><i>16 країн: Франція, Німеччина, Туреччина, Португалія, Великобританія, Італія, Нідерланди, Люксембург, Бельгія, Австрія, Данія, Норвегія, Швеція,</i></p>	<p>Зруйнована виробнича база більшості країн Європи, виснажені валютні резерви, В США для координації було створено Адміністрацію економічного співробітництва. З метою ефективного управління допомогою створили Європейську організацію економічного співробітництва (для управління фінансовими фондами). Кошти використовувались переважно на імпорتنі закупівлі продуктів, палива; промислового</p>	<p>Метою Програми відновлення європейської економіки було подолання дефіциту матеріальних ресурсів для відновлення виробництва, забезпечення життєдіяльності населення, становлення інститутів, які трансформують процес, завдяки усуненню адміністративних бар'єрів, зниженню бар'єрів зовнішній торгівлі, досягненню фінансової стабільності через стабілізацію</p>

²⁷⁶ Беззубко Б., & Беззубко Ю. 1. (2020). Міжнародна технічна допомога для України. Галицький економічний вісник, (64) С.210-216
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Країни, яким надається допомога	Ключові передумови і пріоритети надання допомоги	Програми допомоги та їх зміст
<p><i>Швейцарія, Ірландія, Ісландія та Греція.</i></p>	<p>обладнання і устаткування; добрив, сировини, матеріалів і обладнання для агровиробництва та поповнення міжнародних резервів і стабілізації національних валют.</p> <p>Галузеві пріоритети інвестування: механізація сільського господарства, устаткування для виробництва та постачання сирової нафти і нафтопродуктів; спеціальне обладнання для вугільної промисловості; устаткування для залізорудної і сталеплавильної промисловості.</p>	<p>валютних курсів, збалансування бюджетів.</p> <p>Загальна сума асигнувань сягнула 13,5 млрд дол. США у цінах 1948-1951рр. За час реалізації Програми ВВП європейських країн збільшився на 15-25%.</p>
	<p><i>Позитивні результати дії програми</i></p>	<p><i>Прорахунки/проблеми при наданні міжнародної допомоги</i></p>
	<p>«План Маршала» допоміг економіці країн-реципієнтів зрівнятися за основними параметрами з довоєнним рівнем. Наслідки: відновлення і модернізація виробничої бази; успішна боротьба з голодом і холодом в поселеннях, надходження від продажу імпортованих товарів використовувалися для інвестування виробництва і покриття дефіциту бюджету; зміна бізнес-середовища.</p> <p>Самостійний вибір країною-реципієнтом пріоритетних галузей для підтримки, адресна допомога підприємців.</p> <p>Технічна і консультативна допомога у вигляді опанування передового досвіду і знань через участь в Раді з питань продуктивності, місій з підвищення продуктивності, підвищенні кваліфікацій з питань технологій сільгоспвиробництва.</p> <p>Геоелекономічні наслідки: зародження безбар'єрних торгових відносин, які згодом сприяли інтеграційним процесам у Європі.</p>	<p>Під політичним тиском від участі в програмі відмовились східноєвропейські країни і згодом Чехословаччина. Але пізніше доєдналися Іспанія та Канада. Розкол Європи у відношенні до «плану Маршалла» став початком протистояння СРСР та США.</p> <p>Половина допомоги пішла на сировину, напівфабрикати, продовольство і тільки 15% – на машини і транспортні засоби.</p> <p>Дуже значні диспропорції в отриманні допомоги за країнами: Великобританія отримала 26% від загальної суми, Франція – 18%, Західна Німеччина – 11%.</p>

Складено авторами за даними сайту <http://kimo.univ.kiev.ua>; A. S. Milward. *The reconstruction of western Europe, 1945–1951*. Berkeley; Los Angeles, 1984; J. L. Gaddis. *The Cold War: a new history*. New York, 2005.

Серед міжнародних донорських організацій виділяють: міждержавні організації, урядових, суспільних та корпоративних донорів.

Агентство США з міжнародного розвитку (USAID) надає економічну та гуманітарну допомогу по всьому світу понад 50 років. Діяльність організації зосереджена на таких напрямках: надання гуманітарної допомоги та допомоги у перехідний період; підтримка демократії, прав людини та врядування; сприяння сільському господарству, економічному розвитку, енергетиці та енергетичній безпеці, охороні здоров'я. Досвід USAID у подоланні гуманітарної кризи і наданні гуманітарної допомоги постраждалому населенню може виявитись корисним в період загострення конфлікту, який призводить до стрімкого згортання економічних та гуманітарних зв'язків в країні (приклад Південного Судану у табл. 2).

Таблиця 2 – Програми Агентства США з міжнародного розвитку (USAID) для відновлення Судану і Південного Судану, що постраждав від збройних конфліктів та криз

Країни, яким надається допомога	Ключові передумови і пріоритети надання допомоги	Програми допомоги та їх зміст
Судан і Південний Судан	<p>Понад 20 років триває конфлікт між північчю та півднем Судану. Після здобуття незалежності у 2011 р. Південний Судан зіткнувся з низкою гуманітарних проблем, включаючи переміщення населення та інтеграцію репатріантів, а саме:</p> <ul style="list-style-type: none"> - збільшення потоків біженців з півночі; - зростання насильства між громадами та незахищеність населення; - погіршення гуманітарних умов. <p>За оцінками ООН у 2022 р. в Південному Судані потребуватимуть гуманітарної допомоги 8,9 млн осіб. Пріоритети USAID в країні включають надання допомоги з порятунку життя постраждалому від конфлікту населенню в регіоні Дарфур, Південний Кордофан і Блакитний Ніл.</p>	<p>Фонд швидкого реагування USAID надав короткострокове фінансування національним і міжнародним агентствам допомоги Судану. USAID надав Судану (2016 р.):</p> <ul style="list-style-type: none"> • непродовольчу гуманітарну допомогу (понад 54 млн дол. США) з водопостачання, санітарії та гігієни; охорони здоров'я; харчування; укриття; захисту; для сільського господарства та продовольчої безпеки, відновлення економіки та становлення ринкової системи; • пряму продовольчу допомогу (понад 164 млн дол. США) в рамках Всесвітньої продовольчої програми Організації Об'єднаних Націй (WFP) та ЮНІСЕФ для підтримки незахищених та вразливих груп населення Судану шляхом розподілу невідкладної продовольчої допомоги; • внесок USAID у розмірі 10 млн дол. США на програму ваучерів, які дають можливість людям, можливість людям за купувати продовольство, вирощене в Судані, і 1,4 млн дол. США через ЮНІСЕФ на закупівлю місцевих харчів.

Країни, яким надається допомога	Ключові передумови і пріоритети надання допомоги	Програми допомоги та їх зміст
	<p><i>Позитивні результати дії програми</i></p> <p>USAID інтегрує гуманітарну допомогу та допомогу розвитку, щоб підвищити стійкість домогосподарств і громад. Такий підхід дозволить залучити громади у процес розвитку для вирішення проблем та забезпечення стійкості до майбутніх потрясінь</p> <p>Протягом десятиліть USAID надає Південному Судану гуманітарну допомогу, допомогу з пом'якшення наслідків конфлікту, основні послуги (охорона здоров'я та освіта), а також підтримку ключових етапів Всеосяжної мирної угоди Судану 2005 року.</p>	<p><i>Прорахунки/проблеми при наданні міжнародної допомоги</i></p> <p>Основними <i>проблемами</i> при наданні міжнародної допомоги є:</p> <ul style="list-style-type: none"> - небезпека нападів озброєних осіб на гуманітарні конвої, - бюрократичні переслідування організацій з надання допомоги, - проблеми з матеріально-технічним забезпеченням. <p>Захист виробників і сприяння вирощуванню продовольства в Судані краще сприятиме продовольчій безпеці і стійкості економіки, чим багаторічний зовнішній імпорт.</p>

Складено авторами за даними сайту <https://www.usaid.gov/where-we-work>

Група Світового банку (ГСБ) є одним із найбільших донорів коштів та знань для країн, що розвиваються. ГСБ підтримує заходи охорони здоров'я, працює над забезпеченням потоку важливих матеріалів та обладнання, а також допомагає приватному сектору продовжувати працювати та підтримувати робочі місця. Тільки з квітня 2020 р. по червень 2021 р. ГСБ виділила 160 млрд дол. США для допомоги більш ніж 100 країнам, щоб захистити вразливі верстви населення, підтримати бізнес та підтримати відновлення економіки. Ця підтримка включала 50 млрд дол. США нових ресурсів Міжнародної асоціації розвитку через гранти та пільгові позики, а також 12 млрд дол. США для країн, що розвиваються. За останні роки іноземні інвестори все частіше виявляють бажання вкладати капітал за межами своїх країн. Проте, для країн, які постраждали від нестабільності, конфліктів і насильства, інвестиції залишаються в дефіциті. Залучення іноземного капіталу до таких країн вважається надто ризикованим, оскільки інвестори висловлюють побоювання щодо можливих військових дій, випадків збройних громадянських заворушень, експропріації активів, порушень контрактів, валютних обмежень тощо.

Багатостороннє агентство з гарантування інвестицій (Multilateral Investment Guarantee Agency, MIGA), як член Групи Світового банку, було створено для сприяння прямим іноземним інвестиціям у країнах з економікою, що розвивається, для підтримки економічного зростання, зниження рівня бідності та поліпшення умов життя людей. Саме MIGA надає страхування від ризиків, які є унікальними для країн, що перебувають у конфліктних ситуаціях. Мета цієї допомоги – пом'якшення ризиків обмежень на конвертацію та переказ валюти, порушення контрактів урядами, експропріацію, війни та громадянських заворушень. MIGA допомагає залучити інвестиційний капітал у

нестабільні країни, щоб вони могли отримати вигоду від ведення бізнесу і діяльності місцевих галузей, які приватні інвестори та кредитори вважають занадто ризикованими. Пріоритетами організації є: діяльність в умовах конфліктного середовища, підвищення енергоефективності та протидія кліматичним змінам, трансформаційні проєкти. Досвід MIGA, представлений у табл. 3, що стосується країн з післяконфліктною стабілізацією економіки, дозволяє вирішувати проблеми залучення іноземних інвестицій через механізми страхування з метою стимулювання промислового зростання, розвитку технічних ноу-хау в країнах тощо.

Таблиця 3 – Програми Multilateral Investment Guarantee Agency з відновлення в країнах з ризиками війни та громадянських заворушень

	<i>Ключові передумови і пріоритети надання допомоги</i>	<i>Програми відновлення та їх зміст</i>
М'янма	<p>Після тривалої громадянської війни, що точилася в країні більше 60 років, та громадянського примирення у 2012 році М'янма гостро потребувала сучасних промислових приміщень для залучення інвестицій, стимулювання промислового зростання та привнесення технічних ноу-хау в країну. Водночас в М'янмі досить дорого коштує земля, а закони про землекористування є складними для іноземних інвесторів. Гарантії MIGA підтримують розвиток, фінансування, будівництво, суборенду та експлуатацію Корейсько-М'янмського промислового комплексу на місці напівзруйнованого комплексу, який не використовувався із 2008 року. Будівництво Корейсько-М'янмського промислового комплексу сприятиме інвестиціям приватного сектора та покращить виробничі потужності М'янми.</p>	<p>MIGA видав гарантії Корейській земельній і житловій корпорації Республіки Корея (LH), що покривають її інвестиції в акціонерний капітал до 5,7 мільйонів доларів США в Корею та М'янму, на термін до 15 років. MIGA покриває також гарантію позики, видану LH комерційному кредитору. Гарантії MIGA забезпечують захист LH від ризиків неконвертованості валюти та обмеження переказів, війни та громадянських заворушень, а також порушення контракту.</p> <p>Планується відремонтувати комплекс, а територія навколо нього перетвориться на індустріальний парк площею 2,2 кв. км з заводськими площами, багатоповерховими будинками, парками та ресторанами. Збудує комплекс Korea Land & Housing Corp. (LH) разом з міноритарним партнером Global Sae-A Co., виробником одягу з Південної Кореї, та урядом М'янми. Прагнучи розвивати інфраструктуру, яка залучатиме приватних роботодавців, уряд М'янми передає в оренду площі спільному підприємству LH в обмін на частку власності. LH і уряд володітимуть кожен по 40% спільного підприємства «Корейсько-М'янмський промисловий комплекс (КМІС)», а Sae-A Co. володітиме 20 %. У парку побудують приміщення для текстильних</p>

	виробників, виробників одягу, кухонних комбайнів, виробників електроніки та логістичних компаній. Комплекс матиме власну електропідстанцію та водоочисну станцію. Значна частина допоміжної інфраструктури буде оплачена за рахунок позики Фонду економічного розвитку Кореї.
<i>Позитивні результати реалізації програм та прорахунки/проблеми при наданні міжнародної допомоги</i>	
<p><i>Позитивні результати.</i> Гарантії MIGA для приватного сектору та інвестиції LH у промисловий комплекс зміцнюють довіру до крупних інвестиційних проєктів, зміцнюють зв'язки ланцюгів поставок та заохочують іноземні акціонерні інвестиції. Комплекс створить робочі місця та дозволить трансформувати місцеву економіку завдяки розміщенню міжнародних підприємств та залученню іноземних виробників, що дозволить країні перейти від експорту переважно сировини до текстилю, електроніки та виробництва продуктів з високою доданою вартістю.</p> <p>Економічне зростання М'янми прискориться через створення сучасного індустріального парку, залучення інвестицій приватного сектору, отримання податкових надходжень для уряду, а також посилення економічного впливу за рахунок непрямого створення робочих місць в компаніях-орендарях, постачальниках та компаніях-партнерах.</p>	<p><i>Ключовими перешкодами</i> для ведення бізнесу та інвестицій у приватний сектор М'янми є:</p> <ul style="list-style-type: none"> • складна законодавча база щодо землекористування, • високі ціни на землю, • відсутність доступу до електроенергії та нерозвинена інфраструктура.

Складено авторами за даними сайтів: <https://is.gd/orcVWv>; <https://is.gd/uvCfzf>; <https://is.gd/fHBSmd>; <https://is.gd/0CCCND>.

Програма ООН з навколишнього середовища (ЮНЕП) створена у 1972 р. і нині є провідною для просування раціонального використання природних ресурсів та сталого розвитку навколишнього середовища.

Діяльність ЮНЕП включає в себе: екологічну оцінку умов і тенденцій на світовому, регіональному та національному рівнях; розвиток міжнародних і національних екологічних інструментів; зміцнення інститутів для раціонального управління навколишнім середовищем. В табл. 4 представлено досвід участі ЮНЕП у відновленні навколишнього середовища Іраку після воєнних дій.

Таблиця 4 – Програма United Nations Environment Programme (UNEP) з відновлення навколишнього середовища Іраку після війни та збройних конфліктів

	<i>Ключові передумови і пріоритети надання допомоги</i>	<i>Програми відновлення та їх зміст</i>
<i>Ірак</i>	Катастрофічні наслідки поблизу м. Кайяра, де близько 25 000 мешканців постраждало під час битви за Мосул у 2016-2017 рр., величезні руйнування нафтових свердловин та спалення запасів корисних копалин, підірвані водні дамби. Негативний вплив забруднення навколишнього середовища був такої інтенсивності, що це явище отримало назву “Da’esh winter” («Зима Ісламської держави»). Вплив катастрофи тривав понад 4 роки, перешкоджаючи економічній діяльності, тваринництву та життєдіяльності.	Програма ООН з навколишнього середовища (ЮНЕП) у співпраці з міністерствами нафти та навколишнього середовища Іраку виявили 74 забруднені нафтою об’єкти внаслідок конфлікту. Профінансовано випробування методів очищення і знезараження отруєної землі за допомогою природних ґрунтових бактерій.
<i>Позитивні результати реалізації програм та прорахунки/проблеми при наданні міжнародної допомоги</i>		
	<i>Позитивні результати:</i> Значний рівень успішності використання цих методів знезараження землі від нафти, що становить 77%.	<i>Прорахунки:</i> <ul style="list-style-type: none"> • низькі темпи знезараження та консервації зруйнованих свердловин; • згубний вплив на тваринництво, традиційні сфери діяльності; • відтворення великих нафтових розливів кожного наступного року серед густозаселених районів.

Складено авторами за даними: Crude impact: cleaning up the ravages of war in Iraq 09 Nov 2020 <https://www.unep.org/news-and-stories/story/crude-impact-cleaning-ravages-war-iraq>

Програма розвитку ООН (ПРООН) є глобальною мережею ООН, що надає країнам доступ до джерел знань, досвіду та ресурсів з метою допомоги людям в усьому світі будувати краще життя.

Програма спрямована на такі пріоритети: боротьба з бідністю у сільських районах шляхом впровадження ефективних моделей соціального і економічного розвитку та розвитку навколишнього середовища, а також підтримка демократичних процесів, установ та мереж.

Досвід реалізації проєктів з післявоєнного відновлення економіки країн, що зазнали бойових дій, представлений у табл. 5.

Таблиця 5 – Програми ПРООН у повоєнному відновленні країн (Боснія і Герцеговина, Сирія (Ліван та Йорданія))

	<i>Ключові передумови і пріоритети надання допомоги</i>	<i>Програми відновлення та їх зміст</i>
<i>Боснія та Герцеговина</i>	<p>Наслідки війни, переповнені склади застарілими боєприпасами стали постійною загрозою безпеці для населення Боснії та Герцеговини та регіону. Через свій вік (в середньому 40 років), погані умови складських приміщень та відсутність технічного обслуговування, ці запаси зіпсувалися до такої міри, що становили загрозу для місцевого населення, що проживало біля місць зберігання. Основним ризиком, пов'язаним із управлінням запасами старих боєприпасів, були неконтрольовані вибухи на місці зберігання боєприпасів (UEMS).</p>	<p>Проект знищення вибухонебезпечних предметів та залишків війни (EXPLODE) започаткований 2013 р. був профінансований Європейським Союзом у сумі 4,6 млн євро.</p> <p>Проект мав такі цілі:</p> <ol style="list-style-type: none"> 1. Зменшення кількості нестабільних і небезпечних надлишкових боєприпасів. Було знищено 1800 тонн застарілих зайвих боєприпасів, включаючи боєприпаси малого калібру для легкого озброєння, артилерії, та боєприпаси, що містять білий фосфор. 2. Нарощування потенціалу збройних сил та Міністерства оборони Боснії і Герцеговини для покращення їх здатності управляти боєприпасами та знищувати залишки боєприпасів. Було успішно відремонтовано 72 будівлі, покращено їх безпеку та обладнання.
	<i>Позитивні результати реалізації програм та прорахунки/проблеми при наданні міжнародної допомоги</i>	
	<p><i>Позитивні сторони:</i></p> <ul style="list-style-type: none"> • запобігання незаконному використанню та доступу до вогнепальної зброї та стрілецької зброї; • розмінування та знешкодження нерозірваних пристроїв та озброєння; • створення умов для сталого управління життєвим циклом боєприпасів; • покращення безпеки персоналу збройних сил та населення країни. 	<p><i>Прорахунки:</i></p> <p>Не відомі.</p>

Складено авторами за даними сайтів: <https://is.gd/ZQE0r3>; <https://is.gd/Mc2Q9d>; <https://www.sharp.com/give>.

Глобальний інноваційний фонд (Global Innovation Found, GIF) – некомерційний інноваційний фонд, який фінансує проривні та інноваційні ідеї для поліпшення соціально-економічного життя в країнах з низькими доходами. Фонд підтримує проекти – рішення глобальних проблем в різних галузях, які

можна поширювати у промислових масштабах, через громадські / благодійні сектори або поєднання двох секторів для того, щоб досягти більшого поширення. Пріоритети діяльності GIF полягають у підтримці нових бізнес-моделей, методів, технологічних рішень, ідей щодо способів надання продуктів і послуг, які принесуть користь бідним країнам, що розвиваються. У табл. 6 представлені програми розвитку для мікропідприємств (Кенія, Уганда, інші) та програми щодо працевлаштування біженців (Марокко, Ліван, Йорданія).

Таблиця 6 – Програми Глобального інноваційного фонду (GIF) для підтримки країн, що переживають гуманітарну кризу

	<i>Ключові передумови і пріоритети надання допомоги</i>	<i>Програми відновлення та їх зміст</i>
<i>Кенія, країни Африки на південь від Сахари, Уганда</i>	<p>У Східній Африці у неформальному секторі зайняті понад 75% населення. Неформальна робота зазвичай є низькооплачуваною, ненадійною та небезпечною. Перспективи економічного розвитку у цих країнах відкриваються лише через доступ до гарної та високооплачуваної роботи.</p> <p>Організація Balloon Ventures інвестує в малі та середні підприємства секторів, що створюють нові робочі місця. Організація співпрацює з об'єктами інвестицій, керує командою експертів для роботи з підприємцями, стимулює зростання та покращує умови праці співробітників.</p>	<p>Організація «Венчурна куля» (Balloon Ventures), під егідою GIF, реалізує програми розвитку для мікропідприємств, із забезпеченням навчання, фінансової підтримки, необхідної для росту, створення нових робочих місць.</p> <p>Допомога виділяється у вигляді гранту у розмірі 230 000 доларів США для вдосконалення та зниження ризиків моделі Balloon Venture за надання інтенсивної, довгострокової підтримки передового досвіду управління.</p>
	<i>Позитивні результати реалізації програм та прорахунки/проблеми при наданні міжнародної допомоги</i>	
	<p><i>Позитивні результати:</i></p> <p>Створення передових галузевих інструментів, політики, підходів, тематичних досліджень та ідей, які Balloon Ventures та інші організації можуть використовувати для підтримки неформальних малих підприємств.</p>	<p><i>Прорахунки:</i></p> <p>Інертність населення і низька зацікавленість в підприємництві, брак освіти для ведення підприємництва.</p>

Складено авторами за даними сайту <https://www.globalinnovation.fund>.

Європейський банк реконструкції та розвитку (ЄБРР) – міжнародний фінансово-кредитний інститут, який надає допомогу країнам від Центральної Європи до Центральної Азії для проведення ринкових реформ, активного інтегрування економік цих країн у міжнародні господарські зв'язки. Здійснює свою діяльність за такими пріоритетами: фінансовий сектор та підтримка

малого і середнього бізнесу; розвиток муніципальної, транспортної та енергетичної інфраструктури; природоохоронні заходи; модернізація промисловості. Досвід ЄБРР у допомозі приватному сектору щодо залучення його в програму підтримки місцевої промисловості (Ліван) та підтримці МСП у різних галузях переробної промисловості, стимулювання агробізнесу (Косово) представлені у табл. 7 та 8.

Таблиця 7 – Програма Європейського Банку реконструкції та розвитку (EBRD) для допомоги місцевому приватному сектору

	<i>Ключові передумови і пріоритети надання допомоги</i>	<i>Програми відновлення та їх зміст</i>
<i>Косово</i>	<p>Неконкурентоспроможний приватний сектор. Необхідність підтримки переходу до зеленої енергетики. Необхідність у посиленні регіональної інтеграції, залученні іноземних інвестицій.</p>	<p>Програми ЄБРР сфокусовані на посилення діяльності приватного сектора в країні. Передбачена допомога у:</p> <ul style="list-style-type: none"> • досягненні адженди включення країни у європейське співтовариство, що фокусується на реалізації спільних проєктів; • посиленні підтримки муніципалітетів та залученні їх до виконання кліматично стійких та екологічних заходів, стимулювання інвестиції в інфраструктуру; • прискоренні впровадження інвестицій у державний сектор та підтримці виконання Економічного та інвестиційного плану ЄС; • підтримці місцевих малих та середніх підприємств.
	<i>Позитивні результати реалізації програм та прорахунки/проблеми при наданні міжнародної допомоги</i>	
	<p><i>Позитивні результати</i> від реалізації стратегії розвитку (2016-2021 рр.), що здійснювалась за підтримки ЄБРР:</p> <ul style="list-style-type: none"> • полегшення доступу до фінансування для малого бізнесу через кредитні лінії на суму понад 50 млн євро з 7 банками-партнерами та мікрофінансових установ; • підвищення конкурентоспроможності та ефективності МСП шляхом надання 186 місцевих консультацій та міжнародних консультативних 	<p><i>Проблеми:</i></p> <ul style="list-style-type: none"> - складний поточний стан ділового середовища (бізнес-клімату), недосконале регуляторне середовище у сфері зовнішньої торгівлі є перешкодою для ведення бізнесу; - обмежений доступ до фінансів;

	<p>проектів, а також за допомогою коучингу та навчання з передачі навичок;</p> <ul style="list-style-type: none"> • підсилення приватного сектору шляхом прямого кредитування (30 млн євро) широкого кола компаній для розширення та модернізації своїх потужностей: Tulltorja (будівництво), Santefarm (фармацевтика), REKS (переробна промисловість), Kujtesa (ІКТ-індустрія); • програма «Жінки в бізнесі» (WiB) у Косово, з підтримкою МСП, які очолюють жінки, шляхом надання відповідних послуг через кредитні лінії та консультаційних послуг через ТЕБ Банк; • пряме кредитування агробізнесу (наприклад, Viva Fresh і Meridian) та надання консультаційних послуг для допомоги більш ніж 40 підприємствам для їхнього розширення, оновлення їхніх ланцюгів створення вартості, розробки стандартів для прискорення експорту; • підтримка Центрального банку Косово у прийнятті правової та нормативної бази для факторингу та перегляд законодавчої бази щодо врегулювання банків Косово, узгодження з найкращою міжнародною практикою. 	<ul style="list-style-type: none"> - високе безробіття, дефіцит кваліфікацій; - низька ефективність роботи державних компаній.
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Складено авторами за даними сайту <https://www.ebrd.com/kosovo.html>.

Таблиця 8 – Програма Європейського Банку реконструкції та розвитку (EBRD) для підтримки країн у розвитку інфраструктурних проєктів

	<i>Ключові передумови і пріоритети надання допомоги</i>	<i>Програми відновлення та їх зміст</i>
Ліван	<p>Після катастрофічного вибуху на складі міндобри в Бейруті в 2020 році Ліван переживає найсерйознішу економічну кризу за останні десятиліття, що спричинена неможливістю після інциденту сформуванню дієздатний уряд в країні.</p> <p>Затримки у формуванні уряду зірвали необхідні реформи і стали каталізатором до можливого соціального вибуху. МВФ відмовився продовжувати свою програму підтримки, доки в країні не пройдуть реформи. Влада намагалася зупинити погіршення обмінного курсу та отримати доступ до зовнішніх джерел фінансування, необхідного для підтримки економіки, отримання</p>	<p>Діяльність ЄБРР у Лівані:</p> <ul style="list-style-type: none"> • 10 проєктів на сьогоднішній день (з 2017 р.); • 820 мільйонів євро сукупних інвестицій ЄБРР для підтримки конкурентоспроможності приватного сектору, сприяння сталому енергопостачанню та підвищенню якості й ефективності надання державних послуг; • 100% частка приватного сектора в портфелі; • Поточний портфель проєктів в 199 млн євро. <p>Діяльність ЄБРР у Лівані зосереджена на таких напрямках:</p> <ul style="list-style-type: none"> • підтримка конкурентоспроможності приватного сектору шляхом покращення середовища для розвитку бізнесу та

<p>ключових субсидій та збільшення резервів. Як наслідок, уряд не зміг забезпечити доступ до основних товарів для значної частини населення, а тривала нестача електроенергії та палива значною мірою вплинула на економічну активність, ще більше посилюючи інфляцію.</p> <p>Отже, ЄБРР бере участь у широкому політичному діалозі з владою у співпраці з іншими міжнародними фінансовими установами для сприяння реформам в інфраструктурному та енергетичному секторах.</p>	<p>збільшення обсягу доступних фінансових ресурсів;</p> <ul style="list-style-type: none"> • заохочення сталого енергопостачання, сприяння реформам енергетичного сектору та підвищення енергоефективності; • підвищення якості та ефективності надання державних послуг та підтримка участі приватного сектору в державній інфраструктурі. <p>ЄБРР, за фінансування ЄС, провів дослідження «Промисловий сектор Лівану в 2021 році» для підтримки розвитку промислового сектору Лівану, що має вирішальне значення для економіки Лівану, сприяючи не лише зростанню національного ВВП, а й доступності твердої валюти через експорт промислової продукції.</p>
<p><i>Позитивні результати реалізації програм та прорахунки/проблеми при наданні міжнародної допомоги</i></p>	
<p><i>Позитивні результати:</i></p> <p>Заохочуючи приватний бізнес до участі у державних енергетичних та інфраструктурних проектах, Банк спільно з державними установами сприяє надходженню значних інвестицій та розвитку бізнес-середовища. Увага Банку фокусується на фінансових установах та корпоративному секторі, передусім для підтримки малих та середніх підприємств.</p> <p>Підтримка зайнятості населення у приватному секторі за допомогою ЄБРР позширюється і на розвиток місцевого промислового виробництва, що дозволить знівелювати шоки, пов'язані з масовими звільненнями та поглибленням безробіття в країні. Водночас можливості для бізнесу в Лівані залежатимуть від політичних ініціатив та реформ, які проводить країна, а також від регіональної геополітики.</p>	<p><i>Проблеми:</i></p> <ul style="list-style-type: none"> • тотальна бідність і суцільний дефіцит, високі ціни на харчові продукти, транспорт та енергетичні ресурси, високі темпи інфляції (понад 100%) можуть спричинити «соціальний вибух» в країні; • економічна та політична нестабільність в країні стримує розвиток промислового сектору; • структурні зміни, що пов'язані з реформуванням економіки країни та підтримкою розвитку промислового сектору, потребують втручання різних заінтересованих сторін – від державних інституцій та політиків до приватного бізнесу та промислових асоціацій.

Складено авторами за даними сайту: <https://www.ebrd.com/lebanon.html>

Компенсаційна комісія ООН (UNCC) була створена у 1991 р. як допоміжний орган Ради Безпеки ООН відповідно до резолюції Ради Безпеки 687(1991) для розгляду претензій та виплати компенсацій за втрати та збитки, завдані в результаті незаконного вторгнення Іраку та окупації Кувейту у 1990-

1991 рр. До Комісії було подано близько 2,7 млн претензій на суму 352,5 млрд дол. США. Завершивши розгляд претензій у 2005 р., UNCC підтримала позови приблизно 1,5 млн заявників на загальну суму компенсацій 52,4 млрд дол. США. Комісія підтвердила, що Ірак несе відповідальність згідно з міжнародним правом «за будь-які прямі збитки, збитки, включаючи шкоду навколишньому середовищу та виснаження природних ресурсів, або шкоду іноземним урядам, громадянам та корпораціям в результаті незаконного вторгнення Іраку та окупації Кувейту»²⁷⁷. Основні положення Програми подальших заходів щодо екологічних виплат, яка діяла більше 30 років, і згідно резолюції 2621 (2022) виконала свій мандат у 2022 р. представлено у табл. 9.

Таблиця 9 – Програма UNCC з відновлення навколишнього середовища Кувейту після війни в Перській затоці

	<i>Ключові передумови і пріоритети надання допомоги</i>	<i>Програми відновлення та їх зміст</i>
<i>Кувейт</i>	<p>Під час війни 1990-1991 рр. в районі Перської затоки іракські війська розграбували місто Кувейт. Більше половини населення, як іноземці, так і громадяни, залишили Кувейт. Відбувся негативний вплив на морську та наземну територію країни, забруднення навколишнього середовища.</p> <p><i>Реконструкція Кувейту.</i></p> <p>В лютому 1991 року відновлено суверенітет Кувейту після чого у травні 1991 року уряд заохочував до повернення корінних громадян Кувейту. Країна (2,2 млн людей) покладалася на власні ресурси. Програму реконструкції завершили за рік, бо збитки виявилися не такими великими. Головні повоєнні витрати: компенсації за операцію «Буря в пустелі», високі оборонні витрати, що залишилися надовго, та безнадійні кредити в</p>	<p>Програма подальших заходів щодо екологічних виплат була створена Радою керуючих UNCC згідно з Рішенням 258 (2005) для моніторингу фінансової та технічної реалізації екологічних проектів, які здійснюються учасниками.</p> <p>Програма була створена на прохання уряду Іраку за повної підтримки урядів-учасників (тобто Ірану, Йорданії, Кувейту та Саудівської Аравії) і фактично фінансувалася чотирма урядами з пропорційної частини їхніх відповідних винагород, щоб забезпечити фінансову прозорість і технічну відповідність рекомендаціям Програми. Вона була структурована таким чином, щоб нею керувала мінімальна кількість персоналу. Залучено незалежних рецензентів, які відіграли важливу роль в оцінці технічних та фінансових аспектів проектів уряду. Вони мали унікальний статус: хоча уряди-учасники уклали контракти й оплачували їх, звітували рецензенти в UNCC.</p> <p>Уряди-учасники створювали спеціальні цільові рахунки в своїх центральних банках або подібних урядових установах для управління залишком коштів поетапного проекту. Програма заходів щодо екологічних компенсацій включала: відновлення пошкоджень підземних вод; відновлення збитків, завданих морським і прибережним ресурсам; бетонування котлованів колодязів та військових укріплень; рекультивуацію та відновлення територій після нафтових озер;</p>

²⁷⁷ Follow-up Programme for Environmental Awards <https://uncc.ch/follow-programme-environmental-awards-0>

<p>економіці (уряд купив увесь кредитний портфель іракських банків приблизно за \$20 млрд). Ірак виплатив понад \$50 млрд репарацій.</p>	<p>відновлення морських заповідників; рекультивацію місць утилізації боєприпасів.</p>
<p><i>Позитивні результати реалізації програм та прорахунки/проблеми при наданні міжнародної допомоги</i></p>	
<p><i>Позитивні результати:</i> Рада Безпеки прийняла резолюцію 2621 (2022), в якій оголосила, що UNCC повністю виконала свій мандат в частині підтримки Кувейту.</p>	<p><i>Проблеми:</i> Не зважаючи на те, що мандат у рамках Програми подальших заходів щодо екологічних виплат був виконаний щодо двох країн (Йорданія і Королівство Саудівська Аравія) у 2013 р., через тривалий термін виконання Програми завдається шкода здоров'ю населення. Йорданія протягом багатьох років фіксувала сплеск ракових захворювань, який виник через екологічний вплив, пов'язаний із наслідками воєнної інвазії Іраку. Тривалий час існували бар'єри для ведення традиційної економічної діяльності, зокрема для тваринництва.</p>

Складено авторами за даними сайтів: *Post-conflict environmental restoration: The UNCC Follow-up programme for environmental awards/ united nations compensation commission, 2012/13. URL: <https://uncc.ch/follow-programme-environmental-awards-0>; <https://uncc.ch/un-security-council-resolutions>*

Отже, аналізуючи сучасний досвід реалізації програм міжнародних організацій-донорів, які розроблялися для відновлення економіки постраждалих від конфліктів країн, слід зазначити, що застосовуються як вузькоспеціалізовані, так і функціонально-орієнтовані програми відновлення. Значна частина їх спрямована: на вирішення екологічних проблем, як регіонального значення, так і міжкраїнного; на підтримку розвитку місцевого приватного бізнесу та місцевих індустрій; вирішення проблеми переміщення значної кількості людей, що тісно пов'язано із проблемами безробіття, створення робочих місць та закріплення кадрів, набуття нових навичок і знань. Важливою умовою для успішного виконання програм відновлення є співпраця міжнародних організацій-донорів з урядами країн-реципієнтів.

Водночас, проблеми практичного використання такої підтримки потребують суттєвого опрацювання, зокрема в питаннях розподілу міжнародної допомоги та залучення до цього процесу державних і недержавних інституцій. Як свідчить світова практика, основними проблемами використання міжнародної допомоги є:

- налагодження системи комунікацій та формування надійних партнерських відносин між міжнародними організаціями-донорами та урядом країни-реципієнта на засадах довіри та прозорості;

- відсутність координуючого органу (інституції), що поєднувала б міжнародних донорів та уряд країни-реципієнта;
- нав'язування донорами цільового характеру використання коштів міжнародної допомоги;
- неефективне та непрозоре використання коштів, наявність корупційної складової при розподілі коштів;
- низька відповідальність та підзвітність всіх ланок, залучених до процесу збору, розподілу та використання коштів міжнародної допомоги.

Проблема координації у процесі використання міжнародної допомоги є основною, і держава є центральною ланкою у забезпеченні контролю за максимально ефективним, прозорим використанням коштів. До виконання робіт по відновленню мають бути залучені приватні компанії з високим професійним реноме та чистою кредитною історією, передусім зарубіжні. Завдання держави-реципієнта – забезпечити стратегічну координацію між урядом та країнами-донорами, донорськими установами та їх представництвами, а також організацію комунікації та кооперацію між залученими до проєкту виконавцями, мультинаціональними структурами, приватним бізнесом.

Ще однією проблемою може стати цільовий характер надання коштів міжнародної допомоги та обов'язковість включення певних послуг від країни-донора. Так, наприклад, уряд Боснії та Герцеговини був відсторонений від процесів розподілу міжнародної допомоги, що призвело до проблем оперативного розподілу фінансування між цілями невідкладного характеру та цілями довгострокової стійкості²⁷⁸. Внаслідок такого підходу мало місце розпорошення коштів, спрямування їх на консультативні послуги замість вирішення нагальних і невідкладних потреб держави-реципієнта.

Водночас приклад таких нестабільних країн як Сомалі, Ліван чи М'янма показує, що тісна співпраця донорів з урядами та іншими державними інституціями стала провідним чинником успішної реалізації програм, які спрямовані на підтримку місцевих індустрій та створення нових робочих місць, що в результаті сприяло залученню іноземних інвестицій та розвитку бізнес-середовища.

Міжнародна допомога має бути сфокусована на державних програмах щодо відновлення фізичних активів (промислових об'єктів, інфраструктури, житла), підтримки стратегічних галузей, допомоги працевлаштування населення, а також на програмах підтримки регіонів, які постраждали від війни. Ефективність взаємодії між донорами міжнародної допомоги та державою-реципієнтом повинна виключити нецільове використання коштів. Допомога має

²⁷⁸ Данилишин Б.М. Як відновлювати економіку після війни. Програмна відбудова Боснії та Герцеговини: уроки для України. LB. 25 березня 2022 року. URL: https://rus.lb.ua/blog/bogdan_danylysyn/510994_yak_vidnovlyuvati_ekonomiku_pislya.html

відповідати потребам країни-реципієнта та сприяти реалізації покладених на неї стратегічних завдань.

Актуальною залишається проблема зниження корупційної складової при розподілі міжнародної допомоги. Особлива увага має приділятися прозорості процесу розподілу міжнародної допомоги та контролю за виконавцями країни-реципієнта. Закритість та невідкритість при розподілі та спрямуванні коштів міжнародної допомоги за нецільовими напрямками є значним ризиком у партнерських відносинах між донорами та реципієнтом, оскільки в українських реаліях саме бюджетна сфера і міжнародна валютна допомога є найбільш уразливими сферами для корупції на високому рівні.

В світлі вищевизначених проблем окремої уваги заслуговує побудова партнерських відносин на засадах довіри та прозорості, що також сприятиме приходу інвесторів в країну. Важливе значення матиме забезпечення прозорості нагляду за фінансовими операціями та обсягами інвестицій і їхнім розподілом, що має бути чітко зафіксовано в бюджеті проекту міжнародної допомоги. Створення особливих максимально комфортних умов залучення інвесторів, як вітчизняних, так і іноземних, з можливістю на власний розсуд вибирати об'єкти міжнародної допомоги, будь то допомога у відродженні зруйнованого міста, підприємства, підтримка галузі – має стати своєрідним допуском до участі у відновленні української економіки.

Пріоритетом в економіці має стати розроблення стратегії післявоєнного відновлення промисловості для реалізації національних пріоритетів та з урахуванням євроінтеграційних імперативів розвитку, що дозволить інвесторам скласти чітке бачення перспектив розвитку країни, на основі якого ними може бути сформована відповідна позиція щодо визначення цільових напрямів при наданні міжнародної допомоги.

Відданість Цілям сталого розвитку та неухильне дотримання їх на практиці міжнародними організаціями та урядами провідних країн створять підґрунтя економічного відродження України.

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ECONOMIC EDUCATION IN ENSURING SUSTAINABLE DEVELOPMENT

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Abstract. The article is devoted to the justification of the role of economic education in ensuring sustainable development. It has been proven that economic education and its culture make a significant contribution to the education of people who are passionate about resource conservation.

Keywords: economic education, eco-development, society education, indicators of sustainable development, environmental safety.

The report of the International Commission on Environment and Development in 1987 is the first appearance of the term "sustainable development". Translated into Ukrainian, this term can also mean "sustainable development". There are several more translations of the term "sustainable": supported, self-sustaining, continuous, long-lasting, harmonious, balanced.

At the beginning of the 80s of the last centuries, the concept of "sustainable development" was interpreted as "development without destruction", "eco-development", "ecological development", "organic development". Gradually, they came to the interpretation of "sustainable development", the most widespread definition of which is the stable functioning and development of the economic and social sphere while preserving and rationally using ecological resources.

Sustainable development is the possibility of rational human existence and development with the preservation of resources for the future. The following components of sustainable development are distinguished:

1. ecological – ecologically safe conditions for human development, legal, economic, political measures aimed at resource conservation and environmental protection;

2. economic – the development of the market system is aimed at eco-safety, resource security, the use of technologies that are safe for humans and the environment;

3. social – democracy, ensuring human rights, solving demographic and migration issues, problems of terrorism, military confrontations.

The main task of sustainable development is a promising future with the preservation of existing resources, their multiplication and actions with thoughts about future generations. This is admiration for organic, natural resources, refusal to use harmful substances, chemicals, etc. in everyday life.

Recently, the cultivation and consumption of organically produced food products, waste sorting, gradual rejection of plastic, transition to ecological means, raw materials, etc., have become particularly widespread in the world.

What then is the role of education in sustainable development? The role of education is important and consists in educating everyone to live according to ecologically safe, organic principles, to optimally use resources. Some scientists agree that education in a sustainable environment is the ability to live in a healthy relationship with nature, each other, preserving the best and multiplying it for future generations.

The general trend in modern education is globalization. Which means the formation and spread of a single social, informational and educational system in the world with the use of media space and the Internet. An important aspect of educational globalization is the education of a generation based on tolerance, political culture, and informatization.

Education in sustainable development requires constant changes, improvement, and progress. Since the growth of global competition leads to constant innovation, education of leadership qualities. Therefore, education is directed, first of all, to the upbringing of a personality that will strive for constant improvement, development, self-education, creative thinking, and the search for new ideas.

The development and improvement of various spheres of the economy requires the improvement of educational qualities. A modern qualified worker is an educated person who improves his knowledge and skills, strives for progressive changes and aims to preserve natural resources. All this makes education one of the most important factors of social development.

The model of society education is becoming more widespread – it is the orientation of society towards a high level of knowledge, education, continuous improvement and development. Education of society is a model according to which education takes first place among the needs of society, and is the basis of social and economic policy, improvement of the quality of life, production of innovations, high-tech and high-quality services.

Along with the model of society's education, the concept of "knowledge economy" emerges, according to which education and knowledge play a special role in ensuring economic growth and development. Without knowledge of economic laws, it is not possible to form an educated person who can correctly assess opportunities, calculate risks, determine the perspective and distribute, use all resources.

Economic education in the concept of sustainable development assumes optimality in the use of resources and is aimed at the use of ecological, energy-saving technologies, raw materials, materials, minimization of harmful waste.

The concept of sustainable development called into question the traditional foundation of the economy – economic growth due to the unlimited use of resources.

The existing foundation of the economy (before the emergence of the concept of sustainable development) was based on maximum profit and maximum welfare of the population, and the shortcomings had to be regulated by state policy. At that time, there was no question of the depletion of resources, their saving or restoration.

According to modern scientists, such a foundation is incomplete, since the desire for constant enrichment, obtaining maximum profit, saturation without thoughts about resource conservation can lead to the depletion of natural and social resources, on which the well-being and survival of people are based.

Economic science is developing, becoming more and more progressive and promising and aimed at considering the natural factor. First of all, this is due to the insufficiency of most traditional resources. This is characteristic of non-renewable resources, but also applies to renewable resources of ecosystems²⁷⁹.

Sustainable development is not only about economic stability, but also sustainable development in the long term, with future generations in mind. Since the pursuit of material enrichment leads to the depletion of nature, the degradation of existing economic relations.

In recent years, Ukraine has observed the effect of the law of economic rationalism – one of the most cruel and unjust, according to which environmental protection, resource conservation, moral and spiritual issues, etc. are rejected for the sake of increasing production volumes. For supporters of this law, material enrichment is above all else, money is the main argument.

By using the law of economic rationalism, socio-cultural, spiritual, and moral issues and the quality of life are relegated to the last places, the priority is for material enrichment. Decreasing the quality of life is about the moral and material satisfaction of society, provision of everything necessary for life, education, and work²⁸⁰.

The law of economic rationalism is the opposite of sustainable development and the decline in the quality of life is a confirmation of this. Because the quality of life is one of the most important components of sustainable development. This is a concept that determines the level of a person's social and physical condition and the correspondence of the life process to his wishes.

To determine the quality of life, it is necessary to consider: the possible inconsistency of a person's living conditions and his requirements (wishes) for them; human condition in natural, social and psychological conditions; a person's personal assessment of his standard of living.

As of 2020, the countries with the highest quality of life were: Norway (1st place), Denmark (2nd place), Finland (3rd place), New Zealand (4th place), Sweden (5th place), Switzerland (6th place), Canada (7 place)²⁸¹.

²⁷⁹ Зеркалов Д. В. (2013). Проблеми екології сталого розвитку.

²⁸⁰ Kovalevska N. et al. (2022). Problems of accounting digitalization in conditions of business processes digitalization, p.132-141.

²⁸¹ Висоцька О.Є. (2011). Освіта для сталого розвитку: науково-методичний посібник; Непєїна Г.В. Роль освіти у забезпеченні сталого розвитку людства, с.54-60.

Quality of life criteria used to determine the most comfortable and attractive country for human life, work, and recreation: health, longevity, available educational services, level of gross domestic product per capita.

The list of countries with a high standard of living includes Germany (11th place), Japan (13th place), Belgium (16th place), France (18th place), Slovenia (22nd place), Czech Republic (25th place), Poland (32nd place), Slovakia (35th place), etc. According to the results of 2020, Ukraine took 85th place in the rating and belonged to countries with an average level of development.

At the bottom of the ranking (that is, the countries with the lowest standard of living) are: South Sudan, Somalia, and the Republic of Niger.

In order to improve the quality of life in Ukraine (and not only to increase rating indicators), but it is also necessary to ensure social differentiation based on a significant increase in the specific weight of the middle class. Such actions can prevent unjustified and dangerous for the stability of society gaps in the standard of living of different population groups. But for this, a certain system of influential forms of organization of social life is needed, which can neutralize the negative processes of social stratification in practice²⁸².

In economic education, along with the concept of "quality of life", there is also such a concept as "indicator of human development". Certain sources of economic information equate these concepts, but in most cases, they are considered similar, but with certain different components.

The human development indicator is a characteristic of the quality of human development and its social conditions in a single country. Its value is influenced by three main indicators: life expectancy, level of education (including access to primary, secondary, general, and higher education and the general level of education of the population), gross domestic product per person.

These three components constitute the average indicator for the country. Under the best conditions, it is one, and under the worst conditions, it is zero²⁸³.

When forming a sustainable development strategy, the indicator of sustainable development is also used.

Indicators of sustainable development are indicators used to assess people's quality of life, their health, the environment, and the impact of human activity on the environment and people's health. Among them, the following are distinguished: ecological, economic, social, and institutional.

Ecological indicators of sustainable development consist of: consumption of clean drinking water; volume of wastewater and efficiency of its treatment; areas of recreational and protected areas; the number of forest areas and their afforestation; volumes of emissions into the atmosphere, including from vehicles; volumes of household waste, including the share of the volume of household waste that is disposed of; volumes of radioactive waste; volumes of chemical and other hazardous

²⁸² Непеїна Г.В. Роль освіти у забезпеченні сталого розвитку людства, с.54-60; Kashchena N., Kovalevska N., Nesterenko I. (2021). Monitoring of natural capital indicators as tool for achieving sustainable development goals, p. 156-166.

²⁸³ Шиян Д. В. та ін. (2021). Прогнозування попиту на органічну продукцію у домогосподарств із різним рівнем доходу, с.16-23.

waste, including unsuitable and prohibited pesticides; the number of farms that implement the practice of sustainable agriculture; the number of farms implementing organic farming. In most cases, these indicators are calculated for one person²⁸⁴.

Economic indicators of sustainable development are indicators characterizing the state and development of the economic sphere of human life. These include: growth rates of the gross domestic product (GDP); change in consumption characteristics; access to the use of natural resources; the share of environmentally friendly technologies in the total volume of technologies; the ratio of the number of products, goods, services produced or performed with the saving of natural resources to their total number; the ratio of the number of products, goods, services produced or performed with energy saving or the use of alternative energy sources to their total number²⁸⁵.

Institutional indicators of sustainable development are indicators that indicate the stability of the legislative and legal system, the level of legal protection of a person in his country.

Institutional indicators of sustainable development include: the presence of a legislative framework on sustainable development (concept, strategy, plans: national, regional, local); the presence of state and local bodies that manage the implementation of sustainable development; expenses for maintenance of state administration bodies; expenses for the maintenance of local self-government bodies; public administration efficiency index; public participation in discussion and decision-making.

Social indicators of sustainable development are indicators of sustainable development of the social sphere and social support of human life. They include: the average life expectancy of people; ratio of average and minimum wages; the number of the population living in environmentally dangerous conditions; growth rates of population employment; access to sanitation services; access to information; protection and improvement of people's health²⁸⁶.

Social indicators related to education: the ratio of the dynamics of education costs to the dynamics of GDP growth; index of the ratio of the average salary of teachers and lecturers to the national average; the average level of education of the adult population, the share of people with higher education; access to continuous education, including the number of employees who have acquired an additional specialty or advanced their education; provision of schools with computer equipment; providing university students with computer equipment and access to the Internet during their studies; the number of Internet users; the number of printed publications, including those on education and science; the number of printed publications subscribed by libraries.

²⁸⁴ Висоцька О.Є. (2011). Освіта для сталого розвитку: науково-методичний посіб.; Зеркалов Д. В. (2013). Проблеми екології сталого розвитку.

²⁸⁵ Зеркалов Д. В. (2013). Проблеми екології сталого розвитку.

²⁸⁶ Шиян Д. В. Та ін.(2021). Прогнозування попиту на органічну продукцію у домогосподарств із різним рівнем доходу, р.16-23.

Thus, considering the balance of economic, ecological, and social factors of sustainable development in the process of planning human activities significantly improves living conditions and contributes to the stable existence of individual cities, states, and habitats of humanity. It also involves solving problems related not only to current, but also to future generations, who have equal rights to resources.

Therefore, the main conditions of sustainable economic development in conditions of ecological balance are:

1. The level of consumption of renewable resources should not exceed recovery;

2. The level of consumption of non-renewable resources should not exceed the rate of their replacement by renewable ones, including artificially created ones;

3. The production and sale of final products should be as closed as possible, with minimal impact on nature, ecology and, most importantly, on people²⁸⁷.

4. The intensity of emissions of polluting substances should be minimal, and the effect of production should be as justified and proven as possible. Otherwise, a ban on the production of similar products and substances should apply.

In the framework of sustainable development, economic education occupies an important place. It forms permanent, ecologically balanced habits and patterns of everyday behavior in people.

If society is brought up on the principles of protecting resources, ecology, cultural education, etc., then this is preserved for families for years.

This way of life of children and adults involves certain actions in household, school, and local community on the issues of reasonable energy and water consumption; reduction of wasted raw materials; reduction of garbage disposal; increasing the share of ecological products in daily purchases; strengthening one's own health, etc.

In Ukraine, the issue of civilized education is acute. There are certain reasons for this: ignorance of consumers when purchasing goods, credulity to the main "engine of progress" – advertising, consumers' failure to fix the facts of offenses and protection of their own interests, etc. Therefore, there is an urgent need to educate and educate citizens as civilized consumers who could navigate new market relations, prevent crimes, or, if necessary, be able to defend their rights and protect their interests.

Consumer culture is knowledge, skills, value priorities, which provide for the formation of stable, balanced habits and patterns of behavior in a person, education in legal issues, social security of rights. Consumer education, consumer culture allows one to freely navigate issues of economic efficiency, make certain decisions related to

²⁸⁷ Kovalevska N. et al. (2022). Problems of accounting digitalization in conditions of business processes digitalization, p.132-141; Непейна Г.В. Роль освіти у забезпеченні сталого розвитку людства, с.54-60.

future life and career planning, education, career choice, and promote sustainable development²⁸⁸.

The basic rights of consumers, which are taught by economic education: the ability to choose a product without being guided by advertising campaigns; claim a product warranty; buy a safe product.

That is why, when developing the concept, training programs and educational and methodological materials of consumer education, it is desirable for the developers to rely on pan-European and global approaches to the formation of the content of education, namely on the focus of competences of all elements of consumer education.

It is also important to create an effective monitoring mechanism that would allow monitoring the state and progress in students' acquisition of the necessary competencies, which would correspond to the best global models.

An important factor in the introduction of elements of consumer education is that it acts as one of the effective mechanisms for the formation of a conscious citizen of modern society. Therefore, it can be considered as a content element that strengthens the civic component, which carries a powerful educational function²⁸⁹.

Providing citizens with appropriate education, professional training, and other tools and thereby raising public awareness can contribute to the development of an economically, socially, and environmentally sustainable society. This will enable everyone to take responsibility for their choices as critical and informed consumers, professionals, decision-makers, workers, students, parents and voters, supporting and enhancing the quality of life of current and future generations.

Education is an additional factor in strengthening social unity, responsibility and democratic governance. Education not only provides the necessary scientific and technical qualifications, but also provides motivation, interest and social support for their acquisition and application.

In this connection, children play a special role, since they are "messengers of development", influencing the mentality of their parents and other adult relatives, and also because they must follow a more responsible lifestyle than adults.

Modern studies have shown that people with age remain faithful to the way of life they were used to in childhood. Therefore, education is not only a process of imparting knowledge; it should give impetus to change in behavior and mentality, develop motivation and ability to act in the interests of sustainable development. Thus, it should stimulate the active participation of society to achieve its goals²⁹⁰. The educational level of the population is a prerequisite for social and economic

²⁸⁸ Kashchena N., Kovalevska N., Nesterenko I. (2021). Monitoring of natural capital indicators as tool for achieving sustainable development goals, p. 156-166.

²⁸⁹ Koshkalda I., Kniaz O., Velieva V., Rysnyanska A. (2020). Motivation Mechanism for Stimulating the Labor Potential, p.53-61.

²⁹⁰ Чернікова І.Б. та ін. (2020). Тактично-орієнтовані підходи до податкового планування в умовах сталого розвитку ринку, p.7-19.

growth²⁹¹. Education ensures the development of society, the state, and shapes the outlook of an individual.

The main priorities of economic education in sustainable development:

1. Improvement of basic school education. The formed society should be appropriately informed about the state and prospects of sustainable development. Nations with high levels of illiteracy and unskilled labor resources have too few chances and opportunities for future sustainable development. The relationship between models of education and sustainable development is extremely complex and systemic. Education can improve agricultural production, support or even increase the social status of women, ensure protection of the natural environment, and ultimately – improve the quality of life of the broadest sections of the population and society as a whole.

2. The reorientation of the existing secondary and higher education is not so much a question of the "amount" of knowledge, abilities and skills acquired by students, but of the very approaches to the construction of a new pedagogical system that integrates the problems of the environment, economy and society into a certain organic integrity. This type of education assumes a qualitatively new type of generalization of worldview ideas, knowledge, abilities and skills, experience of creative activity of students in educational and extracurricular work²⁹².

3. The introduction of environmental education into the system of higher education, as one of the most important and necessary means of making the transition to harmonious development of all countries of the world, in the program documents of many conferences and forums, environmental education, informing the population and training highly qualified specialists are named.

4. Humanization of sustainable development is a sustainable future in which it is necessary to train not only highly specialized specialists, but also citizens. It is about the formation of a new worldview, which is determined by both education and science, culture, mass media, etc. In turn, the economic education of sustainable development is called to be anticipatory, since in modern conditions the scientific and educational process cannot only reflect the existing state of affairs but is obliged to carry out an "anticipatory" reflection of the future, which should contribute to the implementation of a new civilizational strategy²⁹³.

Economic education for sustainable development involves changes in the educational process concerning teachers, students, and education management: for teachers, it is a transition from imparting knowledge to creating conditions for their active assimilation and gaining practical experience; for students, it is a transition

²⁹¹ Шиян Д. В. Та ін. (2021). Прогнозування попиту на органічну продукцію у домогосподарств із різним рівнем доходу, р.16-23.

²⁹² Висоцька О.Є. (2011). Освіта для сталого розвитку: науково-методичний посібник; Непєїна Г.В. (2017). Роль освіти у забезпеченні сталого розвитку людства, с.54-60.

²⁹³ Висоцька О.Є. (2011). Освіта для сталого розвитку: науково-методичний посібник; Kashchena N., Kovalevska N., Nesterenko I. (2021). Monitoring of natural capital indicators as tool for achieving sustainable development goals, p. 156-166.

from passive assimilation of knowledge to active search for it, practical understanding; for the management of an educational institution, these are changes in the use of resources by the institution, implementation of the principles of sustainability and democratization in management, establishing a dialogue with interested groups of the population.

An educational environment is created where it is possible to: express and defend one's own point of view; make a conscious choice between alternatives; be responsible for your choices and predict their consequences; listen and understand others; learn to respect democratic decisions; resolve conflicts civilly; learn to negotiate and interact.

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**SOCIAL INDICATORS OF SUSTAINABLE DEVELOPMENT OF
THE COMPANY STAFF: LEGISLATIVE AND ACCOUNTING ASPECTS
IN THE CONDITIONS OF MARTIAL LAW**

**СОЦІАЛЬНІ ВИМІРИ СТАЛОГО РОЗВИТКУ ПЕРСОНАЛУ
ПІДПРИЄМСТВА: ЗАКОНОДАВЧИЙ ТА ОБЛІКОВІ АСПЕКТИ
В УМОВАХ ВОЄННОГО СТАНУ**

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Abstract. The strategy of the labor payment system will provide a mechanism for the implementation of the social component of sustainable development. It will take into account not only the issue of the efficiency of the use of labor resources, but also their social motivation. This will lead to the filling of the budget and ensure the equal implementation of the economic and social components within the framework of the concept of sustainable development

Keywords: sustainable development, personnel, remuneration, accounting of payments to employees

Анотація. Стратегія щодо системи оплати праці, яка формується виходячи із поставлених задач перед керівництвом підприємства, повинна враховувати питання ефективності використання трудових ресурсів. Це, в першу чергу, пов'язано із тим, що працівники підприємства є однією із основних сил виробничого процесу будь-якого підприємства, а розмір оплати праці є основним при регулюванні трудових відносин між даним підприємством і найманим працівником. Тому менеджмент підприємства має обрати таку систему і форму оплати праці, щоб не лише задовольняла виробничим вимогам і задачам, але й була гідним і адекватним еквівалентом використаної праці. З іншого боку саме розмір оплати праці формує соціальну складову концепції сталого розвитку

Ключові слова: сталий розвиток, персонал, оплата праці, облік виплат працівникам

Сталий соціально-економічний розвиток регіону забезпечується ефективною і екологічною діяльністю його суб'єктів господарювання, що реалізують свою місію із задоволення суспільних потреб і, водночас – через сплату податків у бюджет – створюють фінансову основу для вирішення завдань макроекономічного характеру, в тому числі – соціальних. Проте, сучасні умови господарювання та облікові процеси у середині кожного суб'єкта господарювання, які характеризуються високою динамічністю ринкових змін і непередбачуваністю не лише економічних, але й соціальних процесів, висувають до управління сталим розвитком будь-якого регіону, а у тому числі і до кожного суб'єкта господарювання нові вимоги.

Як відомо із постулатів концепції «sustainable development» основою сталого розвитку є економічні та екологічні інтереси суспільства. Порушення рівноваги між ними впливає на погіршення якості життя населення не лише самого підприємства, але й визначеного регіону. Тому взаємодія підприємств регіону, з одного боку, з його навколишнім середовищем повинна бути націлена на уникнення виснаження або деградації природних ресурсів і забезпечення довгострокової якості навколишнього середовища. За таких умов екологічна стійкість допоможе забезпечити задоволення потреб сучасного населення, не піддаючи небезпеці здатність майбутніх поколінь задовольняти свої потреби. Екологічні аспекти мають бути враховані при моделюванні менеджменту сталим розвитком регіону, що передбачали б попередження шкідливого впливу діяльності суб'єктів господарювання, так і зобов'язували їх до дотримання вимог природи і екологічних комплексів.

Проблемі екологічного менеджменту присвячена значна сучасних напрацювань. В переважній частині робіт розглядаються різні питання державного та регіонального управління. Зокрема, проводиться стратегічна екологічна оцінка у секторі міського розвитку регіонів західних країн, роблячи акцент на державному нормативному регулюванні і управлінні, аналізі переваг і недоліків такого управління та оцінки. В деяких інших роботах, аналіз екологічного розвитку регіону проводиться через призму підприємницьких структур, зокрема у роботі чеських дослідників, розглядається взаємодія між екологічними, соціальними та управлінськими показниками та економічними показниками корпоративних компаній²⁹⁴. Частина робіт, детально досліджуючи економічний розвиток свого регіону, сталий розвиток регіону через вбачає у популяризацію туристичної сфери²⁹⁵. Отже, переважно у дослідженнях аналізуються певні економічні аспекти розвитку регіону та надаються практичні рекомендації щодо удосконалення екологічного управління через призму діяльності суб'єктів господарювання.

²⁹⁴ Kosmanova A., Hornungova J, Docekalova M. (2020). Sustainable Corporate Performance: Interaction between Environmental, Social, Corporate Governance and Economic Indicators, p.113-121.

²⁹⁵ Yanling Ma (2020). Research on the Coupling Coordinative Degree of Tourism Development and Poverty Alleviation Effects in China based on the Model of DPSIR-An Example of Guizhou, p.637-645.

Проте, незважаючи на значну кількість публікацій щодо питання екологічного менеджменту для умов збереження сталості розвитку підприємства та регіону в цілому, залишаються актуальними проблеми щодо регуляції економічної та соціальної складової. Їх вплив видається доцільним аналізувати через діяльність суб'єктів господарювання цього ж регіону.

Будь-яке підприємство є унікальним – із своїм економічним рівнем розвитку, використанням унікальних природно-рекреаційних та специфічних трудових ресурсів. І саме аналіз діяльності трудових ресурсів дозволить проаналізувати і запропонувати механізми управління соціальною складовою не лише самого підприємства, але й регіону. За теперішніх умов господарювання уніфікованість методу управління соціальною складовою можлива через регулювання трудових відносин із персоналом підприємства. Використання облікових технологій, що є законодавчо закріпленими і адаптованими до умов воєнного часу дозволить у відповідному обсязі наповнити бюджет відповідними податками, тим самим врахувавши усі нюанси управління соціальною складовою регіону чи країни.

Отже, в рамках концепції сталого розвитку стратегія щодо системи оплати праці забезпечить той механізм виконання соціальної складової, що врахує не лише питання ефективності використання трудових ресурсів, але й їх соціальної вмотивованості та наповнення бюджету.

Працівники підприємства є однією із основних сил господарсько-виробничого процесу будь-якого підприємства. Розмір оплати праці є основним при регулюванні трудових відносин між даним підприємством і найманим працівником. Тому менеджмент підприємства має обрати таку систему і форму оплати праці, щоб не лише задовольняла виробничим вимогам і задачам, але й була гідним і адекватним еквівалентом використаної праці. Саме за таких умов відбудеться паритетне забезпечення усіх складових сталого розвитку чи то на мікрорівні, чи то на макрорівні.

Отже, класично, система оплати праці не лише один із основних чинників ефективності використання робочої сили, але й саме її розмір в сучасних умовах досить часто лише він є тією причиною, що приводить робітника на підприємство, на його робоче місце. З іншого боку, це є тим прямим важелем впливу у формуванні механізму соціальних гарантій і забезпечень у концепції «sustainable development».

Тому облік праці і виплат працівникам не лише проста констатація та відображення операцій щодо взаємовідносин підприємства із найманим працівником, але й оперативний контроль над кількістю і якістю праці. Такий контроль проявляється не лише у моніторингу розміру оплати праці, але й перевірці правильності розрахунку і виплат різного роду виплат соціального характеру. У свою чергу це забезпечує безперебійне надходження до бюджету країни і виконання соціальної політики уряду.

Особливої уваги з точки зору обліку і контролю виплат працівникам потребують і питання заохочення та матеріального стимулювання. Система організації праці та її оплати, опираючись на величину прибутку підприємства, повинна бути таким чином побудована, щоб задовольняти усім потребам

працівників і виходити не лише із мінімально прожиткового законодавчого рівня, але сприяти зростанню заощаджень свого персоналу. І саме менеджмент підприємства повинен забезпечувати не лише досягнення загальних цілей, але й належним чином налагодити взаємодію систему обліку розрахунків з оплати праці із системою перевірки дотримання вимог чинного законодавства з даного питання.

Проблемі виплат працівникам присвячена значна кількість напрацювань. Так праці вітчизняних економістів, серед яких варто означити Ф.Ф. Бутинця, В.В. Сопко, М.С. Пушкаря, Н.В. Шульгу **Error! Reference source not found.** Їхні напрацювання здебільшого присвячені теоретичним моментам дослідження даної категорії – оплати праці. Серед іншого методологічні та облікові аспекти досліджувалися у них у формі порівняння складових виплат працівникам за міжнародними та національними стандартами бухгалтерського обліку та фінансової звітності.

У свою чергу, доповідь «Цілі Сталого Розвитку: Україна» наголошує, «що стале економічне зростання неможливе без забезпечення повної і продуктивної зайнятості та гідної праці, а також захисту трудових прав та надійних і безпечних умов праці для всіх працівників»²⁹⁶. «Гідна праця та економічне зростання» є «основним завданням забезпечення стійкого зростання ВВП на основі модернізації виробництва, розвитку інновацій, підвищення експортного потенціалу, виводу на зовнішні ринки продукції з високою часткою доданої вартості, а завданням для реалізації цілі «Якісна освіта» – збільшення поширеності серед населення знань і навичок, необхідних для отримання гідної роботи та підприємницької діяльності, тобто на державному рівні визначається необхідність сталого розвитку як вітчизняних підприємств, так і працівників»²⁹⁷.

Проте за сучасних умов господарювання в Україні значна кількість змін законодавства з питань обліку оплати праці пов'язана із військовим станом в країні та оплатою праці військовозобов'язаних осіб. Це вказує на актуальність даної теми, що формуватиме ту соціальну складову сталого розвитку в майбутньому через соціальні гарантії та матеріальне стимулювання робочої сили.

У сучасному економічному світі прогрес суспільства та його конкретних суб'єктів (підприємств, організацій) та їх сталий розвиток характеризується відповідним розміром оплати за виконану роботу, працю. Отже оплата праці – це не лише будь-який дохід, заробіток, що, як правило, обчислений в грошовому виразі за трудовим договором, але й певна економічна категорія, що показує рівень розвитку суспільства країни.

Усі питання щодо оплати праці регулюються Законом України «Про оплату праці» від 23 січня 1997 р. № 108/95, чинними постановами та

²⁹⁶ Зайцев В. С. (2019). Сталий розвиток персоналу промислових підприємств: проблеми та рішення, с. 206-214.

²⁹⁷ Цілі сталого розвитку: Україна. Національна доповідь (2017). Міністерство економічного розвитку і торгівлі.

інструкціями, вітчизняними та міжнародними стандартами з обліку. Зокрема даним Законом, ст.1, визначено, що «заробітна плата це винагорода, обчислена, як правило, у грошовому виразі, яку за трудовим договором власник або уповноважений ним орган виплачує працівникові за виконану ним роботу чи надані послуги. Розмір заробітної плати залежить від складності та умов виконуваної роботи, професійно-ділових якостей працівника, результатів його праці та господарської діяльності підприємства»²⁹⁸.

Серед питань організації обліку і перевірки операцій пов'язаних із заробітною платою для вітчизняних підприємств ряд економістів і бухгалтерів-практиків виділяють наступні:

- низький рівень заробітної плати буде з точки зору економічної теорії підкреслювати низьку відтворювальну її функцію;
- низька частка заробітної плати у валовому внутрішньому продукті країни свідчатиме про тінізацію економіки і приховування реальної величини заробітної плати;
- недотриманням вітчизняними підприємствами законодавства у сфері оплати праці виражається і через недотримання колективних угод та договорів;
- невідповідна галузева чи професійна (кваліфікаційна) диференціація заробітної плати призводить до відтоку робочої сили із даних галузей;
- невідповідність розмірів заробітної плати найманих працівників з рівнем їхньої кваліфікації, результатами праці тощо впливає і ріст безробіття країни.

Як видно, будь-яке порушення відповідності чинному законодавству у питаннях обліку оплати праці негативно впливає не лише на діяльність підприємства безпосередньо через його працівників, але й спричиняє негативні наслідки на макрорівні.

Організація заробітної плати в Україні відбувається поєднанням державного механізму із договірним регулюванням індивідуальної заробітної плати для кожного працівника на підприємстві окремо. Такий механізм регулювання проявляється у використанні тарифних умов оплати праці, нормування її та застосування відповідної системи заробітної плати.

Одним із основних напрямків державного регулювання заробітної плати є визначення її мінімального рівня. Відповідно до статті 95 КЗпП «мінімальна заробітна плата – це законодавчо встановлений розмір заробітної плати за просту, некваліфіковану працю, нижче за який не може оплачуватися виконана працівником місячна, погодинна норма праці (обсяг робіт). До мінімальної заробітної плати не включаються доплати, надбавки, заохочувальні та компенсаційні виплати»²⁹⁹.

Розмір мінімальної заробітної плати встановлюється Верховною Радою України за поданням Кабінету Міністрів України раз на рік під час затвердження Державного бюджету України. При цьому враховуються пропозиції від представників професійних спілок, власників підприємств.

²⁹⁸ Закон України "Про оплату праці" (1995). №108/95-ВР.

²⁹⁹ Кодекс законів про працю України. (1971). 322-VIII.

Розмір мінімальної заробітної плати переглядається залежно від зміни розміру прожиткового мінімуму для працездатних осіб (ст. 10 Закону № 108).

Перелік державних норм і гарантій щодо оплати праці та порядок їх застосування визначено статтею 12 Закону № 108. До державних норм і гарантій належать норми оплати праці:

- за роботу в надурочний час;
- у святкові, неробочі та вихідні дні;
- у нічний час;
- за час простою, який мав місце не з вини працівника;
- у разі вироблення продукції, що виявилася браком не з вини працівника³⁰⁰.

Для визначення розміру заробітної плати найманих працівників використовується показник фонду оплати праці. Згідно з Інструкцією зі статистики заробітної плати, затвердженою наказом Державного комітету статистики України від 13 січня 2004 року № 5, до фонду оплати праці включаються нарахування найманим працівникам у грошовій та натуральній формі (оцінені в грошовому виразі) за відпрацьований та невідпрацьований час, який підлягає оплаті, або за виконану роботу.

Фонд оплати праці складається з:

- фонду основної заробітної плати;
- фонду додаткової заробітної плати;
- інших заохочувальних і компенсаційних виплат.

До складу фонду основної заробітної плати включаються виплати, означені в Інструкції № 5, зокрема це «винагороди за виконану роботу відповідно до встановлених норм праці за тарифними ставками (окладами), відрядними розцінками робітників та посадовими окладами керівників, професіоналів, фахівців, технічних службовців, включаючи в повному обсязі внутрішнє сумісництво».

В серпні 2022 р. на засіданні Кабінету Міністрів України було ухвалено законопроект №5857 «Про внесення змін до деяких законодавчих актів України щодо оплати праці». Ним передбачено вдосконалення розміру мінімальної заробітної плати згідно Конвенції Міжнародної організації праці № 131 Про встановлення мінімальної заробітної плати з особливим урахуванням країн, що розвиваються.

Зокрема, планують змінити складові, які не включатимуться до мінімальної заробітної плати, наприклад, такі як оплату за суміщення посад, в понадурочний час, в святкові та неробочі дні, суми певних видів компенсацій тощо.

Проте, із змін на сьогодні реальних, мінімальна заробітна плата у 2023 р. не буде зростати. Її розмір становитиме 6700 грн, що впроваджений з 1 жовтня 2022. Також не планується індексування розміру мінімальної заробітної плати у 2023 р.

³⁰⁰ Закон України "Про оплату праці" (1995). №108/95-ВР.

Отже законодавче і нормативне регулювання оплати праці та виплат працівникам є багаторівневим складним процесом. Воно передбачає не лише державне регулювання, але й внутрішнє регулювання на рівні суб'єктів господарювання, що продиктовано ринковим середовищем і вимогами до колективно-договірних відносин.

Ситуація, яка сталася на підприємствах України у 2022 році, що пов'язана із військовими діями, у суб'єктів господарювання гостро формує проблему розрахунку суми оплати праці працівників, особливо за відсутності їх на робочому місці, наприклад у випадку служби в Збройних силах України чи територіальній обороні. Скрутне фінансове становище вітчизняних підприємств у цей період призводить до не лише неможливості ведення звичного виробничо-господарського процесу, але й до відсутності коштів на оплату праці.

Слід зауважити, що методологічно порядок бухгалтерського обліку розрахунків з оплати праці не змінився. Проте змін зазнали підходи в організації оплати праці. Отже, як відомо є ряд означень, економічних категорій і облікових, що характеризують порядок взаємовідносин між працівником і підприємством. Так, згідно Кодексом законів про працю України «Заробітна плата – винагорода, обчислена, як правило, у грошовому виразі, яку за трудовим договором роботодавець виплачує працівникові за виконану ним роботу»³⁰¹. Облікові нормативні документи, такі як Положення (стандарт) бухгалтерського обліку (ПСБО) 26 «Виплати працівникам» вводять термін для облікових потреб і означення усієї суми оплати праці найманого працівника «виплати працівникам». Так, для класичного трактування витрат на оплату праці використовується термін «поточні виплат працівнику» і згідно з П(С)БО 26 це «виплати працівнику (окрім виплат при звільненні та виплат інструментами власного капіталу підприємства), які підлягають сплаті в повному обсязі протягом дванадцяти місяців по закінченні місяця, у якому працівник виконував відповідну роботу.

Іншим нормативним документом, що регулює дане питання є Податковий кодекс України. Визначення для відображення витрат на оплату праці усі категорій працівників є базою у даному випадку, при здійсненні різного роду нарахувань і утримань відповідних податків і зборів із заробітної плати. Так, «заробітна плата – це основна та додаткова заробітна плата, інші заохочувальні та компенсаційні виплати, які виплачуються (надаються) платнику податку у зв'язку з відносинами трудового найму згідно із законом»³⁰².

Це три основних трактування, які є визначальними у бухгалтерському обліку і підтверджують рівень достовірності нарахованої суми оплати праці і здійснених утримань і нарахувань із неї.

Вчені-економісти дають дещо ширшу палітру визначення категорії оплати праці і витрат пов'язаних з нею. Проте вони акцентують увагу при

³⁰¹ Закон України "Про оплату праці" (1995). №108/95-ВР.

³⁰² Податковий кодекс України. (2010); Податковий розрахунок з 1 квітня 2021 року.

цьому на тих складових даної категорії, визначення якої законодавчо закріплено, які є дотичними до теми дослідження кожного із них.

Проте, усі моменти нарахування і виплати заробітної плати передбачаються у колективному договорі – офіційному нормативному документі, що укладений на основі Закону України «Про оплату праці». Важливим моментом є те, що інформації про воєнний стан не прописано у вітчизняних підприємствах.

Отже, до проблеми оплати праці у воєнний час можна підходити із різних ситуацій. По-перше, якщо підприємство залишилось працювати відносно у звичних і стабільних умовах. Проте і за таких умов певна частина працівників могла б евакуюватися і постане питання оплати їх праці. Наприклад, у випадку виконання своїх функцій дистанційно у повному, чи частковому обсязі. Таке ж підприємство може мати у своєму штатному складі і мобілізованих працівників та добровольців територіальної оборони. Іншим прикладом є підприємство, яке є прямопропорційно постраждалим. Наприклад, у разі значного скорочення обсягу виробництва чи фізичного руйнування. Необхідно враховувати і переміщення підприємств під час евакуації виробничих і технічних потужностей. Тут виникають також особливі питання, пов'язані із оплатою праці персоналу такого підприємства від простої фізичної потреби отримання коштів, для здійснення такого роду операцій, до законодавчих – питань з урегулювання облікових і податкових моментів у нарахуванні і звітуванні перед державою за такі операції.

На час воєнного стану для урегулювання такого питань був запроваджений Закон України «Про організацію трудових відносин в умовах воєнного стану» (Закон № 2136). Цей закон у теперішній час регулює нормами трудового законодавства в Україні.

Проте, дія даного Закону №2136 не може врахувати і покрити значно ширше коло питань, пов'язаних із оплатою праці³⁰³. Розрахунки по заробітній платі є трудомісткою роботою у діяльності підприємства і за мирних умов. У воєнний же час виникає така значна кількість індивідуальних питань, конкретно пов'язаних із певними окремими випадками, що прописати і передбачити в сучасних умовах господарювання майже неможливо, з іншого боку, – і через відсутність такої практики в минулому.

Для дотримання законодавства у сфері виплат працівникам, в період воєнного стану, їх умовно класифікують по певних категоріях:

- «- мобілізовані;
- добровольці територіальної оборони;
- евакуйовані або залучені дистанційно;
- залучені до суспільно корисних робіт;
- ті, хто продовжують виконувати трудові обов'язки у штатному режимі;

³⁰³ Про організацію трудових відносин в умовах воєнного стану (2022). Закон України №2136

- тимчасово позбавлені можливості працювати без альтернативної зайнятості»³⁰⁴.

Першій і другій категорії працівників (мобілізованим і добровольцям територіальної оборони) під час проходження ними служби гарантується державою збереження місця роботи і середньої заробітної плати (ст. 119 Кодексу законів про працю). В Державний бюджет України відповідно до Законів України «Про соціальний і правовий захист військовослужбовців та членів їх сімей» та «Про мобілізаційну підготовку та мобілізацію» закладена сума грошового забезпечення такої категорії населення.

Зміни, які запроваджені і протягом воєнного стану в країні, узагальнено в таблиці 1³⁰⁵.

Таблиця 1 – Зміни норм трудового законодавства в умовах воєнного стану

Показник	Мирний час	Воєнний стан
Максимальна норма часу за тиждень	40 год	60 год
Обмеження граничних норм надурочних робіт	не повинні перевищувати для кожного працівника 4 годин протягом двох днів підряд і 120 годин на рік	не застосовується
Тривалість роботи в нічний час	скорочується на 1 годину	не скорочується
Скорочення роботи на 1 годину напередодні святкових і неробочих днів	при п'ятиденному і шестиденному робочих тижнях тривалість скорочується на 1 годину	не скорочується
Перенесення святкових днів	якщо святковий день припадає на вихідний, то він переноситься на наступний день після вихідного	не переноситься
Компенсації за залучення до робіт у вихідні, святкові і неробочі дні	компенсація нараховується	не нараховується
Тривалість щорічної відпустки	залежно від категорії працівників (до 56 календарних днів)	24 календарні дні
Тривалість відпустки без збереження заробітної плати	до 15 календарних днів	необмежена кількість днів (оскільки триває період карантину)
Попередження працівника про зміну істотних умов праці	попереджається за 2 місяці	роботодавець має право не попереджувати
Звільнення працівника	з ініціативи роботодавця і працівника	з ініціативи працівника

³⁰⁴ Подолянчук О. А., (2022). Оплата праці та розрахунки з працівниками в умовах воєнного стану: трудові відносини та обліковий аспект.

³⁰⁵ Там само.

Працівники, які змушені були залишити місце роботи, але перебувають на території України відповідно ст. 60, 60-1, 60-2 до того ж Кодексу законів про працю та можуть працювати дистанційно(віддалено). При цьому для них допускається гнучкий графік робочого часу. Робота така оформляється трудовими договорами про надомну чи дистанційну роботу. І відповідним наказом про виконання роботи таким способом (віддалено). Гнучкий графік робочого часу також погоджується письмово. Оплата є праці проводиться згідно норм трудового законодавства на загальних підставах.

Під час воєнного стану, за рішенням військового командування разом з місцевими органами виконавчої влади та органами місцевого самоврядування можуть залучатися до виконання суспільно корисних робіт та іншої активної діяльності працездатні особи, віком від 16 років, які проживають на території України і за станом здоров'я здатні до активної трудової діяльності.

З іншого боку види робіт, що є оборонного характеру та направлені на ліквідацію надзвичайних ситуацій тощо, не можуть бути пов'язанні із підприємницькою діяльністю, направленою на отримання прибутку.

Із кожною особою, задіяною на такому виді робіт, укладається строковий трудовий договір.

Персоналу, що залишився на підприємствах, які є активно функціонуючими, за виконання суспільно корисних робіт забезпечується оплата відповідно до умов оплати праці згідно посадового окладу. Проте розмір не може бути нижчим від розміру середньої заробітної плати за основним місцем роботи.

Усім іншим працівникам, що виконують свої штатні обов'язки у повному належному обсязі, оплата праці регулюється Законом України №2136.

Проте, постає ряд суперечних питань щодо оплати праці тих працівників, які не є на робочому місці як з об'єктивних причин, так і необ'єктивних. Особливо, яким чином проводити оплату, якщо форма роботи допускає онлайн виконання своїх професійних обов'язків як у повному обсязі, так і частково.

Одним із варіантів вирішення проблеми, при неможливості працювати дистанційно є варіант використання оплачуваної відпустки щорічної або ж соціальної. Іншим варіантом, як було зазначено у таблиці, є можливість використання відпустки без збереження заробітної плати без обмеження строку згідно Закону України «Про відпустки». Такий вид відпустки може надаватися лише за добровільної згоди працівником.

Іншими варіантами, передбаченими КЗпП, є можливість для підприємства використовувати простій по відношенню до даних працівників. Або ж двостороннє припинення договору найму.

Виплати працівникам за виконані роботи за умов простою, опираючись на чинне довоєнне законодавство, передбачаються у двох ракурсах. Якщо простій не з вини працівника, оплата відбувається у сумі не нижче 2/3 тарифної ставки встановленого працівникові розряду (окладу). У разі неможливості забезпечення безпечних умов роботи для працівника, виплачується середній заробіток.

«Призупинення дії трудового договору – це тимчасове припинення роботодавцем забезпечення працівника роботою і тимчасове припинення працівником виконання роботи за укладеним трудовим договором»³⁰⁶. Така ситуація можлива лише при абсолютній неможливості виконувати працівником свої функції, а підприємством оплачувати його роботу. «Відшкодування виплат працівникам, зокрема заробітної плати на час такого призупинення дії трудового договору у повному обсязі покладається на державу, що здійснює військову агресію».

Отже, в умовах воєнного стану, держава забезпечує і гарантує певні положення для лібералізації економіки країни. З точки зору трудового законодавства, а отже і облікової політики по кожному суб'єкту господарювання підприємство зобов'язано виплачувати виплати працівникам на тих умовах, що визначені у трудових договорах згідно чинного законодавства України. При цьому зберігаються усі необхідні нарахунки і утримання із оплати праці, зокрема і податок на доходи фізичних осіб, і військовий збір і єдиний соціальний внесок.

У разі критичної ситуації, що призводить до неможливості виплати заробітної плати, дії виплата може бути лише призупинена до того моменту, коли підприємство зможе поновити свою виробничо-господарську діяльність.

Отже, за таких умов господарювання саме бухгалтерський облік і його достовірність, вчасність і об'єктивність є тією доказовою базою щодо фіксування реального робочого часу, виконаних робіт, наданих послуг, простоїв, неявки працівників на роботу з поважних і неповажних тощо для подання інформації і для менеджменту підприємства, і збору даних на макрорівні з метою відображення реальної картини на ринку праці і формування бюджету країни. А в свою чергу, саме облікові данні є основою при розрахунку бюджету країни і аналізу не лише економічної, але й соціальної складової за концепцією сталого розвитку.

³⁰⁶ Про організацію трудових відносин в умовах воєнного стану (2022). Закон України №2136

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DEVELOPMENT OF A MARKETING STRATEGY FOR THE DEVELOPMENT OF THE TOURISM INDUSTRY ON THE BASE OF COMPETITIVE ADVANTAGES

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Abstract. The development of the tourism industry requires the search for new solutions in the field of strategic planning, which presents new tasks that require consideration of the impact of competition on the choice of a marketing strategy. Growing competition and the need to take it into account in the formation of competitive advantages lead to the search for new approaches to the problem of planning and management of the tourism industry.

Therefore, the basis of choosing a marketing strategy for the development of a tourist enterprise should be the level of its competitiveness, and the formation of a marketing strategy for the development of the tourism industry should be based on existing and formed competitive advantages, their uniqueness and inimitability.

Keywords: competitive advantages, tourism product, competitiveness, tourism industry. development strategy.

The current nature of international trade in the field of tourism indicates growing competition between countries, which is determined, first of all, by the parameters of global demand for tourist services and their characteristics. The main tourist flows are formed in the most developed countries, in particular in the USA, EU countries, Canada, Australia, and Japan. Today, these countries are the main importers of tourist services in the world. At the same time, there is a trend of the dominant direction of tourist flows from the North to the South. This is primarily because these countries are located mainly in the temperate climate zone, which is characterized by a rather cool winter and a long spring-autumn period. These circumstances determine the need for residents of the temperate zone to use vacations to choose southern tourist destinations. This trend is observed both for intra-regional and international exchanges.

Another regularity is that most tourist flows are mutual exchanges between developed countries. According to international statistics, countries that are the main

importers of tourist services are also the main exporters. At the same time, about 2/3 of international tourist trips go to developed countries. Tourists visit those countries about which they are aware, and which provide services according to their perceptions of quality and high level of safety.³⁰⁷

An important feature is also the intra-regional tourist exchange, the share of which is approximately 70% of all international tourist trips, a significant part of which is made up of tourists from neighboring states. Visiting neighboring countries is mainly due to good knowledge of the culture, traditions, and life of neighboring countries, awareness of the quality of services, and, most often, personal reasons for traveling (visiting relatives and friends, obtaining certain economic benefits, etc.).

So, with a limited number of consumers with high purchasing power, with a constant increase in the variety of tourist offers, we can state the fact of increasing competition in the field of international tourism.

Different tourist companies are in direct competition with each other. However, in the field of international tourism, the tourist product in the consumer's perception not only has certain useful properties but is also closely related to the country. In the field of material consumption, the country of origin of the product also has a certain importance in the mind of the consumer. Most often, it is for consumers a symbol of high quality and an optimal combination of consumer properties. Often, it is these perceptions of the consumer that are of decisive importance when choosing a particular product. But still, the defining characteristics of product competition are, first, the consumer properties of the product.

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³⁰⁷ Zaika S., Kharchevnikova L. (2022) The role of innovations in the development of tourism, p.77.

³⁰⁸ Ibid.

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The level of domestic prices relative to world prices is an important element for the evaluation of a country by a potential consumer. This indicator can be considered an element of economic motivation. Lower domestic prices for basic goods and services, primarily of a tourist nature, are viewed by the consumer as favorable, thereby increasing the attractiveness of this country.

Transportation costs determine the level of additional costs for moving the consumer to the country of destination. The economic proximity of the country and the low level of transport costs (especially air travel) increase the potential tourist's ability to make a tourist trip to this country.

The increase in tourist flows to the Mediterranean countries and developing countries from South-East Asia, Africa, and Latin America is due to the appearance in Europe and the United States of low-cost airlines, which offer a significant reduction in the cost of air flights.

The reputation of the country is closely related to the set of ideas of the potential consumer about the host country, which is formed under the influence of some reasons that are related to both the internal perception of the country by the potential tourist and external influence on him through the media and other communication channels. The country's reputation is negatively affected by unsatisfactory social and criminal situations, natural disasters, and anthropogenic disasters.³⁰⁹

The infrastructure of tourism and the high qualification of personnel are closely related to ensuring the quality of services and their safety. Tourism infrastructure includes two main components: public infrastructure – roads, and other communications; specialized tourism infrastructure – hotel, transport, rest and recreation facilities, etc. At the same time, the level and condition of tourism infrastructure must meet quality and safety standards, and technical and technological requirements.

Qualification of personnel is also important in the field of tourism. Service consumption is carried out in the form of communication. The level of qualification of service personnel depends on the perception of the quality of the tourist service

³⁰⁹ Smith M. (2014) Health, tourism and hospitality: spas, wellness and medical travel, p. 234.

and, as a result, the degree of consumer satisfaction. Training of personnel for the field of tourism involves the training of specialists from a wide range of specialties in the field of hotel business; managerial and technical personnel; translators, tour guides, and instructors in various fields of tourism.

It should be noted that the attractiveness of the country for foreign tourists is not formed immediately but reflects the general level of socio-economic development of the country, its position in the international arena, and the adaptation of the national economy to the needs of international tourism. The attractiveness of the country is a kind of mirror of the competitiveness of the tourist offer to the potential market. At the same time, the perception of tourist attractiveness will be different for different markets.³¹⁰ Consumers who have a higher degree of awareness, personal experience, and motivation will evaluate the attractiveness of the destination country as more significant and weightier for them in choosing a place of rest and leisure. On the other hand, this concept cannot be considered static. The country's attractiveness can decrease for various reasons (environmental disasters and catastrophes, wars and terrorist acts, economic and social upheavals, changes like international relations, etc.).

An important place in the research of international competition in tourism is occupied by the question of determining the competitive position or position in the foreign market. The competitive position is considered the relative level of control over the market by the firm in comparison with competitors. Regarding international competition only at the level of countries, this definition can mean the share of the target market occupied by the tourist offer of the exporting country. The competitive position of a tourism exporting country is not static, moreover, it differs for different segments of target markets and different products.

The state of the competitive situation and the dynamics of its changes are influenced by various market forces. At the same time, the model of "five competitive forces" proposed by M. Porter deserves special attention. According to this model, in any branch of the economy, the essence of competition is expressed by five forces: the threat of the appearance of new competitors; the threat of the appearance of substitute goods or services; the ability of suppliers to bargain; the ability of buyers to bargain; the rivalry between existing competitors.³¹¹ An analysis of the five forces operating in a specific market helps to determine a country's competitive position and develop appropriate strategies aimed at maintaining or strengthening it.

M. Porter proposes to consider as new competitors not only the tourist offer of new countries, which quite actively seek to enter the traditional markets of tourist service importing countries, but also the new offers of already existing competitors. The effect of this power is quite tangible now. Suppliers, which M. Porter considers

³¹⁰ Witt S.F. (1991) *The Management of International Tourism*, p. 92.

³¹¹ Porter M.E., Kramer M.R (2006), *Strategy & Society: The Link Between Competitive Advantage and Corporate Social Responsibility*, p. 78-92.

the third force, in the field of tourism are companies that form a supply through the production and provision of tourist services. These include national tour operators, hotels, catering enterprises, transport companies, etc., which are considered enterprises of various sectors of the tourism industry and related industries. Buyers are not only final consumers but also intermediary companies that ensure the sale of various tourist products that constitute the tourist offer of the exporting country in the studied market.³¹²

The influence of these forces and the ability of the tourism industry of the exporting country to interact with them and respond to their changes form the basis for achieving a stable competitive position in the studied markets. At the same time, the competitive position of a country exporting tourism services can change very quickly under the influence of environmental factors that do not depend on the efforts spent and the strategies used.

Therefore, the ability to gain, maintain and strengthen a competitive position in the markets determines the concept of competitiveness. The competitiveness of the national tourism industry is based to a large extent on its structure, organization, and ability to produce a tourism product that meets the requirements of the target market. Important elements affecting the level of competitiveness of the tourism industry are its ability to quickly adapt to changing conditions, the presence of well-established and effective coordination of the efforts of all its participants – both state bodies and organizations, and private producers of services and tourist consumption goods, activity in the achievement of strategic goals. Usually, the concept of competitiveness is considered from the point of view of the product in comparison with similar products of competitors. Identifying competing offers, determining their strengths and weaknesses, and similarities and differences between their properties and characteristics allow you to assess the competitiveness of your offer and decide on the differentiation or development of a new product.

The formation and achievement of competitiveness are carried out by using competitive advantages. The use of unique opportunities provided by the geographical location, cultural and historical heritage, and natural resources, as well as the technological and innovative development of the country, create the same unique competitive advantage. At the same time, competitive advantages are not always unique. Most competitive advantages are quickly lost precisely because they are universal. Therefore, the task of constantly taking into account the driving forces of competition, developing strategies that strengthen the position in foreign markets, significant differentiation of the tourist offer, and improving the technical, technological, and organizational level of the national tourism industry are important for the formation of a competitive offer and strengthening of competitive positions in foreign markets.

³¹² Porter M. E. (1998) *Clusters and the New Economics of Competition*, p. 84.

The process of globalization of the world economy significantly affects the state of competition in international tourism. Thanks to this process, opportunities to enter foreign markets are significantly increased, access to production and management technologies is facilitated, and new states and certain regions are attracted to the sphere of international tourist exchange. Competition in international tourism is constantly intensifying.

This fact presents tourism businesses with new tasks in the development of the national tourism industry, which require considering the impact of international competition on the choice of strategic priorities and strategic planning.

The scientific approach to the concept of "competition" was established by the classical school of economic theory, represented by A. Smith and D. Ricardo. They viewed competition as a natural process that encompasses all economic activity and can be limited only by subjective factors. They formulated the model of competition, which later received the name "perfect competition", which, according to A. Smith, is the main force in the distribution of resources and benefits.

Investigating the issue of international trade considering the differences in costs for the production of the same product in different countries, A. Smith proposed some provisions called the theory of absolute advantages. Based on these provisions, A. Smith expressed considerations about which goods are profitable to export and which to import. According to this theory, a country exports a good if its production costs are lower than in other countries. Developing the views of A. Smith, D. Ricardo developed the idea of market development, considering the functions of the model of perfect competition in the long run. D. Ricardo owns the theory of comparative advantage, according to which market forces themselves will direct the country's resources to where they can be applied most productively. This means that a country can import any good, even if it can produce it independently and at low costs if it produces other goods with even greater efficiency.

D. Ricardo proved the need for mutually beneficial trade between countries based on their specialization in the production of one or another product. Thus, the classical theory laid the foundations for understanding competition in trade and formulated the concept of competitive advantages.

The ideas of comparative competitive advantage were developed in the 20th century. taking into account changes like international trade and the international division of labor, as the development of social and economic relations. The model of perfect competition did not explain all the features of competition as such and focused only on one of the types of competition – price competition.

A modern modification of the theory of comparative advantages is the theory of the ratio of production factors. According to this theory, different countries are endowed to varying degrees with the factors of production: labor, natural resources, land, and capital. If a country is oversupplied in any one factor, such as lower-wage labor, then the production of labor-intensive goods in that country will be more

profitable. Such a country will export labor-intensive goods and import, for example, capital-intensive ones. The founders of this theory are E. Heckscher and B. Olin. Based on factor analysis, they formulated the foundations of modern ideas about the direction and structure of commodity flows in international trade. Later, the American economist E. Samuelson developed the mathematical conditions for factor ratios. This model of international trade, called the Heckscher-Ohlin-Samuelson theory, explains:

- the structure of international trade, therefore, plays an important role in the development of a competitive strategy;

- causes of differences in international prices, including natural, technological, historical, traditional, etc.;

- sources of comparative costs of different levels, i.e. ratio of value properties of production factors;

- sources of comparative advantages based on the ratio of factors – competitiveness is higher, the higher the presence of one or another factor in a country.³¹³

Later, the development of the theory of comparative advantages led to the demarcation of the understanding of the category "capital". Such types as human capital, physical capital, and knowledge capital were distinguished. However, the Heckscher-Olin Samuelson neoclassical model has its limitations. According to M. Porter, there are many contradictions in the existing structure of exports and imports, which cannot be explained from the point of view of the concept of comparative advantages considering production factors.

M. Porter's theory of competitive advantages is the answer to most of today's requirements. As the basis of the theory of competitive advantages, M. Porter laid the so-called "national rhombus of competition", consisting of four elements (determinants). He considers the following as determinants:

- factor conditions, i.e. specific factors (qualified workforce of a certain profile or infrastructure), which are required for successful competition;

- demand conditions, that is, what is the demand for products and services offered by this industry;

- related and supporting industries, that is, the presence or absence of related or supporting industries in the country, competitive on the international market;

- company strategy, structure, and competitors, that is, what are the conditions in the country that determine how companies are created and managed, and what is the nature of competition in the market.³¹⁴

According to M. Porter, competitive advantages are formed based on the mutual action of all four determinants. Competitive advantage based on one or a

³¹³ Witt S.F. (1991) *The Management of International Tourism*, p. 92.

³¹⁴ Porter M.E. (2008) *On Competition*, Harvard Business School Publishing, p. 43.

combination of two determinants is possible only in industries with a strong dependence on natural resources that do not require the widespread use of complex technologies and skills.³¹⁵ However, such an advantage is short-term, temporary, and can be easily lost.

According to M. Porter's theory, all factors can be divided into basic and developed. The main factors include natural resources, climatic conditions, geographical location, low-skilled labor, and debt capital. Advanced factors include modern infrastructure, highly educated personnel, technologies, and inventions. M. Porter draws attention to the fact that developed factors are of the greatest importance for competitive advantage, but most of the time their achievement requires the presence of relevant basic factors.

The second-factor classification criterion is the level of specialization. There are two types of factors: general and specialized. Common factors can be used in a wide range of industries. Specialized factors are narrowly involved in several or one industry. Specialized factors create the basis for a long-term competitive advantage, they can be purposefully created, and for their appearance, the presence of general factors is necessary. In addition, it is important to distinguish the origin of the factors, that is, whether they are factors of natural origin, whether they arose because of the development of the country, or whether they were created artificially.

Domestic demand also significantly affects competitiveness in the foreign market. Qualitative rather than quantitative characteristics of demand are more important for competitive advantage. To achieve national advantage, the following are important: segmented demand structure; demanding and discerning buyers – as a reflection of developed needs, standards of quality and reliability; anticipated needs of buyers – earlier emergence of needs in the domestic market compared to other countries. If a country's buyers are discerning and demand allows predicting both domestic and international needs, then the size of demand in the domestic market and the nature of its growth can strengthen the country's competitive advantage. Important parameters are the amount of demand, the number of independent buyers, the rate of growth of demand in the domestic market, and the early saturation of the market.

In addition, M. Porter highlights the ability of the process of internationalization of demand to form a competitive advantage. As characteristics that determine the internationalization of demand in the domestic market, he singles out: mobile or multinational buyers – transnational companies that are consumers in the domestic market, countries that can distribute goods and services of national producers in new markets, mobile consumers traveling in other countries, contributing to the emergence of new consumers in them (which is important for the tourism industry); the influence of the manufacturer on the requests of foreign

³¹⁵ Porter M.E., Kramer M.R (2006), *Strategy & Society: The Link Between Competitive Advantage and Corporate Social Responsibility*, p. 78-92.

consumers – the needs that exist in the domestic market are transferred to foreign buyers. The latter also testifies to the significance of the influence of cultural ties, tourism, sports, etc. on the formation of demand abroad. In this connection, the role of informatization of society should be noted, which contributes to faster and more effective promotion of tourist products, both domestically and internationally market.

The influence of related and supporting industries and their competitiveness form a competitive advantage in the tourism industry. The higher the competitiveness of individual elements of the entire chain involved in the formation and operation of the industry, the stronger its competitive advantages in international trade. M. Porter, investigating the interrelationship of various industries, proposed a cluster approach, which considers the industry in close relationship with related and supporting industries in the form of an economic cluster.

The strategy, structure, and rivalry of firms are the fourth determinant that determines the competitiveness of the industry. Studying this influence, M. Porter shows how effective management and marketing, the choice of an appropriate structure, the ability to change and adapt to new conditions, as well as competition and its degree in the domestic market affect the formation of competitive advantages in foreign markets.³¹⁶

Considering M. Porter's theory regarding the tourist industry, some features of its application should be determined.

The offer formed by the tourism industry is a set of tourist products that are intended for different categories of consumers. The motives for tourist trips are diverse, the categories of tourists and the nature and duration of their stay in the destination country are also different.

Speaking about the determinants of competitive advantage, it is necessary to highlight the following specifics. As the fourth determinant, it is necessary to consider the national tourism industry, although by definition it is an interdisciplinary complex, including the activities of state tourism authorities and their specialized agencies.

In the development of tourism and the formation of its competitive advantages, natural factors such as geographical location, climatic conditions, natural landscape, animal and plant life, and cultural and historical heritage are of great importance. These factors shape the specialization of the tourist offer and ensure a certain level of tourism in the country. However, to achieve and maintain a competitive position, developed factors are important – modern infrastructure, both tourism and general; high qualification of tourism personnel; specialized factors – to ensure the functioning of such types of tourist enterprises as hotels and restaurants, sports and health complexes and other producers of tourist services that require modern qualifications of an international level. Therefore, when forming strategic development programs for each type of tourism, its own set of factors that provide competitive advantages must be determined. The high degree of differentiation of the

³¹⁶ Porter M. E. (1998) Clusters and the New Economics of Competition, p. 84.

tourist offers and the relative simplicity of modifying this offer, its adaptation to different needs determines the need for wider use and creation of high-order factors to achieve a strategic competitive advantage. This is what determines the significant success of developed countries in international tourism. At the same time, it is very important to ensure the availability of tourism infrastructure and its products on the domestic market.

So, for the tourism industry, the construction of communications with the target market is important in the formation of competitive positions. Both the construction of sales systems and promotion programs are important. Communications in tourism are almost the only means of presenting a tourist product, its properties, and its usefulness. Of course, communications do not provide competitive advantages in the market, but they are a necessary condition for the formation and maintenance of demand for a tourist product.

The formation of a marketing strategy for the development of the national tourism industry should be based on existing and formed national competitive advantages, their uniqueness, and inimitability, and considering various factors. At the same time, a long-term competitive advantage can be achieved only by well-coordinated actions of all four determinants of the "national rhombus of competition".

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**PROBLEMS OF ENSURING ENERGY EFFICIENCY
IN THE RESIDENTIAL SECTOR OF UKRAINE**

**ПРОБЛЕМИ ЗАБЕЗПЕЧЕННЯ ЕНЕРГОЕФЕКТИВНОСТІ ЖИТЛОВОГО
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Abstract. The conceptual principles of ensuring energy efficiency of the residential sector of Ukraine and the methodological basis of its research are formulated. A methodological approach to the study of the housing sector of Ukraine from the standpoint of organizational and economic support of the energy efficiency of its functioning is proposed. The relationship between the concepts of "energy efficiency", "residential sector", "housing", "energy efficiency provision of the residential sector", "potential of energy efficiency of the residential sector" is determined; the expediency of allocating object and subject potential in solving the problems of building energy efficiency in the residential sector is substantiated; the levels of formation of organizational and economic support of energy efficiency of the residential sector are highlighted.

Keywords: energy efficiency, residential sector, housing, potential of energy efficiency of the residential sector, organizational and economic support of energy efficiency of the residential sector of Ukraine.

Анотація. Сформульовано концептуальні засади забезпечення енергоефективності житлового сектора України та методологічний базис його дослідження. Запропоновано методологічний підхід до дослідження житлового сектора України з позицій організаційно-економічного забезпечення енергоефективності його функціонування. Визначено взаємозв'язок понять «енергоефективність», «житловий сектор», «житло», «забезпечення енергоефективністю житлового сектора», «потенціал енергоефективності житлового сектора»; обґрунтовано доцільність виділення об'єктного та

суб'єктного потенціалу в розв'язанні проблем формування енергоефективності житлового сектора; виділено рівні формування організаційно-економічного забезпечення енергоефективності житлового сектора.

Ключові слова: енергоефективність, житловий сектор, житло, потенціал енергоефективності житлового сектора, організаційно-економічне забезпечення енергоефективності житлового сектора України.

Зміцнення енергетичної незалежності України можливе лише за умов надійного забезпечення потреб суспільства та економіки власними енергетичними ресурсами, а також їх ефективного використання. Енергоефективність виступає одним із критеріїв якості функціонування національної економіки та її сталого енергетичного розвитку, що ставить перед Україною нові економічні й технологічні виклики, які потребують проведення реформи енергоефективності в усіх сегментах національної економіки. Результатом цього має стати побудова ефективною системи регуляцій, інституцій та інструментів забезпечення енергоефективності економіки та її складових, а також створення міцного підґрунтя для сталого майбутнього країни.

У науковій літературі відсутнє однозначне тлумачення поняття, що характеризує ефективне та раціональне використання енергоресурсів, використовують такі визначення: «енергоефективність», «енергозбереження», «ресурсозбереження» й «енергоощадність», табл. 1.

Таблиця 1 – Підходи до визначення сутності поняття «енергоефективність»

Автор	Зміст поняття «енергоефективність»
<i>Енергоефективність як умова та критерій</i>	
Суходоля О.М. ³¹⁷	...є тією умовою, при якій країни виробляють максимальний рівень споживчих благ (задовольняє «потреби суспільства») при мінімально можливих затратах енергетичних ресурсів (забезпечення достатності ресурсів).
Міжнародна енергетична агенція ³¹⁸	...умова та критерій, що характеризують якість економічного розвитку держави та відображає її перспективи в конкурентному світовому співіснуванні та її майбуття.
	...як обмеження або зменшення споживання енергії за рахунок використання більш ефективних пристроїв, покращення рівня управління та впровадження нових технологій, тобто за інтенсивним шляхом розвитку, отримання більш широкого спектру послуг, продуктів, що використовують однакову кількість енергоресурсів.
<i>Енергоефективність як якісна характеристика</i>	
Дзяна Г.О. ³¹⁹	...передбачає економію енергоресурсів за рахунок поліпшення якості

³¹⁷ Суходоля О.М. Енергоефективність національної економіки: умова та критерій енергетичної безпеки України. *Економіка та держава*. 2008. № 7. С. 64-67.

³¹⁸ Енергетична ефективність України. Кращі проектні ідеї: Проект «Професіоналізація та стабілізація енергетичного менеджменту в Україні».

³¹⁹ Дзяна Г.О., Дзяний Р.Б. (2014). Енергозбереження як ресурс розвитку для України, с. 90-96.

Автор	Зміст поняття «енергоефективність»
	їх споживання.
<i>Енергоефективність як результат</i>	
Пустовий О.Ю. ³²⁰ Закон України «Про енергозбереження» ³²¹	...економічно обґрунтованого та ощадливого використання паливно-енергетичних ресурсів. ...продукція або метод, засіб її виробництва, що забезпечують раціональне використання паливно-енергетичних ресурсів порівняно з іншими варіантами використання або виробництва продукції однакового споживчого рівня чи з аналогічними техніко-економічними показниками.
<i>Енергоефективність як стан системи</i>	
Суходоля О.М. ³²²	... за якого досягнення цілей та виконання системи забезпечується при мінімальних витратах енергії.
<i>Енергоефективність як показник</i>	
Міжнародного стандарту ISO 50001 ³²³ Дрожжин Д.Ю. ³²⁴ Директива 2012/27/ЄС про енергоефективність ³²⁵ Закон України «Про енергетичну ефективність» ³²⁶	...це співвідношення (коефіцієнт) або інший кількісний взаємозв'язок між результатом, тобто між виконаною роботою, послугами чи товарами і використаною енергією. ...це позитивне відношення результатів використання енергетичних ресурсів (наприклад, доданої вартості продукції чи послуг, створеної саме за рахунок енергетичних ресурсів, вартості благ, створених цими ресурсами та ін.) до обсягу їх споживання для отримання вказаних результатів. ...співвідношення між обсягом вироблених благ (результатів діяльності (функціонування), виробленої продукції (товарів, робіт, послуг) та енергії) і обсягом енергії, використаної для виробництва таких благ. ...кількісне співвідношення між роботою, послугами, товарами або енергією на виході та енергією на вході.

Огляд наукової літератури щодо змісту цих понять та аналіз правового забезпечення процесів енергоефективного функціонування житлового сектора України свідчать про одночасне існування різних підходів до їх тлумачення, а у випадку порівняння вітчизняного досвіду із зарубіжним ускладнюють розуміння й упровадження останнього у вітчизняну практику³²⁷.

Методологічно важливо дати чітке визначення соціально-економічним, правовим, організаційним та іншим аспектам формування енергоефективності житлового сектора України, що передбачає уточнення окремих дефініцій.

³²⁰ Пустовий О.Ю. (2016). Організаційно-економічний механізм енергозбереження на машинобудівних підприємствах: дис. ... канд. екон. наук.

³²¹ Законодавство України: офіційний веб-портал парламенту України.

³²² Суходоля О.М. (2006). Енергоефективність економіки в контексті національної безпеки: монографія.

³²³ ISO 50001:2011. (2018). Системи енергетичного менеджменту.

³²⁴ Дрожжин Д.Ю. (2012). Механізм державного регулювання енергоефективності в Україні, с. 1-9.

³²⁵ Закон ЄС: офіційний веб-сайт Європейського Союзу.

³²⁶ Законодавство України: офіційний веб-портал парламенту України.

³²⁷ Данілкова А.Ю. Категорійно-понятійний апарат у сфері ефективного використання паливно-енергетичних ресурсів: аналіз, удосконалення, впровадження, с. 359-363.

Поняття «житло» є складним і неоднозначним, має спільні та відмінні риси міжнародного, конституційного, кримінального, цивільного й житлового права, розглядається як у широкому, так і у вузькому значеннях залежно від цілей та рівня досліджень, може вживатися для позначення житлової одиниці, житлового багатоквартирного будинку, житлового фонду будь-якої територіальної одиниці (району міста, міста, області, країни)³²⁸. Житло – пріоритетна потреба людини, а ступінь її задоволення значною мірою визначає якість життя населення. Житловий сектор є ключовим компонентом будь-якої економіки й економічної діяльності в цілому; виступає як важлива частина виробничого потенціалу країни і може бути використаний як двигун економічного зростання при обґрунтованій соціально-економічній політиці³²⁹.

Важливо зазначити, що в наукових дослідженнях відсутнє чітке визначення поняття «житловий сектор». Поряд з терміном «житловий сектор» уживають такі поняття, як «житлове господарство», «житловий фонд». Житловим сектором економіки називають або житлове господарство, або житловий фонд у поєднанні з інституціональною підсистемою житлової системи. Житловий сектор економіки у першу чергу включає будівлі; отже, забезпечення його енергоефективності зумовлює необхідність забезпечення енергоефективності будівель, стан яких визначає й загальний стан енергоефективності житлового сектора України.

Вивчення питання енергоефективності житлового сектора вимагає певного уточнення поняття «енергоефективність будівлі», що дає змогу чіткіше визначити термін «забезпечення енергоефективності житлового сектора».

Відповідно до нормативної бази будівництва³³⁰, енергетична ефективність будівлі – це властивість будівлі, її конструктивних елементів та інженерного обладнання забезпечувати у період прогнозованого життєвого циклу будівлі щоденні потреби людини й оптимальні мікрокліматичні умови для її проживання або знаходження у приміщеннях такої будівлі при нормативно допустимому (оптимальному) рівні витрат енергоресурсів на опалення, освітлення, вентиляцію, кондиціонування повітря, гаряче водопостачання з урахуванням місцевих кліматичних умов.

Закон України «Про енергетичну ефективність будівель» (2017)³³¹ визначає енергетичну ефективність будівлі як її властивість, що характеризується кількістю енергії, потрібної для створення відповідних умов проживання та життєдіяльності людей у такій будівлі.

Згідно з Європейською директивою 2010/31/ЄС³³², енергетична ефективність будівлі – це кількість розрахованої або вимірної енергії, необхідної для задоволення потреби в енергії й пов'язаної зі звичайним

³²⁸ Лічман Л. (2004). Поняття «житло» і його цивільно-правове значення, с.19-22.

³²⁹ Бережна А.Ю. (2005). Особливості формування та прогнозування ринку житлової нерухомості в Україні, с.207-214.

³³⁰ ДБН В.2.6-31:2016. Теплова ізоляція будівель.

³³¹ Законодавство України: офіційний веб-портал парламенту України.

³³² Закон ЄС: офіційний веб-сайт Європейського Союзу. URL: https://europa.eu/european-union/law_en

використанням будівлі, що може серед іншого включати енергію для опалення, охолодження, вентиляції, нагрівання води та освітлення.

Таким чином, енергоефективність житлового сектора України можна розглядати як результат досягнення оптимального рівня енергетичних потреб житлових будинків з використанням меншої кількості енергії, включаючи розумне споживання й упровадження сучасних енергоефективних технологій, що створює комфортні умови проживання людей. Для забезпечення енергоефективності житлового сектора України потрібний процес створення та підтримання умов виникнення й відтворення економічних ефектів від використання енергоресурсів, ефективних енергозберігаючих технологій.

Потенціал енергоефективності слід розглядати як комплекс ресурсів, можливостей та інструментів, що може бути використаний для зменшення витрат енергоресурсів у житлових будинках при одночасному забезпеченні оптимального рівня комфорту для проживання населення, а також як сукупність об'єктних і суб'єктних складових.

Об'єктні складові потенціалу енергоефективності пов'язані з матеріальною формою потенціалу житлового сектора. Вони споживаються й відновлюються в такій чи інакшій формі в процесі життєвого циклу будівлі. До них належать: житловий фонд (сукупність усіх житлових приміщень незалежно від форми власності), інфраструктура житлового сектора (будь-який об'єкт, який перебуває в державній чи приватній власності та надає або розподіляє послуги в інтересах населення, такі як водопостачання, водовідведення, енергопостачання, тепlopостачання), енергоефективне обладнання й матеріали (для впровадження заходів щодо ефективного використання енергетичних ресурсів та енергозбереження), енергоресурси, що споживаються в житловому секторі (природний газ, електроенергія, теплоенергія тощо).

Суб'єктні складові пов'язані із суспільною формою їх прояву, вони формують передумови й фактори (загальноекономічні, загальногосподарські, соціальні, екологічні, технічні, нормативно-правові) щодо раціонального використання об'єктного потенціалу житлового сектора України.

До суб'єктів потенціалу житлового сектора України, що визначають процеси управління, фінансування, експлуатації, відносять: центральні органи влади, органи місцевого самоврядування, міжнародні фінансові організації, агентства з розвитку, банки та інші фінансові установи, комунальні підприємства, ОСББ, домогосподарства.

Реалізація наявного об'єктного й суб'єктного потенціалу організаційно-економічного забезпечення енергоефективності житлового сектора України потребує системного вдосконалення діючої системи управління соціально-економічним розвитком країни.

На національному рівні забезпечення енергоефективності житлового сектора можна визначити як сукупність політичних, економічних, соціальних, екологічних та інших дій, спрямованих на реалізацію реформи енергоефективності з урахуванням кращих практик європейських країн.

На регіональному рівні забезпечення енергоефективності житлового сектора можна визначити як сукупність форм і методів реалізації заходів з

енергоефективності відповідно до положень національного законодавства з урахуванням регіональних особливостей.

На муніципальному рівні забезпечення енергоефективності житлового сектора може бути подано як сукупність завдань з урахуванням локальних особливостей житлового сектора (моніторинг енергоспоживання, планування впровадження заходів з підвищення енергоефективності, залучення джерел фінансування, контроль за ефективністю, упровадження заходів, кадрове забезпечення, мотивація ощадного енергоспоживання).

Виділено складові формування результативності організаційно-економічного забезпечення енергоефективності житлового сектора України, а також визначено проблеми, які потребують розв'язання на національному, регіональному та муніципальному рівнях для досягнення енергоефективності житлового сектора України (рис. 1).

Результативність забезпечення енергоефективності житлового сектора України визначається низкою параметрів, а саме: оптимальним співвідношенням результатів діяльності (споживання) й енергетичних витрат; здатністю житлового сектора використовувати свій енергетичний потенціал; структурою енергоспоживання житлового сектора України та рівнем задоволення потреб споживача (населення) енергоресурсами. Кожна із зазначених вище складових має проблеми та невирішені питання на різних рівнях управління.

Неефективна структура імпорту енергоресурсів і нераціональне використання енергоресурсів перешкоджає отриманню оптимального співвідношення продуктивності (споживання) та енерговитрат на національному рівні. Скорочення світових запасів вичерпних природних енергоресурсів, які складають основу енергетичного балансу України, зокрема нафти, вугілля й природного газу, викликає постійне збільшення їх вартості. Водночас для української енергетичної системи характерна велика залежність від імпорту енергії – третина первинної енергії імпортується, а наявні геополітичні проблеми ускладнюють цей процес. Питання нераціонального використання енергоресурсів ускладнюються застосуванням застарілих технологій, високим рівнем зносу основних фондів, а також витрат на виробництво. У той же час ефективність використання енергоресурсів має прямий вплив на показники, що характеризують конкурентоспроможність та ефективність національної економіки, а отже, і держави в цілому.

На регіональному рівні взаємозв'язок між витратами енергоресурсів та споживанням пов'язаний із труднощами визначення ефективності використання енергоресурсів і багатокритеріальністю визначення об'єктів управління енергоефективністю в житловому секторі. Успішному впровадженню політики з енергоефективності в житловому секторі на регіональному рівні часто перешкоджає відсутність даних для розроблення відповідних показників, щодо яких енергоефективність може бути адекватно оцінена. Управління енергоефективністю в житловому секторі є складним завданням, котре полягає в досягненні оптимальної економії енергії з енергетичної, економічної та екологічної точок зору.

**СКЛАДОВІ ФОРМУВАННЯ РЕЗУЛЬТАТИВНОСТІ
ОРГАНІЗАЦІЙНО-ЕКОНОМІЧНОГО ЗАБЕЗПЕЧЕННЯ
ЕНЕРГОЕФЕКТИВНОСТІ ЖИТЛОВОГО СЕКТОРА УКРАЇНИ**

		співвідношення результатів діяльності (енергоспоживання) та енергетичних витрат	використання енергоефективного потенціалу в житловому секторі	структура споживання енергоресурсів в житловому секторі	рівень задоволення потреб споживача (якість та доступність енергоресурсів)
РІВНІ ОРГАНІЗАЦІЙНО-ЕКОНОМІЧНОГО ЗАБЕЗПЕЧЕННЯ ЕНЕРГОЕФЕКТИВНОСТІ ЖИТЛОВОГО СЕКТОРА	Енергоефективність житлового сектора (національний рівень)	залежність від імпорту енергоресурсів; втрати виробленої та імпортованої енергії при її перетворенні й транспортуванні; забезпечення захисту вразливих споживачів енергоресурсів.	енергетична бідність; обмежений рівень державного фінансування; навантаження на державний бюджет країни через надання субсидій; незначний рівень енергоефективної свідомості громадян.	висока залежність від органічних енергетичних ресурсів; незначна частка альтернативної енергії в енергобалансі; дотримання вимог до навколишнього середовища.	непрозорий механізм формування комунальних тарифів; відсутність дієвих механізмів захисту прав споживачів ЖКП; недостатній платоспроможний попит споживачів ЖКП.
	Енергоефективність житлового сектора (регіональний рівень)	складність визначення ефективності використання енергоресурсів; заборгованість населення за житлово-комунальні послуги; нерациональне використання енергоресурсів.	застарілість житлового фонду та низькі темпи його модернізації; недосконалість фінансово-кредитних механізмів; дефіцит коштів на забезпечення енергоефективності житлового фонду.	недостатнє фінансування регіональних ініціатив у сфері ефективного використання енергоресурсів та розвитку альтернативної енергетики.	низька якість житлово-комунальних послуг; збитковість підприємств ЖКГ; низька відповідальність підприємств ЖКГ за надані послуги.
	Енергоефективність житлового сектора (муніципальний рівень)	поліпшення комфортності умов проживання в житлових будинках; збільшення терміну ефективної експлуатації житлового будинку; не виправдані втрати енергії при її транспортуванні та розподілі (зношеність)	«клаптикові» утеплення замість комплексної термомодернізації житла; високий рівень фізичного і морального зносу теплових та електричних мереж; сертифікація енергоефективності будівель; фінансовий бар'єр розвитку ринку енергосервісу.	відсутність методичного й організаційного забезпечення впровадження та реалізації проєктів використання альтернативних джерел енергії.	недостатність обліку споживання ПЕР у житлових будівлях; формування ринку професійних управителів багатоквартирних будинків; низька відповідальність за спільну власність і платіжну дисципліну.
ПРОБЛЕМИ ЗАБЕЗПЕЧЕННЯ ЕНЕРГОЕФЕКТИВНОСТІ					

Рис. 1. Системний підхід до забезпечення результативності енергоефективності житлового сектора економіки

Джерело: складено авторами на основі³³³.

³³³ Система енергоефективності в Україні: проєкт до обговорення; Енергетична бідність: Проблеми та підходи в ЄС та Україні; Механізми фінансування заходів енергоефективності в Україні.

Найпоширенішим джерелом фінансування проєктів з енергоефективності є використання власних ресурсів на муніципальному рівні. Однак власні ресурси завжди обмежені й не сприяють широкомасштабному впровадженню реформи енергоефективності.

На думку експертів, потенціал скорочення споживання енергії житловими будинками в Україні може становити близько 9 млн т н.е. та 3 млрд євро щорічно³³⁴. Отже, можна констатувати, що реалізація державної політики у цій галузі характеризується низькою ефективністю, зокрема потребує підвищення контролю за виконанням заходів щодо ефективного використання енергоресурсів та енергозбереження за рахунок коштів державного бюджету.

В Україні діють програми технічної допомоги з енергоефективності урядів ЄС, Німеччини, США, Швеції, Канади, Швейцарії й інших країн, фондів та донорів. Основну частку наявного фінансування проєктів з енергоефективності (понад 80%), яка формується за рахунок коштів міжнародних фінансових організацій і донорів, складають проєкти модернізації систем опалення. Таким чином, при фінансуванні проєктів в Україні спостерігається значний дисбаланс між наявним та необхідним фінансуванням³³⁵.

У той же час існуючий житловий фонд України потребує значної роботи з його модернізації, оскільки більша частина перебуває в незадовільному технічному стані через недостатнє фінансування його утримання; зберігається тенденція передчасного старіння житлового фонду.

Технічний стан енергогенеруючих підприємств можна визначити як критичний стан. Крім фізичного зносу мереж, неефективне енергопостачання пояснюються застарілою технологічною структурою, що призводить до енергетичних і відповідно фінансових втрат підприємств, населення та бюджету.

Облік споживання енергоресурсів є обов'язковою умовою для успішного впровадження реформи енергоефективності. З іншого боку, ефективним індивідуальний облік буде тільки за умови, що споживач має змогу регулювати витрати тепла залежно від своїх власних потреб.

Структура споживання енергії в країні характеризується високою залежністю від органічних енергетичних ресурсів та невеликою часткою альтернативної енергії в енергетичному балансі. У той же час Україна є однією з енергодефіцитних країн, яка задовольняє свої потреби в паливно-енергетичних ресурсах за рахунок власного виробництва менше ніж на 50%. Майже всі групи первинних енергоресурсів залежать від імпорту з високою часткою окремих постачальників, що загрожує енергетичній безпеці України.

Одне з питань соціальної безпеки країни – енергетична бідність. Держава повинна виконувати свою соціальну функцію захисту найбільш вразливих

³³⁴ Система енергоефективності в Україні: проєкт до обговорення. Міністерство розвитку громад та територій України: офіційний веб-сайт Міністерства.

³³⁵ Механізми фінансування заходів енергоефективності в Україні. Міністерство розвитку громад та територій України: офіційний веб-сайт Міністерства.

споживачів, котрі з різних причин не в змозі задовольнити свої основні енергетичні потреби. На початок 2021 року субсидії на житлово-комунальні послуги отримали 65% домогосподарств³³⁶, що є великим навантаженням на державний бюджет.

Успішна регіональна політика енергоефективності є основою для розвитку економіки регіону та якості життя в ньому. Регіональна влада у межах своїх компетенцій здійснює політику енергоефективності, але недостатнє фінансування регіональних ініціатив у галузі енергозбереження та розвитку альтернативної енергетики стримує цей процес.

Відсутність методологічної та організаційної підтримки впровадження та реалізації проєктів використання альтернативних джерел енергії перешкоджає активному введенню відновлюваних джерел енергії в економіку на муніципальному рівні.

Важливою складовою результативності організаційно-економічного забезпечення енергоефективності житлового сектора України є також рівень задоволення потреб споживачів (населення) енергоресурсами.

Забезпечення балансу економічних інтересів виробників (постачальників) продукції, постачальників послуг та їх споживачів передбачає, з одного боку, встановлення достатньо економічно обґрунтованих тарифів на житлово-комунальні послуги, а з іншого, врахування економічних можливостей споживачів – рівень платоспроможного попиту.

Недостатність інформування широких верств населення щодо необхідності ефективного та ощадливого споживання паливно-енергетичних ресурсів також зменшує ефективність забезпечення енергоефективності житлового сектора України на рівні регіону.

На муніципальному рівні питання підвищення енергоефективності житлових будинків значною мірою залишається власникам окремих будинків та об'єднанням співвласників багатоквартирних будинків (ОСББ), які мають змогу реалізувати програми з енергоефективності в кредит з частковою компенсацією від держави. Однак реалізація цих питань наразі сповільнюється. Населення має сумніви, щодо спроможності у власних фінансових можливостях, в державній компенсації, не обізнано з технічною стороною впровадження заходів через недостатню компетенцію голів ОСББ з питань енергоефективності.

Отже, для підвищення результативності забезпечення енергоефективності житлового сектора України визначено необхідність дослідження на різних рівнях управління таких напрямів, як фінансовий, інноваційний, організаційний, соціально-економічний, технологічний та правовий, рис. 2.

Перед урядом будь-якої країни стоїть завдання впливати на соціальну структуру населення, а житло може бути найефективнішим важелем перерозподільної функції. Тому що чим нижчий добробут населення, тим більше значення житла в усьому спектрі соціальних проблем.

³³⁶ Енергетична бідність: Проблеми та підходи в ЄС та Україні.

Фінансовий (залучення інвестицій, диверсифікація джерел фінансування)	Інноваційний (розвиток інновацій, розробка нових технологій, пошук альтернативних джерел енергії)	Організаційно- інформаційний (розвиток системи і структури управління)
Соціально-економічний (рівень доходів населення, субсидії)	Технологічний (застосування інноваційних, екологічно чистих, ресурсозберігаючих технологій)	Правовий (розвиток законодавчо- правової бази галузі)

Рис. 2. Напрями підвищення енергоефективності житлового сектора України

Джерело: складено авторами

Житлове будівництво – це майже єдина галузь, де Україна може розраховувати виключно на власний економічний, науковий та ресурсний потенціал, без надмірного впливу іноземного капіталу й імпорту, а енергоефективне житло зменшить енергетичну залежність України від імпорту енергії з позитивними політичними наслідками³³⁷.

Отже, питання забезпечення енергоефективним житлом населення країни є вкрай важливим завданням соціально-економічної політики в Україні в контексті євроінтеграції, розв'язання якого потребує розвитку нового будівництва, термомодернізації наявних і реконструкції старих будівель. Упровадженню енергоефективних заходів у житловій будівлі перешкоджають проблеми тарифної політики; відсутність ефективного власника багатоквартирних будинків; культура низького споживання енергії; недостатній рівень оснащення населення лічильниками; відсутність фінансових механізмів для залучення коштів на енергетичну модернізацію та невизначеність принципів бюджетної підтримки заходів з енергоефективності в житловому секторі України.

Житловий сектор є складовою ринку нерухомості, тому для дослідження питань дієвості забезпечення енергоефективності житлового сектора України доцільно розглянути взаємопов'язаний процес вивчення економічних, соціальних і просторових аспектів функціонування ринку нерухомості. Зарубіжні вчені-економісти Дж. Фрідман та Н. Ордуей вважають, що «ринок нерухомості – це сукупність механізмів, які забезпечують відчуження прав власності (повних або часткових) на об'єкт нерухомості від одного суб'єкта до іншого; встановлення вільного ціноутворення; перерозподіл інвестицій між конкуруючими видами об'єктів та землекористування»³³⁸. Ринок нерухомості ділять за способом здійснення операцій на первинний і вторинний. Під первинним ринком нерухомості розуміють сукупність операцій, що здійснюються із новоствореними, а також з приватизованими об'єктами, результатом яких є передача об'єктів нерухомості в економічний обіг. Питання

³³⁷ Мосейчук В.В. (2007). Українська національна ідея. Тернопіль-Львів: Вид-во Мосейчука В.В. 80 с.

³³⁸ Фрідман Дж., Ордуей Н. (1995). Анализ и оценка приносящей доход недвижимости / Пер. с англ. М.: Дело Лтд. С.444.

енергоефективності житлових будинків на первинному ринку вирішуються під час будівництва, оскільки проекти, які зараз реалізуються, повинні бути енергоефективними, що затверджено на законодавчо-нормативному рівні.

Під вторинним ринком нерухомості розуміють операції, котрі здійснюються з уже створеними об'єктами, які знаходяться в експлуатації й пов'язані з перепродажем чи іншими формами передачі об'єктів нерухомості від одного власника до іншого. Питання забезпечення енергоефективності житлових будинків на вторинному ринку житла є найбільш актуальним, оскільки проблеми старого житлового фонду комплексно не розв'язуються, а будинки, побудовані в 60-70-х роках минулого століття, – це величезні втрати тепла, оскільки в процесі їх будівництва не застосовувались енергоефективні матеріали та конструкції.

Існує взаємозв'язок між первинним і вторинним ринком, зокрема ціни на вторинному ринку – це свого роду орієнтир, котрий показує, наскільки рентабельне нове будівництво при існуючому рівні витрат.

До специфічних характеристик нерухомості як товару належать: стаціонарність (нерухомість невіддільна від місцевості, в якій вона знаходиться, а покупець нерухомості набуває з нею весь спектр характеристик місцевості); унікальність та різноманітність (об'єкти можуть різнитися за розмірами, плануванням, якістю й системами комунального обслуговування); довговічність (накладає на власника нерухомості обов'язок виконувати ремонт (капітальний і косметичний) та контролювати швидкість фізичного зносу); тривалість створення (середня тривалість циклу будівництва чи реконструкції становить 3-3,5 роки)³³⁹.

Манцевич Ю.М. вважає, що проблема структурування житлового фонду має не лише методологічне та теоретичне значення, але й важливе практичне застосування, тому що завжди існує проблема ринкового оцінювання житла як матеріального активу.³⁴⁰ Необхідна й опосередкована залежність між технічними, енергоефективними, санітарно-гігієнічними вимогами до житла та рівнем економічного розвитку країни. Державі потрібно підтримувати рівновагу між зростаючим добробутом населення й потребою у забезпеченні житлом домогосподарств з низьким рівнем доходу. Установлюючи технічні, енергоефективні, санітарно-гігієнічні вимоги до житла, можна розділити житло на те, що відповідає цим вимогам, та те, яке не відповідає. Якщо житло не відповідає встановленим вимогам, його ринкова вартість значно знижується, але це не означає, що таке житло буде негайно вилучене з обігу.

Значну частину житлового фонду України складають житлові будинки, що не відповідають сучасним стандартам енергоефективності, але продовжують використовуватися за призначенням, рис. 3.

Виділяють кілька основних типів застарілого житлового фонду на підставі невідповідності сучасним стандартам:

³³⁹ Асаул А.М. та ін. (2006). Ринок нерухомості: навч. посіб.

³⁴⁰ Манцевич Ю. (2007). Економічні передумови структуризації ринку житла, с.88-98.

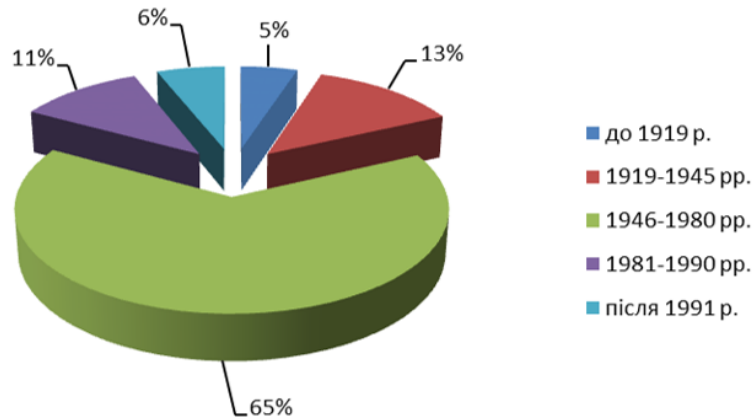


Рис. 3. Структура житлового фонду за роками забудови в Україні

Джерело. Розраховано авторами на основі³⁴¹

– мінімальний рівень невідповідності стандартам – це фонд, який застарів морально, але все ще має достатній рівень фізичної міцності. Невідповідність пояснюється різницею стандартів типорозмірів та якості будівельних матеріалів періоду спорудження житла і періоду оцінювання його відповідності. Це не несе загрози життю та здоров'ю мешканців. Приклади – цегляні й блокові будинки масових серій, побудовані до 1990 року;

– середній рівень невідповідності стандартам – фонд, морально і фізично застарілий, має певний рівень фізичної міцності, що вимагає перевірки придатності для подальшої експлуатації. Невідповідність пояснюється використанням технологій та будівельних матеріалів, які вичерпали свій експлуатаційний ресурс. Це створює потенційну загрозу життю й здоров'ю мешканців. Приклад – панельні будинки масової серії, побудовані до 1970 року;

– високий рівень невідповідності стандартам – фонд, морально і фізично застарілий, має мінімальний рівень фізичної міцності, а також житло, розташоване в підвалах та напівпідвальних приміщеннях. Потрібні аварійно-відновлювальні роботи або термінове переселення мешканців. Це становить реальну загрозу для їхнього життя й здоров'я. Прикладами є одно-, дво- та триповерхові будівлі довоєнного й післявоєнного періоду без належного інженерного обладнання;

– непридатний для проживання – фонд, який незалежно від якісних характеристик визнається таким, що не може бути використаний для проживання людини. Прикладами є пошкоджені або частково зруйновані будівлі, а також розташовані в санітарно-захисних зонах об'єктів спеціального режиму тощо.

Із цієї класифікації видно, що перший та другий види застарілого житлового фонду, незважаючи на невідповідність сучасним стандартам, будуть користуватися великим попитом серед сімей з низьким доходом і молодих сімей, які ще не накопичили достатньо коштів, щоб придбати більш комфортне

³⁴¹ Звіт про науково-дослідну роботу. Дослідження та розроблення науково-обґрунтованих пропозицій щодо формування та використання об'єднаннями співвласників багатоквартирних будинків коштів ремонтного та резервного фондів.

житло. Тому їх слід розглядати як складові існуючого та прогнозованого ринку житла. Проте, недостатній комфорт, низька енергоефективність житлових будинків першої масової серії, їх значний фізичний та моральний знос потребують розв'язування проблеми капітального ремонту (реконструкції) житла із застосуванням сучасних енергозберігаючих технологій, матеріалів і обладнання.

Третій і четвертий типи застарілого житла також матимуть обмежений попит на ринку житла, тут має значення право власності на об'єкт нерухомості, а не житло у матеріальній формі, оскільки покупець фактично купуватиме місце розташування квартири, а не квартиру³⁴².

У зв'язку зі значним старінням житлового фонду України, потенціал ринку житлового будівництва має важливе значення як сукупність ресурсів, можливостей, запасів, цінностей, які можуть бути використані для створення конкурентного середовища на ринку нерухомості.

Успішність розв'язання завдань підвищення енергоефективності житлового сектору в Україні безпосередньо пов'язано із наявним конкурентним потенціалом житлового будівництва (як реалізованим, так і нереалізованим) та масштабами інвестування нових та реконструкції існуючих виробничих і невиробничих потужностей, їх подальшого технічного переозброєння³⁴³. До основних складових конкурентного потенціалу житлового будівництва відносять виробничий, трудовий, фінансовий, інвестиційний, інноваційний, інформаційний та енергоефективний (табл. 2), що перебуває під впливом різних факторів. Зокрема, галузь житлового будівництва є капіталомісткою й потребує оптимізації техніко-технологічної складової виробничого потенціалу та врахування специфіки кожного типу технологічного процесу будівництва³⁴⁴, що супроводжується виникненням ризиків реалізації проєктів зі створення житлових об'єктів.

Упровадження сучасних екологічно чистих, енерго- та ресурсозберігаючих технологій у виробництво будівельних матеріалів, новітніх методів здійснення процесів монтажу й робіт з високотехнологічним інструментом дає змогу поліпшити якість житла, підвищити ефективність виробництва, зекономити ресурси, знизити витрати на експлуатацію будівель і споруд. На жаль, сьогодні відбувається помітне технологічне відставання будівельної галузі України від розвинених країн світу, причинами цього зниження рівня наукового та інноваційного забезпечення розвитку будівництва. Визначено фактори, які перешкоджають інноваційній діяльності на будівельних підприємствах:

– техніко-економічні (слабкість матеріальної й науково-технічної бази, домінування традиційного виробництва, застаріла техніка та технологія, орієнтація на короткострокові цілі, недостатність коштів для ризикових проєктів);

³⁴² Манцевич Ю.М. Житло: проблеми та перспективи.

³⁴³ Рогожин П.С., Гойко А.Ф. (2001). Економіка будівельних організацій.

³⁴⁴ Дуба С.Т., Романченко К.О. (2009). Актуальність трудового потенціалу підприємства в сучасних умовах, с.157-160.

- організаційно-управлінські (висока централізація й консервативність організаційної структури, відсутність інноваційної стратегії, повільне розроблення та впровадження інновацій);
- інформаційно-комунікативні (недостатня інформація про інновації, відсутність захисту власності на інформаційні ресурси, замкненість і обмеженість міжгалузевих зв'язків);
- соціально-психологічні (стереотипи поведінки, опір інноваціям, невизначеність);
- правові (антимонопольне, податкове, патентно-ліцензійне та кредитне обмеження)³⁴⁵.

Таблиця 2 – Складові потенціалу ринку житлового будівництва

Вид потенціалу	Характеристика
Виробничий	сукупність ресурсів (земельні ресурси, матеріально-сировинні ресурси, техніко-технологічні ресурси, технологічний персонал), необхідна для здійснення будівельного процесу.
Трудовий	здібності працівників до створення високоякісного житла (рівень освіти, кваліфікації, мотивації).
Фінансовий	забезпечення стабільних і життєво важливих фінансових потоків, пошук зовнішніх джерел фінансування за умови необхідності, оптимізації структури капіталу.
Інвестиційний	вкладання різних видів ресурсів для отримання прибутків, ефектів.
Інноваційний	сукупні можливості щодо генерації, сприйняття та впровадження нових (радикальних і модифікованих) ідей до змін технологій, до оновлення виробництва.
Інформаційний	єдність організаційно-технічних та інформаційних можливостей, які забезпечують підготовку й прийняття управлінських рішень та впливають на специфіку виробництва через збирання, зберігання (нагромадження), обробку та поширення інформаційних ресурсів.
Енергоефективний	проведення спеціальних заходів, що в подальшому забезпечать рівень питомого енергоспоживання на опалення будинків не нижче нормативного.

Джерело: складено авторами

Зважаючи на той факт, що обсяги щорічного нового будівництва в Україні не перевищують 2% від існуючого житлового фонду, основний потенціал енергоефективності житлового будівництва перебуває у сфері експлуатації житлового фонду та об'єктів інфраструктури і може бути реалізований шляхом: оснащення будинків енергоефективним інженерним обладнанням, системами, елементами й огорожувальними конструкціями, які забезпечують можливість економного використання теплової енергії та паливно-енергетичних ресурсів згідно з діючими будівельними нормами. Відповідно оцінки потенціалу енергоефективності існуючого житлового фонду в Україні упровадження

³⁴⁵ Беззубко Л.В. (2008). Інноваційний потенціал будівництва, с. 8-11.

енергоефективних заходів може забезпечити приблизно 50% зниження енергоспоживання від базового рівня фактичного енергоспоживання³⁴⁶.

Саме тому важливим є досвід країн ЄС щодо впровадження концепції сталого розвитку в будівництві (model of sustainable development for building), де забезпечення енергоефективності у будівництві тісно пов'язано з сталим (стійким) будівництвом (sustainable building), що знаходить реалізацію на етапах проєктування, будівництва та експлуатації будівель. Критерієм оцінювання енергоефективності житлових будівель у рамках концепції сталого будівництва є сукупність чітко визначених екологічних, економічних, соціальних і технічних показників.

Таким чином, методологічним базисом дослідження житлового сектора національної економіки з позицій організаційно-економічного забезпечення енергоефективності його функціонування є концепція сталого розвитку, що сприяє забезпеченню збалансування розвитку економічних, соціальних і екологічних систем. У той же час, забезпечення енергоефективності житлового сектора України є вагомим частиним елементом реалізації концепції сталого енергетичного розвитку України, що має бути спрямований на задоволення енергетичних потреб місцевого населення без шкоди для майбутніх поколінь.

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³⁴⁶ Дослідження ринку. Житловий сектор України: правові, регуляторні, інституційні, технічні та фінансові аспекти: фінальний звіт.

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CHAPTER 2

TECHNOLOGICAL AND ECOLOGICAL PRIORITY AREAS OF SUSTAINABLE DEVELOPMENT

PRODUCTIVITY OF VARIETIES OF DYEING SAFFLOWER DEPENDS ON THE FACTORS INVESTIGATED IN THE CONDITIONS OF THE EASTERN FOREST STEPPE

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Abstract. The results of studies on the dependence of germination and survival of safflower cultivars on the width of interrows and seed fraction are presented. The influence of row spacing and seed fraction on safflower productivity was studied. It was established that the best variety is the Sonyachnij variety with an average fraction of seeds with a row width of 45 cm.

Keywords: safflower dye, seed material, varieties, field germination, seed fraction, plant survival

Today, oil crops are the most attractive for agricultural production, as they can give the highest profitability. There are more than 350 species of oil crops³⁴⁷.

Due to its geographical position and climatic conditions, Ukraine is one of the main producers of sunflower seed oil, which determines the annual growth of its crops. Therefore, the areas occupied by sunflower greatly exceed the scientifically based ones. This forces the search for alternative oil crops for different soil and climatic zones of Ukraine. Thus, one of such promising crops for the arid conditions of eastern Ukraine is dye safflower (*Cartahamus tinctorius*, Aistrovi family), known as dye thistle, wild or American saffron³⁴⁸.

Today, there is a need to create an effective mechanism for managing the efficiency of oilseed cultivation. One of such mechanisms can be the transition to the

³⁴⁷ Zinchenko O. I., Salatenko V. N., Bilonozhko M. A. (2001). Roslinnictvo; Filipov Ye. G. (2014). Agrotehnicni prijomi na ekonomichnu efektivnist viroshuvannya safloru krasilnogo v umovah zroshennya pivdnya Ukrayini, p.143-149.

³⁴⁸ Bilokon O. P. (2004). Udoskonalennya tehnologiyi viroshuvannya safloru, p.173-176; Bezpalko V. V., Chalaya O. S., Zhukova L. V. (2022). Saflor – perspektivna nisheva kultura v zoni Lisostep, p.11-13.

production of non-traditional oil crops. Such crops include safflower, white and gray mustard, black cumin, amaranth³⁴⁹.

One of the more promising crops for the arid conditions of the east is safflower. But the technology of its cultivation in Ukraine is insufficiently developed.

Although safflower is one of the most valuable oil crops, which include sunflower, mustard, rapeseed, flax, safflower, oil poppy, and others, it is a promising niche crop³⁵⁰.

So, why does this culture attract agricultural producers? First, it is not picky about soils and drought resistance. Safflower grows well even on saline and saline soils.

Dyeing safflower is determined by many advantages in cultivation over other oil crops. It has a deep root system, which depletes the soil less, unlike sunflower. Safflower seedlings are resistant to spring frosts (up to -5°C). It is an insurance crop in case of reseeding of winter crops. Specific diseases and pests of safflower did not spread widely³⁵¹.

But the technology of its cultivation in Ukraine is not sufficiently developed. There are no clear recommendations for the producer on the methods, sowing rates and requirements for the seed material, the width of the rows, as well as the fractional composition of the crop seeds³⁵². Therefore, research on this issue is relevant.

In Ukraine at the beginning of the 20th century, safflower was planted on an area of 1,500-2,000 hectares, mainly in the south. Today, the area has decreased, it is grown on small areas in the Kherson Zaporizhzhya, Poltava and Kharkiv regions³⁵³.

The homeland of safflower is Ethiopia and Afghanistan. Safflower is one of the oldest cultivated plants. The seeds were found in the tombs of the pharaohs, which are mentioned around 2000 BC. It was cultivated by the ancient Chinese, Syrians, and Arabs as an oil crop and for use in medicine³⁵⁴. Now safflower is found as an oil plant in the driest areas of Central Asia. It is grown on small plantations in India, Turkey, Iran, China, European countries, and the USA.

In many countries of the world, safflower is valued as a medicinal plant. The fat content in the seed is 32-37 %, and in the kernel – 46-50 %. Safflower oil contains carotenoids, vitamins (B1, B2, PP, E, B-tocopherol), as well as linoleic acid (up to 90

³⁴⁹ Fedorchuk M. I., Filipov Ye. G. Kokovihin S. V. et al. (2014). Metodichni rekomendaciyi z vikoristannya informacijnih tehnologij pri optimizaciji tehnologiyi viroshuvannya safloru krasilnogo na polivnih zemlyah pivdnya Ukraini.

³⁵⁰ Shevchenko I. A., Polyakov O. I., Vedmedyeva K. V., Komarova I. B. (2017). Rizhij, saflor, kunzhut. Strategii vyrobnystva olijnoyi syrovyny v Ukraini (maloposhireni kulturi).

³⁵¹ Bakum M. V., Krekot M. M., Mihajlov A. D. et al. (2020). Labratorno-polovi doslidzhennya efektyvnosti vplivu sortuvannya nasinnya za rozmirami na urozhajnist safloru, p.35-40.

³⁵² Bakum M. V. et al. (2022). Doslidzhennya efektyvnosti pnevmatichnogo separatora z nahilenim kanalom na pidgotovci posivnogo materialu safloru, p.28-35; Bezpalko V. V., Chalaya O. S., Zhukova L. V. (2022). Saflor – perspektivna nisheva kultura v zoni Lisostep, p.11-13.

³⁵³ Solonenko S. V. (2019). Optimizaciya elementiv tehnologiyi viroshuvannya safloru krasilnogo v umovah Lisostepu zahidnogo.

³⁵⁴ Fedorchuk M. I., Filipov Ye. G. Kokovihin S. V. et al. (2014). Metodichni rekomendaciyi z vikoristannya informacijnih tehnologij pri optimizaciji tehnologiyi viroshuvannya safloru krasilnogo na polivnih zemlyah pivdnya Ukraini.

%), which is indispensable for the human body. It is considered useful due to the high concentration of polyunsaturated fatty acids and occupies a special place. In addition, safflower oil is a natural raw material to produce conjugated linoleic acid³⁵⁵.

The nutritional value of safflower oil is determined by the content of unsaturated fatty acids in it, which are necessary for our body to build cells. Unsaturated fatty acids are easily absorbed by the body and are not deposited on the walls of blood vessels, narrowing them. This is the advantage of vegetable oils over animal oils.

Since safflower oil is very rich in unsaturated fatty acids, it permeates the skin faster and is absorbed almost instantly, has a softening and moisturizing effect, and provides a barrier (protective) function of the skin. These properties contributed to the wide use in various creams and ointments for the skin. The oil obtained from the whole seed has a bitter aftertaste and is used to produce oil, white paint, enamels, soap, and linoleum³⁵⁶.

Safflower petals have two different color pigments – yellow and red. The yellow pigment is considered less valuable and is removed by washing the petal mass with water. The red substance of safflower – carthamine – is difficult to dissolve in water, but easily dissolves in alcohol and alkalis and is the most valuable natural red dye. Currently, carthamine is used in carpet production and for fabric dyeing, as well as in cooking as a substitute for saffron. Safflower petals are also used in the food industry, for example in the production of caramel³⁵⁷.

Safflower seeds contain inulin, thereby contributing to the normalization of blood glucose levels. Chinese traditional medicine knew about safflower as early as 1061, using it for diseases of the heart and coronary vessels, as well as as a stimulant, antiseptic, laxative, emetic.

Safflower expands blood vessels, improves blood circulation, eliminates yellow–brown spots on the skin of the face and neck, protects the skin from premature aging, has an enzyme–regulating effect, has an antibacterial and anti–inflammatory effect on the skin, stimulates the secretion of gastric juice and pancreatic enzymes, is characterized by choleric, antisclerotic effect, removes sand from the gall bladder, relieves intestinal spasm and flatulence. It normalizes the level of glucose in the blood, hormonal balance in mastopathy, provides a pain–relieving effect, is an expectorant and diaphoretic³⁵⁸.

Safflower is of particular interest for Ukraine with its harsh continental climate and hot, dry summer. This plant is unpretentious, withstands sharp temperature fluctuations and tolerates both morning frosts in spring and summer heat. Undemanding safflower and soils. The plant is resistant to weeds, does not die even in conditions of strong clogging. In Ukraine, the area of crops is still not significant.

³⁵⁵ Bilokon O. P. (2004). Udoskonalennya tehnologiyi viroshuvannya safloru, p.173-176.

³⁵⁶ Shevchenko I. A., Polyakov O. I., Vedmedyeva K. V., Komarova I. B. (2017). Rizhij, saflor, kunzhut. Strategiiia vyrobnytstva olijnoyi syrovyny v Ukraini (maloposhireni kulturi).

³⁵⁷ Solonenko S. V. (2019). Optimizaciya elementiv tehnologiyi viroshuvannya safloru krasilnogo v umovah Lisostepu zahidnogo

³⁵⁸ Shevchenko I. A., Polyakov O. I., Vedmedyeva K. V., Komarova I. B. (2017). Rizhij, saflor, kunzhut. Strategiiia vyrobnytstva olijnoyi syrovyny v Ukraini (maloposhireni kulturi).

Expanding safflower production is a very attractive thing. The areas of saline soils in Ukraine are increasing annually. These are primarily irrigated lands and on the banks of reservoirs, for their reclamation and prolongation of use, safflower culture is suitable. Therefore, the cultivation of safflower on an area of up to 1 million hectares will not have a negative impact on the production of other crops. Even if we count on crop rotation and other circumstances, the safflower area in Ukraine should be at least 100,000 hectares. This will provide an additional 100,000 tons of oil raw materials³⁵⁹.

The modern climate is characterized by frequent and anomalous changes with a persistent tendency to increase average annual temperatures, which negatively affects the yield of agricultural crops. Safflower is advantageously different from traditional cultures for Ukraine. Therefore, safflower dye is a valuable oil and medicinal crop that can be grown in the conditions of the Eastern Forest Steppe³⁶⁰.

The starting material for laboratory and field research was taken as two varieties Lahydnyi and Sonyachnij. Field research was conducted in 2020–2021 in the conditions of the educational and experimental field of the department of agricultural technologies and ecology based on the "Central" NDP of the Kharkiv Technical University of Agriculture named after P. Vasylenko.

Sonyachnij variety. Year of registration – 2001. Recommended for the Steppe zone. Productivity is average. Resistance to drought – 6, lodging – 7, shedding – 7, diseases – 5 points. Forms a basket with a diameter of 2,5–3,0 cm. 10–25 baskets are formed on one plant. The leaves are covered with sharp small spines. The flowers are yellow–orange, light yellow in color, turning red by the end of flowering. The weight of 1000 seeds is 44–45 g. The oil content of the seeds reaches 33 %. The growing season of the Sunny variety lasts 120–125 days. The yield in the fields in the Kherson and Zaporizhzhia regions was recorded at 1,6–1,8 t/ha.

Lagidnij variety. Year of registration – 2011. Created by the Institute of Oil Crops of the National Academy of Sciences together with the Dryad Scientific Research Fund. Cultivation zone – Steppe and forest–steppe. Resistance against drought is very high, against shedding, lodging – high, resistance against major diseases – 8 points, against pests – 6 points. The height of the plants is up to 99 cm, the weight of 1000 seeds is 44 g, and the oil content is 31,5 %. The flowers are orange–red, characterized by a change in color during flowering from orange to red. The plant has rounded upper leaves without teeth along the edge of the leaf plate. There are no spines. The duration of the growing season is 105–110 days, the average duration of flowering is 14 days. The variety is characterized by strong drought resistance. According to the variety tests, the seed yield is 2,1 t/ha.

³⁵⁹ Shevchenko I. A., Polyakov O. I., Vedmedyeva K. V., Komarova I. B. (2017). Rizhij, saflor, kunzhut. Strategiiia vyrobnytstva olijnoyi syrovyny v Ukraini (maloposhireni kulturi).

³⁶⁰ Fedorchuk M. I. et al. (2014). Metodichni rekomendaciyi z vikoristannya informacijnih tehnologij pri optimizaciyi tehnologiyi viroshuvannya safloru krasilnogo na polivnih zemlyah pivdnya Ukraini; Homina V. Ya., Stroyanovskij V. S. (2016). Pokazniki yakosti oliyi netradicijnih zhirovmisnih kultur zalezno vid agrotehnicnih zahodiv v umovah Lisostepu Ukraini, p.65.

Experiments were carried out in compliance with the requirements of scientific agronomy.

Field studies, observations of phenological signs during the growth and development of plants were conducted in accordance with generally accepted methods³⁶¹.

Placement of plots is randomized. The registered area of the experimental plot is 25 m². The predecessor is winter wheat.

Sowing was carried out manually, with different widths between rows and fractions: (70 cm – large seeds, 45 cm – medium and 30 cm – small seeds).

Pre-sowing treatment was carried out to a depth of seed wrapping up to 4 cm, at a soil temperature of 4,3...4,8 °C, mineral fertilizers were not applied.

Field studies, observations of phenological signs during plant growth and development were conducted in accordance with generally accepted methods.

The mass of 1,000 safflower seeds was determined according to the method of the State DSTU 3484–96 (GOST 170–81–97).

The yield was determined separately by threshing each variant.

Everyone has known for a long time that the primary task of farmers when growing any crop is to ensure high seed germination. In our studies with safflower dye for 2020-2021, the similarity was within 80,0-87,2 % (Figure 1).

It should be noted that, comparing the two varieties, the highest seed germination was achieved in 2020 by the Sonyachnij variety, 87,2 %, and by the Lagidnij variety, 84,1 %, with a row width of 45 cm and an average seed fraction.

Regarding the survival of the dyer's safflower, it should be noted that with a greater density of standing plants, there is more competition, while some may not survive. The best result was shown by the Sonyachnij variety of 96,3 % with a row width of 45 cm and an average seed fraction in 2021 compared to the Lagidnij variety with a row width of 45 cm and a small seed fraction of 94,0 %.

The duration of the growing season of the dye safflower in our studies on the varieties Sonyachnij and Lagidnij ranged from 116 to 118 days in 2020 and 2021 and ranged from 115 to 120 days from full germination to full maturity for all interrows and seed fractions.

Safflower can be sown both in the usual row method and in wide rows with a row spacing of 45 to 70 cm. Preference is given to the wide row method of sowing when the soil is heavily soiled with weed seeds, and it is impossible to use soil herbicides. Considering the small seeding rate of 10–15 kg/ha, preference should be given to units with a high distribution capacity. Seed drills with disc coulters provide the best results of uniformity of seed wrapping in the soil. The depth of seed wrapping should be 4–6 cm, and when the top layer of the soil dries out – up to 6–8 cm.

³⁶¹ Rozhkov A. O. (red.). (2016). *Doslidna sprava v agronomiyi. Teoretichni aspekty doslidnoyi spravy*; Smaglij O. F. ta in. (2013). *Metodyka naukovih doslidzhen v agronomiyi*, p.264.

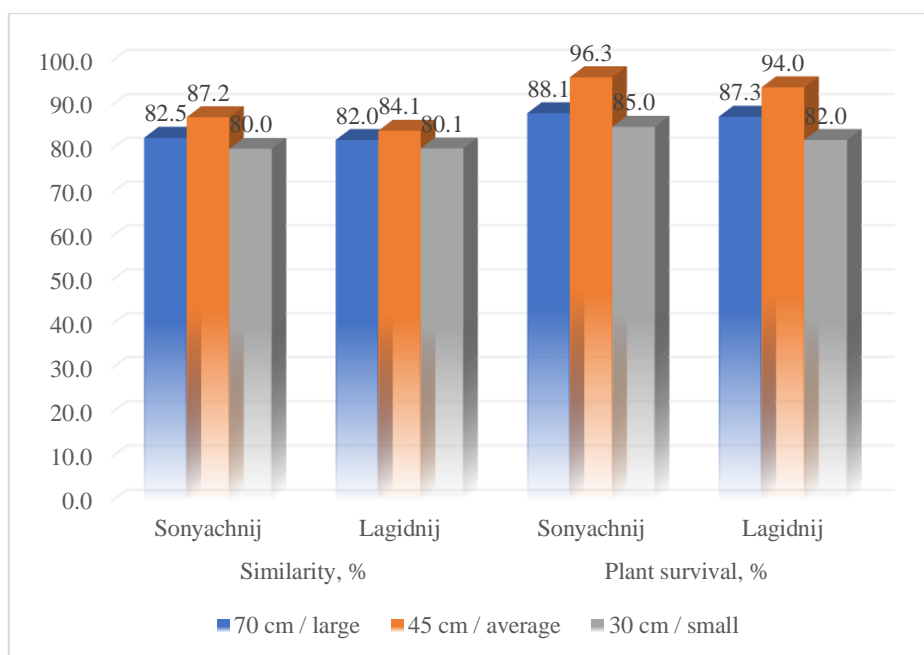


Fig. 1. Similarity and survival of dyeing safflower plants depending on the width of the rows and the seed fraction, % (2020–2021 years)

Laboratory and field studies were used to determine the regularity of the productivity of safflower dye depending on the size of the sown seeds. It is known that the yield reduction of many agricultural crops can be 10–12 % when using seed material with the content of small, weak, and underdeveloped seeds. The best yield is provided by well-formed seeds, not thin, but not too large, which have a fairly high germination energy and germination.

In our research, we studied the growth, development and productivity of safflower depending on the width of the rows and (Figure 2) the seed fraction. In the field experiments, the main phases of plant vegetation were determined: seedlings, formation of baskets, flowering, ripening.

After the measurements, at the full onset of the vegetation phases, the dynamics of plant growth was determined. When determining the productivity of dyeing safflower by varieties, it was determined by sampling plants from 12 of each repetition for each variant.

Thus, the best result for the Sonyachnij variety (Figure 2) was shown by the variant with a row width of 45 cm and an average seed fraction, the height of the plants in the phase of full maturity was 100,7 cm, which is 14,3 cm and 19,7 less than with the variant with a row width of 70 (large) and 30 (small) cm seeds, respectively. Slightly lower indicators of the height of plants with an average fraction of seeds and a row width of 45 cm were shown by the Lagidnij variety.

It should be noted that in the variant with the width of the rows and the average fraction of seeds, both in the Sonyachnij variety and in the Lagidnij variety, the thickness of the stem and the height of the laying of the side shoots and the length of the roots were observed to be the greatest.

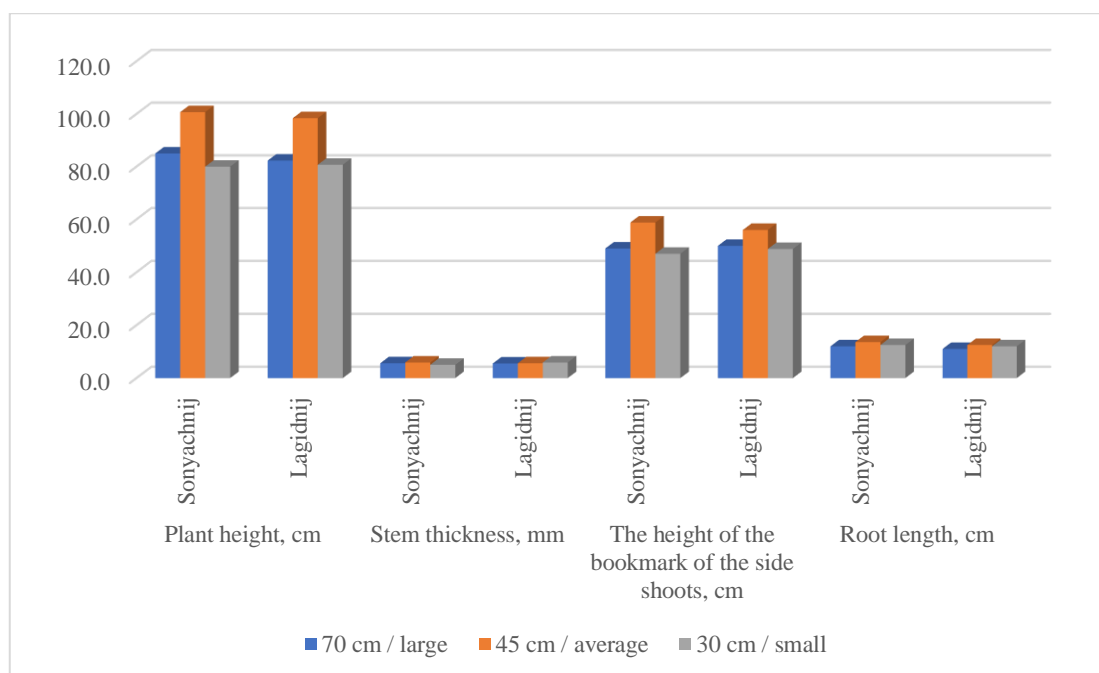


Fig. 2. Morphological indicators of plants of safflower varieties depending on the width of the rows and the seed fraction

The thickness of the stem is a sign of a sufficient amount of all nutrients for the plant.

In our research, we determined the structural analysis of the harvest and the yield of safflower under experimental conditions. As a result of the research, it was established that the size of the seeds affects the structural indicators of crops, including the number of baskets and the number of grains from one plant, as well as the weight of 1000 seeds (Table 1).

As can be seen from the data in Tabl. 1, the plants in the variant with (a small fraction of seeds and a row width of 30 cm) had the best indicators of the crop structure in both varieties (the number of productive baskets and the number of seeds from 1 plant, the weight of 1000 seeds), but the biological yield was lower than that of plants of the medium fraction and with a row width of 45 cm. This can be explained by the fact that the plants of the small fraction had thinned crops, and the stand density indicator, which significantly affects the yield level, was the smallest among the options in both varieties. And plants with a width of 70 cm between rows and a large fraction of seeds in both varieties had the lowest indicators of crop structure and yield.

Thus, the plants with the width of the rows and the average seed fraction, although they were inferior to the plants of the average fraction in terms of these indicators but exceeded them in yield.

Table 1 – The structure of the yield of varieties of safflower dye depending on the width of the rows and the fraction of the seeds under the conditions of the experiment

Row spacing / seed fraction	Number of baskets for 1 plant, pc.	Diameter of baskets from 1 plant, cm	Number of seeds from 1 plant, pc.	Mass 1000 seeds, g	Productivity (biological), t/ha
Sonyachnij					
70 cm / large	6,5	2,9	109,0	37,9	2,7
45 cm / average	7,6	3,0	118,0	39,2	3,2
30 cm / small	6,0	2,1	118,0	39,5	3,0
Lagidnij					
70 cm / large	6,2	2,6	107,0	38,0	2,9
45 cm / average	7,0	2,9	112,0	39,1	3,0
30 cm / small	8,2	2,4	119,0	39,0	2,7

Comparing the two varieties, the highest seed germination is the best result for the Sonyachnij variety of 87,2 %, with a row width of 45 cm and an average seed fraction. In terms of survival, the best indicators were also shown by the Sonyachnij 96,3 % variety with a row width of 45 cm and an average seed fraction.

Considering the morphological indicators of growth and development, the structure of the harvest and yield, which were obtained when growing the seeds of dyeing safflower of two varieties with different fractions of seeds, should be noted. As for the thickness of the stem and the height of laying lateral shoots, the length of the roots was observed to be the greatest in plants with a width of 45 cm between the rows and an average fraction of seeds for both varieties of safflower dye.

The conducted research on the dependence of the germination and survival of safflower plants on the width of the rows and the seed fraction showed that the size of the seed affects both the morphological indicators of the crop and the indicators of the crop structure.

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EFFICIENCY OF THE USE OF THE COMPLEX BIOLOGICAL PREPARATION "MEGAVROZHAI" ON THE FORMATION OF THE YIELD AND QUALITY INDICATORS OF WINTER WHEAT GRAIN

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Abstract. It was established that foliar fertilization had a significant effect on the formation of elements of the crop structure. Thus, the highest indicator was formed with complex fertilization with nitrogen fertilizers and the biological preparation MehaVrozhai, namely, the number of grains from an ear was 32,6 and 29,4 pcs., the weight of grains from an ear was 1,0 and 1,3 g, and the weight of 1000 grains was formed at the level of 42,4 g.

Also, it has already been established that a higher level of yield is formed when sowing winter wheat on cereal precursors than when sowing on sunflower, and the highest level of yield is formed when complex foliar fertilizing with nitrogen fertilizers and the biological preparation MehaVrozhai at the level of 4,2 and 4,3 t/ha, which is 1,1 and 1,3 t/ha more than in the control when sowing on different predecessors.

The analysis of the conducted studies indicates a significant effect of the investigated factors, namely, the highest level of protein and a high increase in gluten content was observed when sowing winter wheat on a grain precursor and when feeding with a complex of fertilizers Urea-ammonia mix-32 + MehaVrozhai. Protein content increased by 6,3 %, and crude gluten increased by 15,6 %.

Keywords: foliar feeding, precursors, grain crops, crop structure, quality indicators, protein, crude gluten, fertilizers, bacteria.

The cultivation of winter wheat is one of the most important directions of the agricultural sector of Ukraine. Under modern realities, when almost all segments of the national economy are under the influence of crisis factors, farms receive record harvests of this crop. Which is of great interest to both manufacturers and consumers. On the one hand, farmers are trying to get a high yield, and on the other hand,

consumers set high demands for quality, and above all environmental friendliness, of raw materials and products³⁶².

Preservation of positive trends in increasing gross grain production is possible both using high-quality seeds of high-yielding varieties of grain crops, and through the implementation of modern innovative approaches in the production of grain crops in compliance with global quality standards³⁶³.

As for environmental friendliness, the intensive use of chemical plant protection agents has a negative impact on the environment and the quality of the obtained products. The resistance of pathogens to chemicals is constantly increasing, and drugs lose their effectiveness over time. Fungicides of chemical origin often have a negative effect on plants and cause their growth to slow down, and sometimes lead to the cessation of their development. Obviously, a reliable guarantee of ecological safety can be the use of biological means of plant protection, which, unlike pesticides of chemical synthesis, after introduction into the agroecosystem lead to qualitative and quantitative changes among the components of the cenosis. However, many mechanisms of interaction between plants and biological preparations have not been studied in detail. The effect of drugs of different concentrations on the environment and the reaction of plants to their use in different soil and climatic conditions remains unexplored³⁶⁴.

The aim of our research is to study the interaction of various precursors, feeding with nitrogen fertilizers and the new complex biological preparation "MehaVrozhai" on the formation of yield and quality of winter wheat grain.

These are field, laboratory, statistical. These are planning, conducting field experiments, observations and accounting carried out according to B.O. Dospekhov. Statistical processing of the results of the experiments was carried out using the dispersion method, using application program packages Microsoft Excel.

The issue of the influence of biological preparations on various crops is widely studied, namely: many scientists noted that pre-sowing treatment of cereal seeds with biological preparations containing bacteria of the genus *Azospirillum* helps to limit the development of root rot and increase the yield by 18-28 %³⁶⁵. And a team of authors from the Institute of Agriculture of the National Academy of Agrarian Sciences conducted research with plants of different varieties of spring barley. They established that when using a mixture of micro fertilizers, bio preparations and humic acids, the number of species of micromycetes in the rhizosphere soil decreases (4-35 %). This shows that the drugs can significantly affect the number of

³⁶² Karamushka O.M. (2016) *Pidvyshchennia konkurentospromozhnosti vyrobnykiv zernovykh kultur v Ukraini*, p.104-108.

³⁶³ Kovalenko O.A., Kliuchnyk M.A., Chebanenko K.V. (2015). *Zastosuvannia biopreparativ dlia obrobky nasinnievoho materialu pshenytsi ozymoi*, p.74-77.

³⁶⁴ Mosiichuk I.I. et al. (2022). *Vplyv biolohichnykh preparativ na chyselnist mikromitsetiv ryzosferneho gruntu roslyn yachmeniu yarooho*, p.39-49.

³⁶⁵ Ishchenko V.A., Kozelets H.M. (2021). *Formuvannia produktyvnosti yachmeniu zvychainoho yarooho zalezho vid inokuliatsii nasinnia biopreparatom ta pozakorenevykh pidzhyvlen v Stepu Ukrainy*, p.180-186.

phytopathogenic micromycetes³⁶⁶. Dumych V. in his works established that the introduction of bio preparations on sowing of spring grain crops provides an increase in yield by 12.3-19.9 %³⁶⁷. The research of Shevchuk M. Y. and Didkivska T. P. established that the incrustation of seeds with Baikal-EM-1 preparations increases the yield of spring barley by 5.1 c/ha³⁶⁸. The positive effect of drugs based on biological organisms has also been established, not only on increasing yield, but also on grain quality. Thus, Odesa scientists determined that the cultivation of winter wheat using biological technology gives an increase in yield up to 10 % and grain quality of 2-3 class³⁶⁹.

Studies conducted on leguminous crops also give high results. Thus, Horodyska I. M. and Chub A. O. established that the use of biological preparations in the planting of leguminous crops has a positive effect on the quantitative and qualitative indicators of the yield of experimental crops (soybeans, peas and beans): the sowing qualities of the seed material of leguminous crops grown by organic technology using biological preparations; an increase in the yield of peas, soybeans and beans relative to the control at the level of 16.5, 7.5 and 7.4 %, was noted respectively³⁷⁰.

In addition, many studies aimed at studying the effect of biological preparations in a complex with mineral fertilizers have been conducted. Thus, Chaikovska L. O. found that the use of bio preparations based on phosphate-mobilizing bacteria and mineral fertilizers in agricultural technologies for growing grain crops gives the greatest effectiveness in the pre-sowing bacteriization of winter wheat and spring barley seeds with the use of Phosphoenterin or Polymyxobacterin in the background for winter wheat – P₃₀, spring barley – against the background of N₃₀P₃₀ and the estimated dose of fertilizers (N₅₃)³⁷¹. Uman scientists studied the reduction of herbicide pressure on plants and established that the most active synthesis of chlorophylls in spring wheat leaves occurs with the combined use of the herbicide Lintur 70 WG (120 g/ha) and Emistyn C (10 g/ha), such an interaction of drugs gives more favourable conditions for crop growth and activates physiological

³⁶⁶ Kozar S.F. (2005). Biologichna efektyvnist kompleksnoho zastosuvannya mikrobnnykh preparativ, p.86-94.

³⁶⁷ Dumych V. (2018). Doslidzhennia efektyvnosti zastosuvannya biopreparativ u tekhnolohiiakh vyroshchuvannya yarykh zernovykh kultur, p.232-236.

³⁶⁸ Shevchuk M.Y., Didkovska T.P. (2007). Efektyvnist zastosuvannya bakterialnykh preparative, p.129-135.

³⁶⁹ Smetanko O.V., Zorunko V.I. (2018). Zastosuvannya biologichnykh preparativ pry vyroshchuvanni pshenytsi ozymoi na riznykh fonakh mineralnoho zhyvlennia ta poperednykiv v umovakh pivdennoho stepu Ukrainy, p.111-119.

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³⁷¹ Chaikovska L.O. (2011). Efektyvnist poiednanoho vykorystannia biopreparativ na osnovi fosfatmobilizovalnykh bakterii ta mineralnykh dobryv pry vyroshchuvanni zernovykh na pivdni Ukrainy, p.52-58.

processes and reduces the effect of herbicides on plants and the natural environment³⁷².

The list of biotechnological products – bacterial preparations has significantly expanded in recent years and includes preparations created based on free-living, associative, symbiotrophic, nitrogen-fixing, phosphate-mobilizing microorganisms, as well as preparations of binary action. Therefore, the study of this issue has wide boundaries, and the topic is very relevant.

The purpose of our research was to study the interaction of various precursors, fertilization with nitrogen fertilizers and the new complex biological preparation "MegaVrozhai" on the formation of the yield and grain quality of winter wheat.

Field research was conducted in 2022 on the fields of the limited liability company "ORHANYTSIA", which are located in the north-eastern part of the Cherkasy region in the village of Bohdanivka. The experiment with winter wheat was laid according to generally accepted methods. The research was carried out in triplicate, the placement of the plots was randomized. The total sown area was 60 hectares, the registered area was 360 m². The soils of the research plots are sod-gley, rich meadow and sod-podzolic. The growing season of winter wheat was favourable for the formation and development of winter wheat plants. At the beginning of the growing season, a low level of moisture was observed, but the subsequent conditions were favourable.

The Bohdana winter wheat variety was used in the research. Originator: Institute of Plant Physiology and Genetics of the National Academy of Sciences of Ukraine, Myronivskyi Wheat Institute of NAAS named after V. M. Remesla, variety of intensive type, medium-ripening. The fertilization was carried out with the complex biological preparation "MegaVrozhai" produced by "ORHANYTSIA" LLC. The scheme of the experiment: factor A (precursor) – winter rye and sunflower, factor B (foliar top dressing): I – no top dressing (control), II – top dressing with KAS-32 at a dose of 70 l/ha, III – top dressing with the biological preparation MegaVrozhai (5,5 l/ha), IV – top dressing KAS-32 (70 l/ha) + MegaVrozhai (5.5 l/ha).

The first feeding with the studied drug was carried out at the beginning of the recovery of spring vegetation simultaneously with nitrogen feeding of winter wheat plants.

The second was at the beginning of the emergence of winter wheat plants in the tube exclusively with a biological preparation. Crop seeds were sown at the optimum time for this zone, with a sowing rate of 5 million pieces per hectare, with a row width of 0.15 m row-sowing method.

The harvesting was carried out at the onset of biological ripeness, separately according to options by direct combining. The protein content was determined by the method of infrared spectroscopy (National Standard of Ukraine NSTU 4117:2007), the raw gluten content was determined by the manual method (NSTU ISO 21415-1:2009) in the laboratory of genetics, biotechnology and quality of the Plant Breeding

³⁷² Zabolotnyi O.I., Zabolotna A.V. (2013). Vmist khlorofilu u lystkakh pshenytsi yaroi pry zastosuvanni herbitydu Lintur 70 WG i rehuliatora rostu roslyn Emistym S, p.414-418.

Institute named after V. Ya. Yuriev. Mathematical data processing was carried out by the method of dispersion analysis according to B. O. Dospiekhov using Microsoft Office Excel table editor³⁷³.

The formation of the crop depends on the productivity of one plant. Predecessor, soil tillage quality, nutrition background, level of moisture supply – these factors affect the result of growing winter wheat. Therefore, in the conducted research, the plant productivity was evaluated by the next indicators: the number and mass of grains from an ear, the mass of 1000 grains. The research has revealed a positive effect of the action of the biological preparation on the formation of the yield of winter wheat plants.

Based on the results given in the table 1, it can be noted that 24.6 pieces are formed in the control after the grain precursor of grains, when feeding KAS-32 this indicator increases significantly and amounts to 28.7 pcs., the number of grains observed under the action of the biological preparation MegaVrozhai is almost at the same level, namely 30.4 pcs.

The highest manifestation of this indicator was established with the complex treatment of KAS-32 and the biological preparation MegaVrozhai – 32.6 pcs. As for the values after the precursor sunflower, the number of grains from the ear of corn, it was noted that 20.3 pieces of grain were formed in the control, when processing KAS-32 plants – 23.4 pcs., when applying a biological preparation – 25.9 pcs., and the highest result is given by complex processing of winter wheat plants – 29.4 pcs.

A high level of the indicator of the number of grains per ear does not guarantee us a satisfactory level of harvest. Due to the fact that with an insufficient level of nutrition, plants form thin, incomplete grain, accordingly, the grain mass will be of low quality, therefore a significant part of the profit will be lost³⁷⁴.

In the research, an analysis of the formation of the mass of the ear depending on feeding was carried out. The following results were obtained: when sowing on winter rye, the plants formed an ear weighing 0.8 g, when feeding KAS-32 – 0.9 g, when plants were treated with the biological preparation MegaVrozhai, the weight of grains from the ear increased to 1.1 g, and accordingly the highest level of this indicator, 1.3 g was formed with complex feeding KAS-32 + MegaVrozhai.

The mass of 1000 grains is also an important technological indicator of grain quality. It characterizes the fullness of the grain and its size. In our research, the mass index of 1000 grains ranged from 29.7 to 42.2 g. The smallest mass of 1000 was observed on the control option when sowing after sunflower, namely 29.7 g. Accordingly, it was the highest when sowing winter wheat after rye and under the action of complex fertilization KAS-32 + MegaVrozhai.

If we consider the indicator of the weight of 1000 grains when sowing on a separate predecessor, it can be noted that when feeding KAS-32 plants, the indicator

³⁷³ Dospiekhov, B.A. (1985). Metodika polevogo opyita.

³⁷⁴ Heller O.Y., Pashova V.T., Korbaniuk R.A., Zaitseva O.S., Kravchenko K.O. (2012).

Osobystosti formuvannia kilkisnykh i yakisnykh pokaznykiv yachmeniu yarohto pry zastosuvanni biotekhnolohichnykh preparativ, p.36-40.

increased by 0.5–4.1 g, when feeding with the biological preparation MegaVrozhai by 4.7–7.6 g, with complex treatment KAS-32 + MegaVrozhai for 7.5–9.1 g.

Table 1 – Indicators of the yield structure of winter wheat depending on foliar feeding in 2022

Predecessor (factor A)	Variant of foliar feeding (factor B)	Indicators of yield structure		
		The number of grains in an ear, pcs.	Mass of grains from an ear of corn, g	Weight of 1000 grains, g
Winter rye	without feeding (control)	24,6	0,8	32,1
	KAS-32	28,7	0,9	36,2
	«MegaVrozhai»	30,4	1,1	39,7
	KAS-32 +« MegaVrozhai»	32,6	1,3	41,2
Sunflower	without feeding (control)	20,3	0,6	29,7
	KAS-32	23,4	0,7	30,2
	«MegaVrozhai»	25,9	0,9	36,4
	KAS-32 +« MegaVrozhai»	29,4	1,0	37,2
NIR0.5 for: factor A		0,66	0,06	0,53
factor B		0,93	0,09	0,76
interaction of AB factors		1,31	0,13	1,07

The main criterion by which it is possible to evaluate the technological methods used in the cultivation of winter wheat is, of course, the yield obtained³⁷⁵. The yield data obtained indicate that both precursors and foliar fertilizing with nitrogen fertilizers and the biological preparation MegaVrozhai had a significant effect on the yield of winter wheat ($HIP_{05} = 0.93$ t/ha) (Table 2).

Table 2 – Yield of winter wheat depending on foliar feeding in 2022

Predecessor (factor A)	Variant of foliar feeding (factor B)	The yield, t/ha	The increase, т/га
Winter rye	без підживлення (контроль)	3,24	-
	without feeding (control)	4,09	0,85
	KAS-32	4,32	1,08
	«MegaVrozhai»	4,46	1,22
Sunflower	KAS-32 +« MegaVrozhai»	2,91	-
	without feeding (control)	3,58	0,66
	KAS-32	3,85	0,94
	«MegaVrozhai»	3,97	1,06
NIR0.5 for: factor A		0,47	
factor B		0,66	
interaction of AB factors		0,93	

³⁷⁵ Shevnikov D.M. (2019). Formuvannya vrozhaivosti pshenytsi tverdoi yaroї zalezhno vid mineralnykh dobrov ta mikrobiolohichnykh preparativ v umovakh Livoberezhnoho Lisostepu, p.20-27.

According to the results of the analysis of productivity indicators, it was established that the increase was from 0.66 to 1.22 t/ha. The lowest level of increase was observed when sowing winter wheat after sunflower and feeding KAS-32, namely 0.66 t/ha. The highest increase was observed for sowing after winter rye and feeding with a complex of preparations KAS-32 + MegaVrozhai – 1.22 t/ha. Also, a significant increase in productivity was observed when treated only with the biological preparation MegaVrozhai, namely 0.94 t/ha when sowing with the precursor sunflower and 1.08 t/ha when sowing with winter rye. Such results are due to the complex effect of the drug on the plant. Thanks to the fact that MegaVrozhai contains bacteria of the genus *Bacillus Subtilis* in its composition, which provide fungicidal protection of the plant, *Bacillus licheniformis* – stimulates growth processes in plants. *Trichiderma Viride* – synthesizes phytohormones, amino acids, proteins for the plant, *Bacillus Megaterium* – phosphate and potassium mobilizer, helps the plant to absorb nitrogen, phosphate and potassium micro fertilizers as much as possible.

The foliar fertilizing had a positive effect on the formation of grain quality indicators. In the research, the moisture content of the grain mass was determined and it can be noted that this indicator was lower than the critical value of 14 % and ranged from 10.8 to 13.2 %. In our research, the protein content of winter wheat grains ranged from 9.3 to 15.6 % (Figure 1) when sowing after winter rye and from 8.7 to 12.6 % when sowing wheat after sunflower.

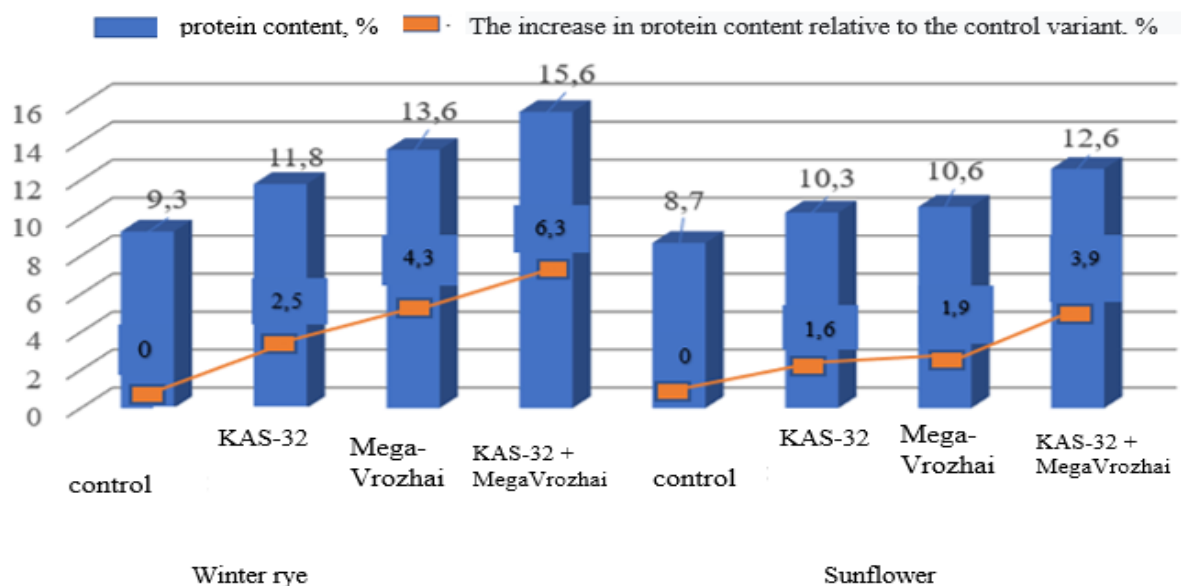


Fig. 1. Dynamics of protein content in wheat grains of the Bohdana winter variety depending on foliar feeding and precursors

The bacterial composition of the MegaVrozhai biological preparation creates an environment in which plants better absorb poorly soluble compounds from the soil and help fix nitrogen from the atmosphere, which contributes to a more intensive accumulation of protein in the grain. The higher the protein content, the more moisture the wheat grain can safely hold. Thus, the increase in the protein content of

the options for foliar feeding of winter wheat crops makes it possible to store safely the grain at a slightly higher humidity.

The analysis of the conducted research indicates a significant effect of the investigated factors (at $HIP_{0.5} - 0.32$), namely the highest level of protein was observed when sowing winter wheat on a grain precursor and when feeding with a complex of fertilizers KAS-32 + MegaVrozhai, and it was 15.6 %.

When wheat is sown after sunflower, the highest level of bun is also observed, at the level of 12.6 %, with complex feeding KAS-32+MegaVrozhai.

The crude gluten content is an important indicator of winter wheat grain quality. In our research, a significant influence of foliar feeding and the action of the precursor on the accumulation of gluten in winter wheat grains was noted (at $HIP_{0.5} - 0.36$). Thus, in the control variant (Figure 2), the level of crude gluten content was 12.4 %, when sowing after winter rye and 11.9 % after sunflower. When feeding KAS-32, the gluten content increased by 8.0 % in the grain precursor and by 0.7 % in the sunflower. A high increase in the content of gluten was observed when plants were fed with the biological preparation MegaVrozhai and with complex feeding KAS-32 + MegaVrozhai, namely by 12.2, 15.6% and 7.0%, 8.4%, respectively, for sowing according to different predecessors.

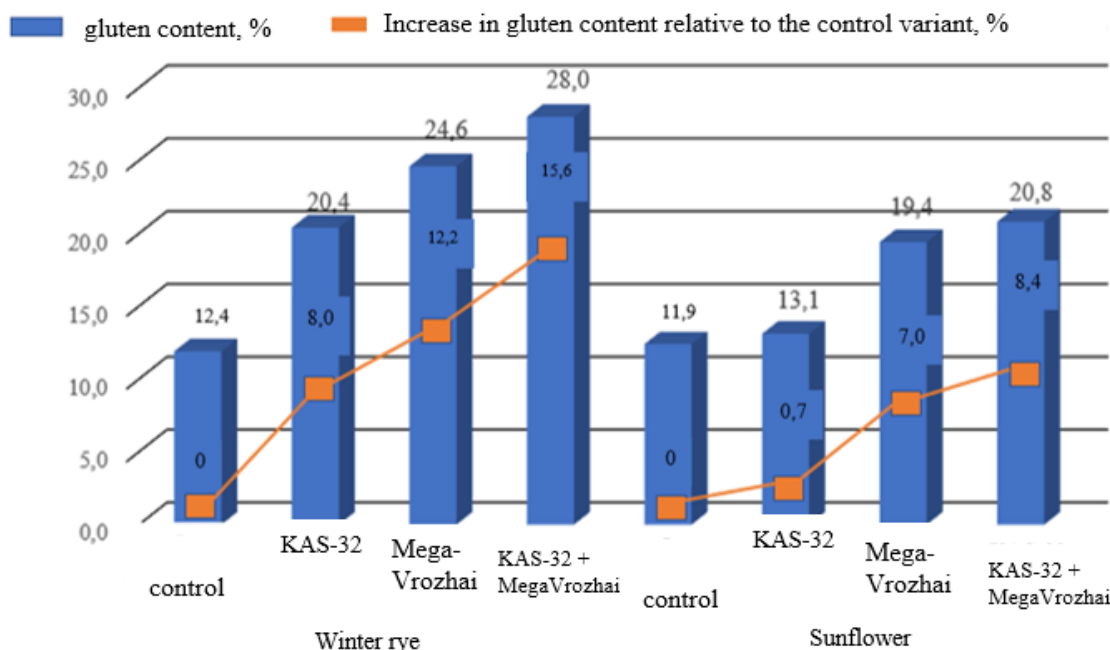


Fig. 2. Crude gluten content in Bohdana winter wheat grains depending on foliar fertilization and precursors

Increasing the amount of protein and raw gluten in Bohdana winter wheat grain gives us the opportunity to obtain high-quality raw materials for bakery production, which increases the selling price of grain and increases the profitability of production.

The results of research on the influence of various precursors and foliar fertilization on the formation of yield and grain quality of soft winter wheat confirmed the feasibility of their implementation.

It was established that a higher level of yield is formed when winter wheat is sown with grain precursors than when it is sown with sunflower, and the highest level of yield is formed with complex foliar fertilization with nitrogen fertilizers and the biological preparation MegaVrozhai at the level of 4.2 and 4.3 t/ha, which on 1.1 and 1.3 t/ha more than in the control when sowing according to different predecessors.

The treatment of plants with a biological preparation had a significant effect on the accumulation of bran and raw gluten in grain, which contributed to the formation of higher quality grain. Thanks to the bacteria of the genus *Bradyrhizobium japonicum* and *Azotobacter chroococum*, which ensured the binding of molecular nitrogen from the atmosphere into chemical compounds available to the plant, a positive nutritional background was created, and in the complex with nitrogen fertilizer KAS-32, an additional source of nutrition for winter wheat plants was created. The higher quality of wheat grain can ensure a higher sales price and production profitability.

The grain with the highest level of protein and crude gluten content was formed when winter wheat of the Bohdana variety was sown after winter rye and under complex fertilization with nitrogen fertilizer KAS-32 and the biological preparation MegaVrozhai.

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BALANCED AND PROTECTIVE FOREST MELIORATION IN SOUTH-EASTERN UKRAINE (LUGANSK REGION)

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Abstract. Today in Ukraine, both in forestry and agriculture, the problem of preservation, reproduction, and expansion of protective forest plantations has become acute. Productivity and protective afforestation conditions have significantly deteriorated due to unauthorized felling; their deaths from fires, littering with household waste. The issue of acquiring ownership of protective forest plantations is acute. In the conditions of uncertainty of owners of field protective forest belts and mismanagement, in the corresponding plantings, fellings of care, formation, and support of a necessary design are not carried out. All this leads to an increase in erosion processes, a significant reduction in soil fertility, and a reduction in crop yields. The experience of using ecological-landscape approaches to forest-reclamation arrangement of agricultural landscapes in the historical and spatial aspect is analyzed. Conceptual approaches to the design of protective afforestation in an ecological-landscape system of agriculture are considered. The general problems of modern agroforestry in the context of reforming land relations are outlined, and the experience of their solution in the Luhansk region (Ukraine) is presented.

Keywords: agro landscape, ecological, landscape, system of agriculture, protection.

In the context of the crisis of agricultural production and radical changes in the structure of agricultural land use, the issues of preservation, reproduction, and expansion of field-protective afforestation have unfortunately receded into the background. An unauthorized cutting of trees in the protective forest plantation (PFP) and their destruction from fires due to illegal mass burning of stubble and littering with household waste became significant problems on a national scale. In the conditions of uncertainty of owners of field protective forest belts and mismanagement, there is no question of intermediate cutting, formation, and maintenance of their necessary design for a long time. There is a paradoxical situation in which the protective forest belts themselves need protection. At the same

time, neither wind nor water erosion has become less threatening for the arable lands of Ukraine; on the contrary, the adverse climatic phenomena such as prolonged droughts and heavy rains cause not only a significant reduction in yield capacity but also significantly increase the erosion processes and lead to significant soil losses. The results of the analysis of 200 years of experience on the impact of field-protective afforestation on agricultural landscapes show that it is possible to cease the erosion, stabilize soil fertility and crop capacity only with the introduction of a comprehensive system of agriculture based on ecological and landscape principles, the structural framework of which is the system of field-protective afforestation.

Because the natural and climatic conditions of the Luhansk region are difficult for farming and its territory is exposed to almost the most intensive erosion processes in Ukraine. The development of forest reclamation measures on an ecological and landscape basis is relevant and needs further research. Our article aimed at the analysis of domestic and foreign experience, introduction of effective systems of farming and arrangement of the territory on ecological and landscape principles, studying of works and conceptual approaches for further development and introduction of optimum systems of protective forest plantation in Luhansk region. It is well known that the South-East of Ukraine is a zone of risky agriculture. The agricultural landscapes of Donbas, where the huge technogenic load on the environment is combined with the highest intensity of erosion processes in Ukraine, are especially vulnerable. Thus, according to the Luhansk Institute of Land Management, at the time of compiling the latest reports on land quality (1996), the agricultural lands in the Luhansk region were eroded by 67%, and arable lands – by 68%, which is almost twice as high as in Ukraine in the whole. Simultaneously, the actual woodiness of the region is 12,7%, which is quite a low index compared to the normative optimum woodiness for this region (16,0%). Luhansk region is characterized by high development and plowing of the agricultural lands (74 and 71%, respectively). This indicates an irrational and largely unbalanced land structure, which causes and exacerbates the region's soil degradation.

Scientific research and practical experience have shown that a set of soil protection measures against erosion in water catchment areas is necessary to stop and successfully prevent the erosion processes (Goroshko et al., 2010; Goroshko et al., 2010). This conclusion was substantiated in the 30-40-ies of the twentieth century according to the results of the Novosylsk ravine-research station under the leadership of A.S. Kozmenko. He was the first who identified the main components of the anti-erosion complex, which include organizational and economic, agro-technical, forest reclamation, meadow reclamation, and hydrotechnical measures (Kozmenko, 1954). One of the main elements of this complex is protective forest plantation (PFP) of different categories. They cause the absorption of surface runoff, improving the land by silt deposition of washed away fine soil particles and enhance these functions in the most superficial hydraulic structures, which are combined with the forest plantation.

It was in Ukraine that 200 years later, a set of forest reclamation measures was first introduced, most of which corresponded to the concept of a modern landscape approach. In 1809-1837 V.Ya. Lomykovskiy, in his estate in the village of Trudoliub in Myrhorod district, Poltava province, for the first time, created a wood-sawing (according to the author) farming system. Sobolev S.S. called the edition of 1837 "Afforestation in the village of Trudoliube", which V.Ya. Lomykovskiy published for the wide dissemination of his experience, and for which he was awarded the gold medal of the "Society of Forestry Encouragement", a classic work (Sobolev, 1948). Now it can be considered strange that two centuries later, our countryman created an original holistic theory and used almost modern methods of agricultural forest reclamation for its implementation, in which each field was protected from the adverse weather conditions by forest, orchard, and shrub plantation in the form of strips, curtains, and tracts in the fields and on the unsuitable lands. High agricultural machinery was used in the fields; soil mulching was used in the gardens, and separate hydrotechnical structures (log-paths and wide dams) were built in the wetlands and valleys. The attention was also paid to the hayfields in the valleys and the pastures on the slopes. The impassable swamps were drained by wide canals and placed lined with the grove. In today's context, the most important thing is that Lomykovskiy V.Ya. "tilled each place separately in such a way as required by the most natural property of the place...". This quotation, which Sobolev S.S. highlighted, emphasizes the ecological and landscape approach in today's interpretation (Sobolev, 1948). In general, regarding the efficiency of the wood-sawing system of Lomykovskiy V.Ya., it allowed obtaining stable high yields even in the arid crop unproductive years of 1834 and 1835 (Sobolev, 1948; Koptev & Lishenko, 1989).

A modern example of the relevant system implementation into production is the former collective farm "Druzhba" (now agricultural artel "Druzhba") in Kantemyriv district of Voronezh region), in which you can still watch the 30 years of experience in implementing the ecological and landscape farming under the leadership of Professor M.I. Lopyrev (1997, 1999, 2002). He developed and implemented a set of measures, ranging from the territory arrangement to crop rotations, agricultural machinery, and micro-reserves for the beneficial insects. In terms of forest reclamation, the author proposed the field-protective woodiness at the level of 5-6%, the total woodiness of the territory should be 16-20% (in the conditions of the Central Chernozem district); he also proposed the contour-parallel drainage-regulating forest belts (at a distance of 200-350 m, which was calculated in each case depending on the erosion situation), and the introduction of 1-2 shrubby coulisses of trees between the contour-parallel drainage-regulating forest belts, which divided the field into landscape strips and fixed the direction of soil tillage. At the same time, the forest belts, and coulisses of trees on the slopes were combined with the most straightforward hydrotechnical constructions. The afforestation of beams and ravines, economic centers, ponds and rivers and installation of mule filters near the tops of ponds and the cones of removal of ravines and beams, carried out (Lopyrev, 1997, 1999).

On the farm, according to Lopyrev M.I.: “Soil erosion has been stopped, ravines are not growing, the impact of droughts has been significantly reduced, there are more birds and wild animals, the productivity of pastures and hayfields has increased. The results of the soil cover survey show that the degradation of lands has been stopped, humus has been stabilized, water, nutrient and thermal regimes of the soil have improved during 25 years”. The efficiency of such a farming system and territory arrangement is proved by the fact that now the agricultural artel “Druzhba” consistently receives 30-40% higher yields than other farms in similar natural conditions (Lopyrev, 2002). The result of the catastrophically arid year of 2010, which was marked by the powerful steppe and forest fires and large-scale crop failures, is especially significant. Thus, O. Bogdanova in the article “Landscape strips are a guarantee of harvests” from 01.10.2010, gives the following data: in the Luhansk region from 30 to 70% of winter crops have been lost, while in the fields of the former collective farm “Druzhba” they have survived completely and yielded 32.5 centners per hectare (in Kantemyriv district – 11 centners per hectare, and in the Voronezh region – 13 centners per hectare on the average). In the good year of 2008, the yield capacity of winter crops in the fields was 60 centners/ha, while the regional average yield capacity was 32 centners/ha.

Another example is given by the well-known popularizer of ecological (natural) agriculture M.I. Kurdyumov in his book “Peace instead of protection. Practice of natural farming”. We cite a book published a quarter of a century ago by A.P. Aidaka “And the seeds will germinate”, in which the head of the former collective farm “Leninskaia Iskra” in the village of Achaky in Chuvashia shares the experience of transforming the dry ravine steppe into a picturesque and fertile area (Kurdyumov, 2010). Here is also implemented a whole set of measures in their classic combination – the ratio of land, land management, forest reclamation, and alkaline slope erosion-hazardous lands, regulation, and in most cases – the cessation of cattle grazing by creating soil-protective legumes and grass crops on the slopes, and also – the compliance with crop rotations, special agricultural techniques, plant protection systems (mostly biological), the creation of ecotopes for valuable plants and insects, as well as entomological micro-reserves. The result is the same, i.e., the soils and yields on the farm are stable, livestock is provided with fodder and summer pastures created on alkaline arable lands by sowing legumes and grasses near each village (Kurdyumov, 2010).

Analyzing the experience of many practical workers of natural farming, M.I. Kurdyumov summed up their result as follows: “Stable fertility exists in nature free of charge. Its size is optimum, and it gives the optimum yield. It is not the largest, but it is stable, high quality and the cheapest one (highlighted by the author)”. He also defines the role of the agricultural landscape for farming in general: “The health of any agrocenosis covers three levels of biodiversity: rich biocenosis of soils below, mosaic of crops and varieties in the middle, and rich agro-landscape are around” (Kurdyumov, 2010).

These examples, given for 200 years, show that the role of protective forest plantations in the agro-landscape is significant and of frame nature, because they form a system of different types of plantations and comprehensively combine all other components of the agro-landscape. Unfortunately, these examples are the achievements of the individual enthusiasts, starting with M.Ya. Lomykovskiy and ending with the separate modern farms. Such system character and complexity have not become an example and a mass phenomenon; moreover, modern agrarian and land transformations have destroyed and continue to destroy even what was created in the previous decades.

As for modern views on forest reclamation measures in the agro-landscape, we should begin their review with the contour-ameliorative system of agriculture, which was actively implemented in Ukraine in the late 80's and early 90's. It allowed to slow down the erosion processes and partially solve the problem of soil degradation. Simultaneously, in the previous socio-economic conditions, it was impossible to radically change the structure of agricultural land, land categories, and crop rotations, which were strictly determined by the nature of extensive land use and plans for agricultural production. Though the advantages of contour-ameliorative agriculture were undoubted, the main reasons that led to the current ecological crisis in agriculture remained as a consequence of the previous rectangular arrangement of the territory; they are the excessive plowing and irrational ratio of land on the one hand, and on the other – the priority of economic and technological factors over the environmental ones (Dzhos, 2002).

Hladun H.B and Poroshyn O.M. give the typification of forest reclamation measures depending on different types of terrain in terms of the relief and other natural conditions, highlighting some priorities for flat conditions (like the Stone Steppe in Voronezh region) and others – for the areas with complex relief and potential severe danger of erosion processes (Gladun & Poroshin, 2002).

Further development of soil protection systems of agriculture with the contour arrangement of the territory began in the 80-the 90s of the last century, but was significantly detailed and widely supported at the beginning of the XXI century based on ecological-landscape (landscape-adaptive) orientation of land management, which provides for the creation of sustainable ecologically balanced agricultural landscapes with a harmonious combination of socio-economic, environmental and aesthetic functions. The embodiment of these principles today is the ecological and landscape system of agriculture (Lopyrev, 1997, 1999; Belolipskij et al., 1999; Kashtanov, 2001; Gladun & Poroshin, 2002;), which is based on two main principles:

– landscape arrangement of the territory is the framework on which the system of agriculture is formed, regardless of the categories of land users and forms of ownership. It is based on the optimization of the ratio of land and land categories, the contour arrangement of the territory, the optimum and mutually agreed location of the system of protective forest plantations, hydrotechnical structures, and the areas alkaline due to the perennial grasses and nature reserves. This principle is a priority;

An agrotechnical block includes the structure of sown areas, crop rotation, tillage system, fertilizer application. This block provides for comprehensive restoration of soil fertility on the principles of biological and ecological agriculture; it is the second one and subordinated to the interests of landscape arrangement of the territory.

It is the subordination of the territory arrangement to the technological block of agriculture (in which the forest belts were created sporadically within the existing fields of crop rotations, and the fields themselves were allocated without taking into account the relief and soil conditions, but solely guided by the convenience of soil tillage with heavy tractors having large agricultural implements) was and remains the main disadvantage of all previously created concepts of agriculture.

In 1999-2000 the Concept and Program of the ecological and landscape system of agriculture in the Luhansk region for the period up to 2010 were developed (Belolipskij et al., 1999; Dzhos et al., 2000). Several necessary and reasonable measures were envisaged, which at that time (the beginning of mass registration of state acts on land ownership to holders of certificates on shares) could prevent the development of erosion processes and improve the environmental situation at the expense of optimizing the composition and ratio of different types of land plots by increasing the environment of their stabilizing species (forest plantations, hayfields and pastures, water, and swamps) while reducing the area of arable land due to the withdrawal of eroded and other types of degraded lands. It was planned to remove 313 thousand hectares of eroded and unproductive lands from the arable land in the region (mainly on the slopes $> 3-5$ degrees) and thus reduce the plowing of agricultural lands erosion and ecological zone from 72% to 48–68%. This would make it possible to create an additional almost 92 thousand hectares of PFP, including almost 10 thousand hectares of field-protective ones. The woodiness of the region should increase from 12.6 to 16.2%, and field-protective territory – from 1.9 to 3.6% (Dzhos et al., 2000).

Unfortunately, most of the planned measures remained only on paper. The regional initiative was not supported at the level of either the State Land Committee or the leadership of the agricultural department. Instead, the authorities called for the accelerated consolidation of shares by the State Acts on land ownership, which in most cases led to the accelerated development of land management projects not only without the planned ecological and landscape arrangement of the territory, but also without designing protective and drainage-regulating forest belts in the places where they were essential considering the provisions of the contour and reclamation arrangement of the territory.

The only farm where the ecological and landscape arrangement of the territory was designed in a more or less complete volume was the former collective agricultural enterprise named after Kirov within the Prosianka Village Soviet in Markiv district of Luhansk region. The arrangement of its territory was carried out in a complex with the registration of the State Acts on the shared arable lands and hayfields. The distribution of land shares was carried out considering the ecological

and landscape arrangement of the territory with an integrated system of drainage-regulating forest belts and shrub coulisses, located at the distance of 100-120 m, which fixed the longitudinal boundaries of land plots shares across the slope (Milehin et al., 2003) (Figure 1).

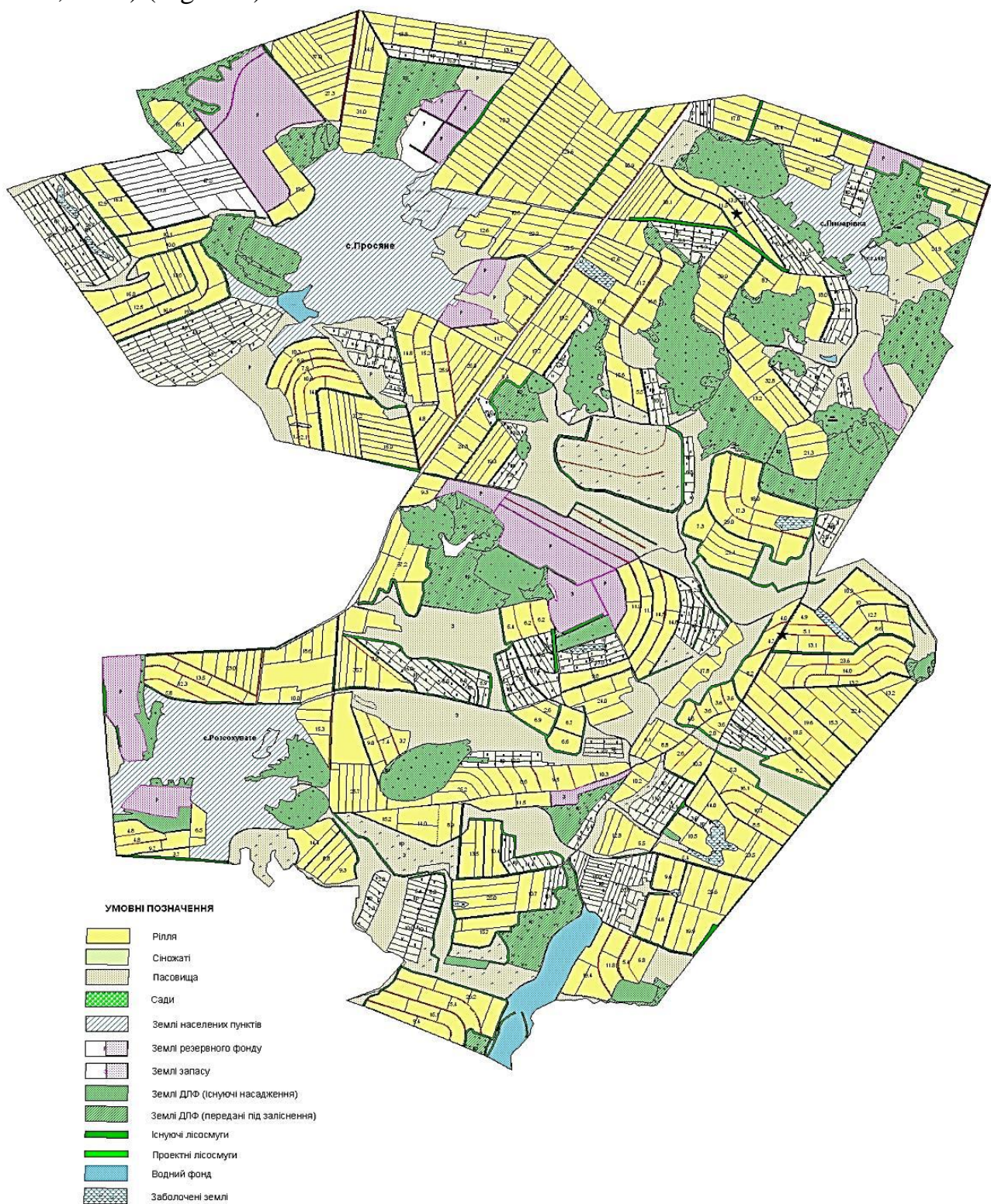


Fig. 1. Scheme of ecological and landscape territory arrangement of the collective agricultural enterprise named after Kirov in Markiv district, Luhansk region (the arable lands are marked with the yellow, horticulture lands – by the green)

The project envisaged a reduction of plowed territory from 56 to 45.7%, an increase in total woodiness from 10.8 to 19.0% and, accordingly, an increase in the field-protective territory from 2.5 to 4.0%.

The ecological and landscape approaches during the design of the territory arrangement have their peculiarities in creating a system of protective afforestation as a spatial and temporal framework of the agro-landscape.

Their ecological impact on both separate elements and the whole agro-landscape is exceptionally diverse; it is intensified over time and takes on an irreversible, consistently positive character with a synergistic and emergent effect (Jørgensen, 2009; Nerlich, Graeff-Hönninge & Claupein, 2013). Thus, forest reclamation as part of ecological and landscape farming systems should be only comprehensive (cover all spatial elements of the agro-landscape), be based on the water catchment design principle, and have the most prolonged duration (Bila, Goroshko & Gordiyashenko, 2020). Regarding the anti-erosion forest plantations on the sloping arable lands, the ecological and landscape arrangement of the territory provides for significant volumes of creation of drainage-regulating forest belts and shrub coulisses, which should divide the fields into contour landscape strips about 100 m wide. During their design, it is necessary to consider several recommendations:

- drainage-regulating forest belts 10–12 m wide are placed mainly at a distance of 200–300 m on a calculated basis depending on the slopes and their exposure, the wind load at different times of the year, and soil conditions. 1-2 lines of shrub coulisses are arranged between them at a distance of about 100 m. In the hollows, if possible, they are combined with the hydrotechnical structures;

- the main, accompanying, and shrub species are determined according to agricultural forest reclamation and forest typological zoning, considering the ecological and landscape requirements as for the inclusion of the species that are fodder base and habitat of beneficial insects, birds, and animals, and have officinal, phytoncide and melliferous value into the composition of bred plantations.

- structural and technological parameters of the field-protective, drainage-regulating forest belts and those located near the beams and ravines can be variable (width and number of lines, rock composition, scheme and type of mixing, combination with hydrotechnical structures, and width of inter-line spacing) (Lopyrev, M.I. & Petrov, 1982). For example, at the intersection with hollows, you can plant wood species that require more moisture, as the water regime is better here (in the case of oak forest in the hollows, you can plant such species as a shrubby birch tree, Norway maple, etc.);

The simplest hydraulic structures reinforce–drainage-regulating forest belts and shrub coulisses at their intersections with the hollows to increase the working areas for retention and absorption of runoff (Zykov, 2002), i.e., to increase the anti-erosion arrangement of forest belts (Holupyak, 1993);

– drainage-regulating forest belts can sometimes be designed not along the entire contour but replace with a shrub coulisse on the inter-hollow watershed, or break the coulisse and move its part below or above the slope so as not to cross the horizontals (Tyshkovec, 1988). Depending on whether the horizontals are converging or moving away, M.I. Lopyriev (Lopyrev, 1999) and N.H. Petrov (Lopyrev, M.I. & Petrov, 1982) allow the arrangement of forest belts of variable width, and in some cases, they can be supplemented with the decorative borders of perennial grasses.

In general, forest reclamation is an effective anti-erosion measure, but outside the system of agrotechnical, forest reclamation, and hydrotechnical measures, their effectiveness is much lower (Abdalla & Fangama, 2015).

Because the protective forest plantations in the steppe and forest-steppe zone in many cases perform a recreational function and are part of the environment in which the rural population lives permanently, it is necessary to take into account the landscape approaches proposed by German scientist H. Poiker in his monograph “Cultural Landscape: Formation and Care” (Pojker, 1987). The main principles of this approach are as follows:

1. Land management should create an optimum structure of agricultural land and the creation of a cultural landscape. The requirements for the cultural landscape provide for the maintenance or development of natural components diversity in the areas included in the agricultural circulation at the appropriate level.

2. The agricultural landscape should be considered not only as a production space. It is also a place for people’s recreation and needs the proper design. This area must meet the technological needs of agricultural production and perform an aesthetic function.

3. On the other hand, an area affected by the intensive agricultural use must include a certain number of natural areas to maintain the ecological stability and balance in nature and the processes of natural resources restoration. These natural areas are a permanent habitat for plants and animals and have a compensatory effect on the neighboring agricultural lands.

4. It is desirable that the agro-landscapes should be located evenly and fan-shaped throughout the space in natural areas. Moreover, the area of separate plots of such an ecological network should be not less than 250 m², and the area of each plot of agricultural land interspersed into this network – not more than 10 hectares, and the similar compensating plots should be approximately not less than 5% of the valuable area of agricultural land.

Conclusions. 1. The ecological and landscape system of agriculture solves the problems of soil protection from water and wind erosion and other types of soil degradation most comprehensively and systematically while ensuring the stable yield capacity and high quality of agricultural products at low cost.

2. The ecological framework of the agro-landscapes structure in the ecological-landscape system of agriculture is the protective forest plantations of different species

and categories. They provide the maximum ecological result only under the condition of a complex combination of different species and categories and their systematic spatial arrangement on the territory, providing a synergetic effect.

3. The ecological and landscape arrangement of the territory makes specific demands and restrictions to the design of protective and drainage-regulating forest belts and other categories of protective forest plantations, which must be considered during the development and implementation of such projects. Simultaneously, their design requires considering the local conditions, creative and original approach, and environmental thinking.

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FORMATION OF YIELD AND PRODUCT QUALITY OF BROCCOLI CABBAGE DEPENDS ON HYBRID CHARACTERISTICS IN LEFT BANK FOREST STEPPE OF UKRAINE

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Abstract. The article presents the results of a study of the productivity and quality of products of early-ripening and medium-ripening hybrids of broccoli cabbage of foreign selection when grown by the seedling method on typical heavy loam chernozem on forest-like loams in the conditions of the Left Bank Forest Steppe of Ukraine. It was established that the hybrids Batavia F1 (14.8 t/ha) and Larson F1 (12.8 t/ha) are characterized by high yield and good quality indicators of broccoli production.

Keywords: broccoli cabbage, hybrid, productivity, quality.

Vegetable growing, as a branch of agriculture, is an important component of the agro-industrial complex of Ukraine. It is vegetable plants that provide the population with valuable food products, and industry with raw materials. To date, about 452 thousand ha. of cultivated land in Ukraine is occupied by vegetable crops, and the gross collection of products is 9.7 million tons³⁷⁶.

Broccoli occupies a small area among vegetable crops (1.4 thousand hectares), but the demand for it is constantly growing, and the cultivated areas are increasing every year. Cabbage and broccoli are classified as promising crops suitable for industrial processing and production of frozen semi-finished products. Areas set aside for broccoli and cauliflower make up 1.2% of the total area of vegetable crops in Ukraine. The average productivity of broccoli cabbage in Ukraine reaches 16.1 t/ha³⁷⁷. Broccoli cabbage is an important food product. This culture received its recognition thanks to its valuable food and medicinal properties, as well as unpretentiousness to growing conditions. In terms of nutritional value, it takes a leading place not only among cabbage varieties, but also among many other vegetable crops. Its composition includes vitamins of group B, vitamins E, A, PP, K,

³⁷⁶ Derzhavna sluzhba statystyky v Ukraini.

³⁷⁷ Ibid.

C and U. Broccoli contains more vitamin C than lemons and oranges; and vitamin U, which is no less in broccoli than in asparagus, is excellent for healing ulcers. In addition to vitamins, broccoli contains macro- and microelements, such as potassium, calcium, magnesium, sodium, manganese, phosphorus, iron, zinc, selenium and copper. The energy value of broccoli cabbage is low and is 126 kJ/100 g. In terms of protein quantity and quality, it is equal to a chicken egg, and in terms of quality and quantity of essential amino acids, broccoli can be compared to beef³⁷⁸.

Broccoli cabbage plants are not very picky about growing conditions, they are cold-resistant, productive, which makes it possible to grow them in different soil and climatic conditions.

Broccoli is an annual and biennial vegetable plant of the cabbage family. Plants reach a height of 70-100 cm or more. The stem is fleshy, ending in a loose inflorescence (head). During the entire growing season, side shoots 15-20 cm long are formed, on which smaller inflorescences grow. The root system penetrates to a depth of 40-50 cm, but the main mass of the roots lies at a depth of 20-25 cm, therefore shallow inter-row cultivation is used³⁷⁹. Broccoli has increased repair properties. It consists in the fact that after cutting the central head in the axils of the leaves, sleeping buds quickly wake up and after 10–20 days, new, smaller inflorescences form on their shoots, which increases the yield to 100% or more. This feature of broccoli cabbage is increasingly used by farms to obtain additional products³⁸⁰.

In relation to heat, broccoli is a cold-resistant plant. Their seeds germinate at a temperature of 4...5 °C. A well-hardened seedling can withstand a short-term drop in temperature to –5...–8 °C. The optimal temperature for the growth and development of this plant is 16...20 °C. This type of cabbage differs from all others in its greater heat resistance. It is less demanding on growing conditions than flowering, more resistant to diseases and pests, differs from it in higher precocity and cold resistance³⁸¹.

In terms of demand for moisture, this culture belongs to the first group – it is very demanding for both soil and air humidity. This is explained by the origin of the culture and the morphological structure of the plants. Broccoli has an increased rate of water consumption. To obtain high yields of high-quality broccoli, it is necessary to maintain moisture in the active layer of the soil at least 75-80% RH. Cabbage is especially sensitive to a lack of moisture after planting seedlings in open ground, as well as in the phase of active growth and head formation³⁸².

Plants of this culture are light-demanding and belong to long-day plants. A long day accelerates the growth of seedlings, the formation of heads, and in plants of the second year of life – flowering. With a lack of light, the seedlings stretch and become vulnerable to diseases. During a long day, all phases of growth and development pass

³⁷⁸ Basa V. I. A., Melnichuk O.Ye. (2016). Vikoristannya kapusti brokoli dlya stvorenniya fermentovanih produktiv harchuvannya, p.215-216.

³⁷⁹ Bolotskih A.S. (2005). Enciklopediya ovoshevoda.

³⁸⁰ Skokova G. (2011). Prihovani rezervi brokoli, p.47-49.

³⁸¹ Bondarenko V.A. (2017). Lezhkozdatni vlastivosti kapusti brokoli ta bryusselskoyi.

³⁸² Puzik L. M., Bondarenko V. A. (2015). Ekologichna stabilnist gibridiv kapusti brokoli, p.15-20.

faster in them. Broccoli cabbage can grow and produce good crops on various types of soil, except for sandy soils poor in organic matter, but light loamy soils with a high content of nutrients and a slightly acidic reaction that warm up quickly and easily give plants moisture and nutrients are best suited for it³⁸³.

The yield and qualitative biochemical indicators of broccoli depend on many factors, among which an important place belongs to the selection of the assortment. Stable production of broccoli cabbage in Ukraine is possible only if the latest approaches to its cultivation technology are implemented. The correct selection of hybrids adapted to certain soil and climatic conditions is an important condition for improving the cultivation technology and obtaining high-quality products of this cabbage. The main requirements that manufacturers set for modern varieties and hybrids of broccoli cabbage for industrial production are as follows: high yield, dense heads (inflorescences), high quality and longness of inflorescences, suitability for the fresh market and processing, plasticity and resistance to stressful situations³⁸⁴.

In the State register of plant varieties suitable for distribution in Ukraine, there are no varieties and hybrids of broccoli cabbage of domestic selection, therefore, only hybrids of foreign selection of various production companies are used in production. The Netherlands is the leader in the assortment of hybrids. An analysis of the assortment of broccoli during 2017-2020 by the number of varieties and hybrids recommended for cultivation in Ukraine and entered into the State Register of plant varieties suitable for distribution in Ukraine showed that the assortment is expanding every year. Thus, in 2017, it was 19, and in 2020 – 29 varieties and hybrids³⁸⁵.

Broccoli cabbage belongs to the rare vegetable plants in Ukraine. However, the demand for it grows every year, and the price fully satisfies consumers. The reason for the absence of broccoli in industrial crops of Ukraine is limited knowledge about this culture, the lack of high-yielding varieties and hybrids, and the necessary recommendations on growing technologies in different climatic zones. That is why one of the tasks of our research was to select high-yielding hybrids of broccoli to obtain a marketable and high-quality harvest of broccoli in the conditions of the Left Bank Forest Steppe of Ukraine.

Research methodology and conditions. The research was carried out during 2021-2022 at the research field of the Department of Fruit and Vegetable Growing and Storage of KhNAU named after V.V. Dokuchayev, which is located on the territory of the Kharkiv district, the soil and climatic conditions of the field are typical for the Left Bank Forest Steppe zone of Ukraine.

The topography of the region is dominated by undulating plains dissected by river valleys, streams and ravines. The topography of the area where the research was conducted is characterized as flat and undulating.

³⁸³ Didiv O., Didiv I., Didiv A. (2018). *Kommercijna kultura brokoli*, p.26-32.

³⁸⁴ Kovtunuk Z., Usatyuk O. (2016). *Pidbir sortimentu ta osoblivosti viroshuvannya kapusti brokoli v litno-osinnij period*, p.47-49.

³⁸⁵ Hromova A.V. (2021). *Analiz sortimentu kapusti brokoli v Ukraini*, p.147-150.

According to the weather station of Khnav named after V.V. Dokuchaeva, the climate of the region where the experimental field is located is temperate–continental with unstable humidity and air temperature. The average long–term air temperature is 7.2 °C. The lowest air temperature was observed in January. According to the amount of precipitation, the territory of the experimental field belongs to the zone of insufficient moisture. 529 mm of precipitation falls per year. The largest amount of precipitation – 767 mm was observed, which is 145 % of the norm. The lowest amount of precipitation was observed – 342 mm, which is 65 % of the norm³⁸⁶.

The soil of the experimental field is a typical heavy loam chernozem on loess loams.

Field experiments were conducted according to generally accepted methods: according to B. A. Dospelkov³⁸⁷, V. F. Moiseichenko³⁸⁸, V. F. Belik³⁸⁹, G.L. Bondarenko³⁹⁰, A. O. Rozhkov³⁹¹. Soil preparation for cabbage and plant care were carried out in accordance with generally accepted recommendations. The research was conducted with early–ripening broccoli hybrids Agassi F1, Besti F1, Batavia F1 (control – Agassi F1) and medium–ripening Orantes F1, Bathory F1, Larson F1 (control – Orantes F1), which are included in the State Register of plant varieties suitable for distribution in Ukraine³⁹².

Broccoli cabbage was grown by the seedling method. Seeds of early–ripening hybrids were sown in the third decade of March, and of medium–ripening hybrids in the second decade of April. Seedlings with three to four true leaves were planted at the age of 40–45 days. The term for planting seedlings of early–ripening hybrids is the second decade of May, and mid–ripening hybrids – the third decade of May. The method of placing plants is tape with a placement scheme – (40+100) × 35 cm. Plant density – 40.8 thousand pcs./ha. Repeatability in experiments is three times. The experiment is univariate. The area of the accounting plot is 19.6 m². Placement of options is systematic. The predecessor is a carrot.

According to the methods in vegetable growing, phenological observations were made, namely, the dates of sowing, the emergence of seedlings, the appearance of the first true leaf, diving, planting of seedlings, the formation of productive organs, the beginning of technical ripeness, the beginning and end of harvesting were determined. The beginning of the phase was recorded when it was noted in 10% of the plants on the plot, in mass – in 75 %. Biometric measurements were taken every 15 days, on the first and sixteenth of the month. At the same time, the following measurements were taken to determine the dynamics of mass growth: stem diameter

³⁸⁶ Obrazcova Z. G. (2001). Ekologo-klimatichni osoblivosti doslidnogo polya HDAU, p.96-104.

³⁸⁷ Dospelkov B. A. (1985). Metodika polevogo opyta (s osnovami statisticheskoy obrabotki rezultatov issledovaniy).

³⁸⁸ Mojsejchenko V. F. (1992). Osnovi naukovih doslidzhen u plodivnictvi, ovochivnictvi, vinogradarstvi ta tehnologii zberigannya plodoovochevoyi produkciyi.

³⁸⁹ Belik V. F. (1992). Metodika opytnogo dela v ovoshevodstve i bahchevodstve.

³⁹⁰ Metodika doslidnoyi spravi v ovochivnictvi i bashtannictvi.

³⁹¹ Rozhkov A. O. et al. (2016). Doslidna sprava v agronomiyi: navch. posibnik.

³⁹² Derzhavnij reyestr sortiv roslin, pridatnih dlya poshirennya v Ukrayini na 2020 rik.

near the soil surface, plant height, number of leaves, leaf rosette size, leaf plate size. Harvesting was carried out selectively as the heads formed and reached technical maturity. At the same time, the heads were weighed and divided into commercial and non-commercial products. Commercial products were divided into standard and non-standard according to the requirements of the current standard – "Fresh broccoli cabbage: technical conditions" – DSTU 8147 – 2015"³⁹³. The biochemical composition of the heads was determined, namely the content of dry matter, total sugar, and ascorbic acid. Harvest accounting was carried out separately for each plot. At the same time, to determine the quality of products, the mass of the central head, the diameter of the central head, and the total mass of the side heads were determined. Characteristics of the researched hybrids of cabbage and broccoli:

Agassi F1. An early hybrid of broccoli. Harvest hybrid for cultivation from the end of May to the beginning of September. Vegetation period – 65-75 days. Suitable for cultivation in all regions of Ukraine. Tolerates a hot climate well. Inflorescences are not prone to negative reactions to stress factors. To ensure the conveyor, it is recommended to plant seedlings in several periods (with an interval of 7-10 days). The recommended stand density is 40-45 thousand plants per hectare. This hybrid is characterized by its resistance to heat³⁹⁴.

Besti F1. Mid-early hybrid of broccoli cabbage. Vegetation period – 55-60 days from planting seedlings. The heads are compact, dense, weighing 1.2-1.5 kg. Undemanding to growing conditions, tolerates adverse weather conditions and lack of nitrogen in the soil quite well. Resistance to high temperatures. For growing in the spring-summer period. Recommended for collection in May – August. Purpose: fresh market. The recommended planting density is 40-45 thousand plants/ha. Recommended for collection in May – August. Versatility. An ideal form for the fresh market³⁹⁵.

Batavia F1. An early hybrid of the Dutch company Bejo Zaden B.V. Vegetation period – 65–68 days from planting seedlings. The hybrid forms fairly marketable, dark green, elastic, dense heads weighing 1.0–1.5 kg with a fine-grained structure. The hybrid is highly productive and is in demand on the market. It is characterized by high transportability and lightness. Resistant to Fusarium wilt and cracking. Differs in resistance to stressful growing conditions and heat resistance. It can be grown by seedling method and by direct sowing in open soil. Purpose: fresh consumption and for processing³⁹⁶.

Orantes F1. A medium-ripe hybrid of broccoli from the manufacturer Rijk Zwaan. The average vegetation period after planting seedlings (60–75 days). Dense compact inflorescence. High productivity. Uniformity and marketability of inflorescences. Resistance to stressful conditions. Its head is quite massive, weighing up to 0.5 kg. The optimal growing time is the end of summer and autumn. A long

³⁹³ DSTU 8147 – 2015. Kapusta brokoli svizha: Tehnichni umovy.

³⁹⁴ Rijk Cvaan Ukraina. Katalog nasinnia 2019-2020. Asortiment ovochevih kultur.

³⁹⁵ Syngenta. Katalog nasinnia ovochevih kultur 2019-2020.

³⁹⁶ Bejo. Katalog nasinnia ovochevih kultur 2021-2022.

period of standing in the field. Easy to harvest. Recommended thickening – 40-45 thousand plants/ha. Suitable for fresh consumption and processing³⁹⁷.

Batory F1. Medium ripe. Owner of Syngenta Seeds B.V. Vegetation period – 70–75 days from planting seedlings. The heads are compact, aligned, dome-shaped, dense with a good weight of up to 1.8–2 kg. Universal. It can be grown both indoors and outdoors. High resistance to high temperatures. For growing and harvesting from mid–August. Purpose: fresh market, processing. It is characterized by high qualities of transportation. The hybrid is well stored without losing its marketable appearance (color and freshness). The recommended planting density is 35-40 thousand plants/ha³⁹⁸.

Larson F1. A medium-ripe hybrid of broccoli cabbage from the producer Rijk Zwaan. Very dense inflorescences of dark green color. Vegetation period – 70–80 days. A plant with high growth energy and a powerful root system. The hybrid is suitable for autumn harvesting. High resistance to stress. The recommended density is 40–45 thousand plants per hectare. Recommended for fresh market and processing³⁹⁹.

Research results. As a result of research conducted with hybrids of cabbage and broccoli, it was found that the course of phenological phases depended on the terms of maturity and characteristics of the hybrid (Table 1). During phenological observations, it was established that the growing season from planting seedlings to mass technical maturity depended on the weather conditions of the year and was within 61-72 days for the group of early-ripening hybrids. The Agassi F1 hybrid had a longer growing season, which was 72 days in 2022. In the group of medium-ripe hybrids, the growing season lasted 75–82 days. The Orantes F1 hybrid had a shorter vegetation period compared to other variants, which was 78 days in 2021 and 75 days in 2022.

Table 1 – Dates of the onset of the phenological phases of the development of broccoli cabbage plants (2021–2022)

Hybrid	Ripeness group	Year	Transplanting	Formation of productive organs		Technical maturity		Vegetation period
				beginning	massive	beginning	massive	
Agassi F1 (control)	PC	2021	14.05	13.07	15.07	17.07	23.07	70
		2022	17.05	10.07	15.07	15.07	28.07	72
Batavia F1	PC	2021	14.05	11.07	13.07	14.07	17.07	64
		2022	17.05	11.07	15.07	15.07	23.07	67
Besti F1	PC	2021	14.05	10.07	14.07	14.07	17.07	64
		2022	17.05	09.07	12.07	13.07	17.07	61
Orantes F1 (control)	CC	2021	25.05	29.07	02.08	02.08	11.08	78
		2022	28.05	30.07	03.08	05.08	11.08	75
Batori F1	CC	2021	25.05	05.08	10.08	11.08	15.08	82
		2022	28.05	07.08	10.08	10.08	15.08	79
Larson F1	CC	2021	25.05	06.08	10.08	11.08	15.08	82
		2022	28.05	05.08	07.08	09.08	11.08	75

³⁹⁷ Rijk Cvaan Ukraina. Katalog nasinnia 2019-2020. Asortiment ovochevih kultur.

³⁹⁸ Syngenta. Katalog nasinnia ovochevih kultur 2019-2020.

³⁹⁹ Rijk Cvaan Ukraina. Katalog nasinnia 2019-2020. Asortiment ovochevih kultur.

An important component of the technology of growing any agricultural crop, including broccoli, is the correct choice of hybrid. One of the main indicators of the effectiveness of cultivation technology is yield. Characterizing the yield of broccoli cabbage hybrids, we can say that the lowest yield on average over two years was obtained for the cultivation of the Orantes F1 hybrid – 11.8 t/ha (Table 2). The highest yield of marketable heads was provided by the Batavia F1 hybrid – 14.8 t/ha. Plants of the early-ripening hybrid Agassi F1 and medium-ripening hybrid Orantes F1 were distinguished by a larger diameter of the central head – 12.5 and 12.6 cm, respectively.

Table 2 – Quality indicators of the yield of broccoli depending on the hybrid (2021–2022)

Hybrid	Ripeness group	Year	Mass of the central head, g	Diameter of the central head, cm	The total weight of the side heads, g	Productivity, t/ha
Agassi F1 (control) Batavia F1	ER	2021	180,0	11,6	118,8	12,2
		2022	237,7	13,4	139,8	13,2
		Average	208,9	12,5	129,3	12,7
Agassi F1 (control) Batavia F1	ER	2021	236,6	12,0	134,1	15,4
		2022	242,8	12,8	142,4	14,1
		Average	234,7	12,4	138,3	14,8
Agassi F1 (control)	ER	2021	220,4	11,7	72,0	11,9
		2022	194,3	12,0	93,0	12,7
		Average	207,4	11,85	82,5	12,3
LSD _{0,5}	ER	2021				2,82
		2022				the difference is not significant
The influence of the factor, %	ER	2021				65
		2022				44
Orantes F1 (control) Batory F1	MR	2021	209,4	12,4	78,3	11,7
		2022	218,2	12,7	112,3	11,8
		Average	213,8	12,6	95,3	11,8
Orantes F1 (control) Batory F1	MR	2021	214,4	11,5	88,5	14,6
		2022	225,7	12,9	98,6	10,7
		Average	220,05	12,2	93,5	12,7
Orantes F1 (control)	MR	2021	203,9	11,4	82,4	11,4
		2022	247,8	11,8	131,5	14,1
		Average	225,9	11,6	106,9	12,8
LSD _{0,5}	MR	2021				2,06
		2022				2,40
The influence of the factor, %	MR	2021				74
		2022				68

According to the results of dispersion analysis, the yield of broccoli during the research depended on the characteristics of the hybrid by 44-74%. According to the received data of 2021, in the group of early ripening plants. the Batavia F1 hybrid exceeded the control variant in yield by 3.2 tons, such a difference is significant

(LSD_{0.5}=2.82), but in 2022 there was no significant difference between the experimental variants. Among the plants with an average ripening period in 2021, a significantly higher yield was obtained in the hybrid Bathory F1 (14.6 tons), which is 2.9 tons (LSD_{0.5}=2.06) more than in the control variant.

Research has established that all broccoli cabbage hybrids had high quality products. It should be noted that the productivity of broccoli plants depends on the mass of the central head. In particular, the mass of the central head in the experimental variants was in the range of 207.4-234.7 g.

It was established that the content of the components of the chemical composition in the heads of broccoli cabbage depends on the characteristics of the hybrid (Table 3). Within the studied hybrids, the products differed in terms of biochemical parameters. In our research, the content of dry matter in the central heads was in the range of 11.4–20.73 %, depending on the hybrid, and their greater amount was accumulated in the heads of the medium-ripe hybrid Orantes F1 – 20.73 %. The total sugar content of hybrids ranged from 2.32 to 3.50 %. Batavia F1 and Agassi F1 had a higher amount of ascorbic acid in the central heads.

Table 3 – Biochemical composition of broccoli depending on the hybrid

Hybrid	Ripeness group	Dry matter, %	Total sugar, %	Ascorbic acid, mg/100 g
Agassi F1 (control)	ER	11,4	2,40	78,9
Batavia F1	ER	12,6	3,50	80,9
Besti F1	ER	14,6	2,32	76,3
Orantes F1 (control)	MR	20,73	3,13	24,08
Batory F1	MR	16,62	3,04	25,29
Larson F1	MR	16,90	2,72	30,91

Conclusions. 1. The yield and qualitative biochemical indicators of broccoli depend on many factors, among which the correct selection of hybrids that will be adapted to certain soil and climatic growing conditions is important. Product yield is an important indicator when evaluating hybrids. 2. The duration of the growing season during the research depended on the characteristics of the hybrid and the maturity period to which it belongs. For the group of early-ripening hybrids, this indicator was within 61-72 days. In the group of medium-ripe hybrids, the growing season lasted 75-82 days. 3. On average, over the two years of research, higher yield of marketable heads was ensured: in the early-ripening group – Batavia F1 hybrid (14.8 t/ha), yield increase compared to the control was 2.1 t/ha, or 16.5%; in the medium-ripe group – Larson F1 (12.8 t/ha), the yield increase compared to the control was 1.0 t/ha, or 8.5%. 4. According to the results of dispersion analysis, the yield of broccoli during the research depended on the characteristics of the hybrid by 44-74%. 5. The productivity of broccoli plants depends on the mass of the central head, which in the experimental variants was in the range of 207.4-234.7 g. 6. The content of the components of the chemical composition in the heads of broccoli cabbage depends on the characteristics of the hybrid.

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THE USE OF POTATOE CELL SELECTION FOR PRODUCING NEW VARIETIES, RESISTANT TO THE AGENTS OF FUSARIAL WILT

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Abstract. The experiment has determined the characteristic features of callusogenesis, regeneration as well as of receiving resistant to fusariosis of potatoes cell lines in simulated conditions of biotic stress. The technologic elements of potatoe cell selection on its resistance to *Fusarium oxysporum*, *Fusarium sabucinum* have been given. The plants-regenerants, received on the selective medium, are characterised by higher resistance (by 10–35 %) to the pathogenes action as compared to the regenerants of a control variant.

Keywords: potatoes, culture in vitro, cell selection, selective medium, phytotoxic metabolites, plants-regenerants.

Potatoe is one of the most important food and feed crop in the world. It is grown on all continents practically in every country. In Ukraine potatoe is grown on the area of more than 1.5 mln ha. The variety has become a determinant of modern potatoe growing efficiency in the last few years. The potatoe yield is determined by 50% by the potatoe variety. The variety value can not be overestimated. Being different in biological and economic characteristics, the varieties make the basis of any technology⁴⁰⁰. Under current conditions the selectionists' capabilities on augmenting the obtainable genetic variability have greatly increased⁴⁰¹. They have new methods of mutations inducing, chromosome and gene engineering, protoplast fusion and others, though the main sources of hereditary variation which are used in selection practice are hybridization and mutagenesis. That is why, together with using

⁴⁰⁰ Podgayetskiy A.A., Gorbas S.B. (2013). The feasibility of getting high-starch forms from among the progeny from crossing of interspecific hybrids, p.224-228.

⁴⁰¹ Polozhenets V.M., Tymoschuk O.A., Zhuravska I.A. (2006). *Fusarium* dry rot of potatoe, p.13-15.

the recombinant sources of genetic variabilities it is expedient and perspective to find and to work through the effective methods of genetic variabilities expansion by means of technologies in vitro using different selective agents.

Being based on the induced or spontaneous somaclonal variability, it is possible to choose in the cell and fiber culture and in selection conditions some genotypes resistant to unfavourable factors of the environment including the ones resistant to the agents of the diseases. A few researchers deal with the problem of cell-less selection agents (culture filtrates, toxins). Such approach was used when using the potatoe plants resistant to *Phytophthora infestans*⁴⁰², *Rhizoctonia solani*⁴⁰³, *Fusarium oxysporum*⁴⁰⁴.

With the view to develop the scheme of cell selection on its resistance to the agents of potatoe fusarial wilt, the impact of culture filtrates of two fungic pathogenes and their phytotoxic metabolites, namely fusaric acid, on growth and regeneration of suspension culture and callus of two potatoe varieties with different resistance to the given pathogenes has been studied. The task of the given research is to work through the criteria of receiving the regenerants on the selective medium and to estimate the selected lines on the level of test-tube plants and in the field conditions.

The potatoe varieties of the Institute of Potatoe Growing selection with different resistance to *Fusarium oxysporum*, *Fusarium sambucinum*: *Gurman* (*enduring*) and *Tyras* (sensitive) were used in the research. Murashige-Skuga⁴⁰⁵ with different concentrations of hormones and aminoacids served as the growing medium. The resistance on the level of regenerating callus was determined by calculating the amount of regenerants which have survived on the selective medium as well as by the amount of callus offsets which were formed. There were 250 new callus in the experimental samples and 100 ones – in a control one. Later only the amount of established regenerants was considered. The resistance analysis on the plant level was made in laboratory conditions by spraying conidium suspension. The plant resistance to diseases as well as qualitative and quantitative indices were determined in field conditions by using the methods of selection.

As follows from the results of the research, on the fiber level somaclonal lines resistant to phytotoxic metabolites (FTM) *Fusarium oxysporum*, *Fusarium sambucinum* have been received. But it should be mentioned that not all lines were able to regenerate. Throughout the duration of selection process some of them lost the morphogen competence. From among the analyzed literary sources no cases of

⁴⁰²Behnke M. (1980). General resistance to late blight of *Solanum tuberosum* plants regenerated from callus resistant to culture filtrates of *Phytophthora infestans*, p. 151-152.

⁴⁰³ Kalashnikova E. A. (2003). Cell selection of plants on their resistance to fungus diseases.

⁴⁰⁴ Bolic M., Foroughi-Wehr B., Kohler F. (1986). In vitro selection for disease resistance in potato and barley, p.275-285.

⁴⁰⁵ Murashige T., Scoog A. A revised medium for rapid growth and bioassays with tobacco tissue cultures, p.473-497.

receiving regenerants in all cell-and callus clones have been found. From among the resistant callus lines of Gurman variety only 36 % were able to regenerate, and of Tyras variety-only 2,8 %. The problem of receiving regenerants from resistant cell-and callus lines is one of the most important and difficult in cell selection. The offsets regeneration from such cells is very complicated and the frequency of plants formation is low. While developing selective medium, it was supposed that cell screening with a higher resistance to phytotoxic metabolites of fungus *Fusarium oxysporum*, *Fusarium sambucinum* takes place in a more hostile selective environment. Cell proliferation resulted in callus formation and later in regenerants formation, which were characterised by a higher resistance. The results of the experiments on plants regeneration conducted in selective conditions showed that higher concentration of toxic metabolites in the environment lowered the amount of the received regenerants (Table1).

Table 1 – Yield of plants-regenerants from suspensive culture of potatoe on a selective medium with different concentrations of FTM

Variants of the research	Planted out explants, units	Received morphogene callus lines, units	Received plants-regenerants, units
Gurman variety			
MC (control)	100	64	136
MC+ FTM мкМ			
10	200	68	139
20	200	62	119
30	200	54	106
40	200	49	78
50	200	43	61
60	200	38	41
70	200	36	37
Tyras variety			
MC (control)	100	58	102
MC+ FTM мкМ			
10	200	43	63
20	200	27	43
30	200	12	18
40	200	6	11
50	200	3	3
60	200	2	2
70	200	2	2

Thus, for Gurman variety on a control medium (without any phytotoxic metabolites) 136 regenerants were received, and on the medium which contained 10 mkM FTM-139; 20-119; 30-106; 40-78; 50-61; 60-41, on the medium with the highest concentration of 70 mkM –only 37 plants were received. The same consistent pattern was true of Tyras variety.

The plants-regenerants, which were received on the selective medium, were cloned by a pot-culture method, and were estimated on their resistance to *Fusarium oxysporum*, *Fusarium sambucinum*. By the method of artificial inoculation, 238 lines of self-clones and 825 lines which were received by the method of cell selection, were estimated. It should be mentioned that among the plants of each variety, which were received on a control medium (without FTM) and on selective ones, some lines with higher as well as with lower resistance were formed. It is necessary to admit that a considerable part of persistent forms had morphological changes as well. Perhaps it can be explained by a somaclonal variability of cells under cultivation conditions in vitro. The frequency of lines formation which are different on their resistance within each of the studied genotypes testifies to the fact that more persistent (on the level of plants-regenerants) lines are more frequently seen in descendants of the initially more resistant genotypes.

Thus, among the regenerants of Gurman variety, the plants with a higher resistance level amounted to 43 %, as compared to the control. In Tyras variety the lines with a higher resistance did not exceed 12 % from the total amount of the received plants. On the average, from all the material, which was received by the method of somaclonal variability, 28,4 % of lines had resistance on the control level, 22,4 % of lines had resistance by 1-2 points more than a control one, which was 4-7 points depending on the variety. But there were no absolutely immune forms of potatoe as to fusarial wilt.

The application of phytotoxic metabolites of fungus *Fusarium oxysporum*, *Fusarium sambucinum* into selective medium resulted not only in higher resistance in plants-regenerants by 2–4 points, but also in the increase in the number of lines as compared to control. Thus, 38,7 % of the received lines had a higher resistance point as compared to an initial variety, and 41,4 % of plants had resistance rate on the control level.

The lines, which were characterised by a higher resistance, were further tested in field conditions on the artificial infection background with the purpose of studying the issue as to keeping the resistance level, which was achieved in the culture in vitro, in field conditions during 2014-2016.

Potato tubers were planted on the plot which had already been infected with fusarial wilt. The infectious preparation (4g) of fusarium, which was received by pure culture propagation of *Fusarium oxysporum*, *Fusarium sambucinum* on the potato-oat medium, was applied into each planting hole.

The analysis results (Table 2) testify to the fact that all the lines under research were infected by fusariosis to one degree or another.

It is necessary to mention some increase in disease incidence during the years of research: in 2014 the number of infected plants was 2,1-26,7%, in 2016 it was 7,7-44 %. Visual estimation of tubers as to the degree of fusariosis infection has manifested a high resistance point (5-8), whereas control samples were more infected (resistance point was 1-5). As follows from the results of the research we succeeded in separating the lines which during a 3-year period of research were characterised by a higher resistance point as compared to the original varieties Gurman and Tyras.

The received lines were estimated on their yield capacity and starch content. The lines deviations on economically valuable indices either increased or decreased as to characteristic value. Herewith, the deviation upward is 25-75 % depending on characteristic. The combination of maximal characteristic values was found in lines 12 and 28 of Gurman variety. The received lines were given to the selection breeding plot for further testing.

Table 2 – Variability of regenerants lines on economically valuable characteristics in field reproductions (2014-2016)

Variety	Line number	Yield, g/t	Starch content, %	Resistance point		
				2014	2015	2016
Gurman		1032	15,4	5	4,3	3,8
	3	1307	15,0	4,3	3,9	3,0
	4	1082	15,8	5,7	5,1	4,5
	5	664	15,2	6,3	6,0	5,6
	7	1305	15,7	5,7	5,4	5,0
	8	1140	15,9	7,7	6,8	4,9
	9	915	15,1	6,3	6,0	4,8
	12	1533	16,3	8,0	7,8	7,8
	16	970	15,2	6,6	5,0	3,9
	17	1087	15,5	5,2	5,0	4,5
	27	1234	15,7	6,7	6,1	4,8
	28	1670	16,6	7,8	6,5	6,0
	29	944	15,3	4,7	4,0	4,0
	34	1422	15,5	5,0	4,0	3,2
Tyras		995	12,2	2,8	1,7	0,9
	8	1360	12,2	4,1	3,6	2,9
	14	854	12,8	4,6	3,9	3,7

The variability among the potato sorts on their capability as to morphogenesis in vitro (callus- and regeneration characteristics) on the medium with different amount of phytotoxic metabolites *Fusarium oxysporum*, *Fusarium sambucinum* has been analysed.

As follows from the results of cell selection, the potatoe plants-regenerants which are resistant to selective agents in the culture in vitro as well as directly to the agents of fusarial wilt under condition of infectious background, have been received.

It has been planned to estimate on genetic level callus cells (RAPD method) which are cultivated in selective conditions, as well as plants-regenerants which have been received because of cell selection and differ in higher resistance to *Fusarium oxysporum*, *Fusarium sambucinum*.

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THE COMMON TOMATO INSECT PESTS IN GREENHOUSES

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Abstract. The purpose of the study is to study the harmfulness of tomato pests in greenhouses. Even if tomato insect damage is nominal, the pests themselves often are vectors for disease. So, it is imperative that you recognize tomato insect damage and learn about treating pests on tomatoes. Insect pests are very dangerous for greenhouse tomatoes. They not only cause damage to various parts of the plant, but are also carriers of various diseases. Getting rid of pests in a greenhouse is very difficult. The species composition of harmful organisms is represented by specific forms adapted to the subtropical conditions of closed soil. It is much easier to prevent their occurrence. For this, the plants, and the greenhouse itself are subjected to mandatory preventive treatments.

Keywords: tomatoes, greenhouse, insect pest, dangerous.

Indoor vegetable growing is one of the leading sub-sectors of the agro-industrial complex of Ukraine, which provides the population with vegetable products all year round and makes it possible to obtain the largest harvest from a unit of area. But for this, plants should be effectively protected from pests and diseases.

Closed ground today is different types of technologies and types of greenhouses when there is intensive restoration and increase of areas. Even in the private sector, technologies are being implemented that make it possible to collect about 45 kg of tomatoes from 1 m².

At the same time, the limited species and variety set of crops, lack of crop rotation, and constant use of soil and crushed stone substrates, cultivation facilities, artificially created microclimate contribute to the massive development of harmful organisms in greenhouses.

It should be noted that the number of species of pests in greenhouses is much smaller than in open agrocenoses, the year-round use of such structures, constantly elevated air temperature and humidity, and the lack of natural regulatory factors contribute to the mass reproduction of phytophages and significantly increase their harmfulness.

Today, greenhouse farms show trends in the successful use of advanced technologies for growing vegetables. Undoubtedly, such products must be of high quality. The main criterion for the quality of vegetables is the absence of harmful residues of chemical compounds. Based on this, scientists and specialists develop and implement integrated systems of protection of vegetable crops, in which the main place belongs to biological and non-chemical techniques. In greenhouse farms, where there are qualified personnel and technological processes are organized at a high level, the use of chemicals during the growing season of plants is reduced to 70–80%. Pesticides are used to protect tomatoes from harmful organisms. This is due to the beginning of the mass appearance of several types of pests and the difficulties of creating conditions under which biological agents would be effective.

The species composition of harmful organisms is represented by specific forms adapted to the subtropical conditions of closed soil.

The most dangerous among all pests of tomatoes is the whitefly. A dangerous quarantine object, which, due to its great variability and wide distribution in the world, has been described under dozens of names – *Trialeurodes vaporariorum* Westwood, 1856 (Figure 1).



Fig. 1. *Trialeurodes vaporariorum* (Westwood, 1856)

Whiteflies are very small insects 1-3 mm long. Butterflies are yellow, sometimes have a slight reddish tint, there may be black spots on the wings. The body is covered with white waxy powdery pollen. At rest, butterflies fold their wings into a house.

Whiteflies settle on the underside of leaves, more often in the upper tier of plants. Females lay up to 130 eggs on the underside of leaves in clusters of 5–20. The eggs of these insects have a stalk, with which they are attached and kept on the leaves.

After 5-7 days, a larva emerges from the egg, which moves for several hours, choosing the juiciest place, and then proceeds to feed. In development, the larva goes through 4 stages, the first stage is mobile.

The larvae move over the leaves in search of the most succulent, on which they feed. They tuck their long legs under them and press against the leaf. A waxy sticky liquid stands out around them, which firmly adheres to the leaf blade and creates a greenish-brown fringe around the larva, which reliably protects it from adverse factors.

The next 3 stages are immobile – the larva is in a wax capsule and feeds continuously. Both larvae and butterflies suck the juice from the leaves, releasing a sweetish sticky liquid in the process. A new generation appears every 28 days.

It winters in the soil in a warm climate where there is no frost (Crimea, the Caucasus, the Black Sea coast of the Krasnodar Territory), in the northern regions it is preserved in greenhouses and on houseplants, it freezes completely in the ground even with warm and mild winters.

During the season, 4-5 generations of pests appear, and in the south up to 7-8 generations, so it is extremely difficult to completely get rid of the whitefly.

The whitefly is very active in hot and humid weather. In cold weather, it does not damage tomatoes as much. At temperatures below 10 °C insects stop flying, only larvae feed, at 0 °C the pest dies.

In a greenhouse, the insect spreads extremely quickly and is very difficult to get rid of. The pest is especially common in greenhouses with poor ventilation. During early summer frosts, the whitefly can survive, since the temperature in the greenhouse does not fall below 0 °C. But during prolonged cold weather in spring (the temperature in the greenhouse is 7-10 °C), insects die because they are not able to eat.

In closed ground, it damages all greenhouse crops (tomatoes, peppers, eggplants, cucumbers). On the street causes significant damage to potatoes, tomatoes, cabbage, strawberries, zucchini, garden flowers. The whitefly damages tomatoes and peppers especially strongly in the greenhouse. Favorable conditions for it are high temperature and humidity.

If you shake the infected bushes, then the butterflies immediately take off, but tend to return as quickly as possible. On the underside of the leaves there are small white dots – pest larvae. On the entire lower surface of the leaf there is a sticky mass – whitefly secretions.

In the place where the pest feeds, yellow or dirty brown small spots appear on the leaves, which increase in size over time. On the underside, the surface is rough with small gray-yellow dots. Gradually, the leaf fades and dries. The site of damage is inhabited by sooty fungi, which makes it grayish-green with small black dots.

With severe damage, leaf areas turn black. Sooty fungi disrupt the photosynthesis of the leaf, it dries up and falls off. The process occurs very quickly in 14-20 days, the whitefly and the fungus in the south can destroy all greenhouse tomatoes. On the street, the process is slower, the tomatoes die within a month. In the northern regions, damaged bushes are strongly oppressed, but do not die.

Mechanical measures: these include mechanical collection and the use of various traps. If the pest has just appeared, then it can be manually collected or suppressed on the leaves. It is easier to do this on tomatoes than on other plants, since with proper agricultural technology there are few leaves on the bushes.

Use glue traps. The whitefly loves yellow and flies to it en masse. Therefore, in the manufacture of traps, a yellow base is used. The results are visible within a few hours. Place 4-5 traps in the greenhouse. On the street they put one trap per 1-2 m².

Agrotechnical measures: tobacco is planted along the perimeter of a plot with tomatoes or in a greenhouse. The whitefly prefers it to all other plants and gathers on it in huge quantities. At the same time, tomatoes and other crops are weakly populated with it. It remains only to destroy the tobacco along with the pest, while not forgetting to treat the tomatoes themselves and other plants with biological products.

If the nights are cold (below 10 °C), then leave the greenhouse open. Tomatoes will endure 3-4 cold nights without damage, and the whitefly at this temperature stops eating (both adult insects and larvae) and some individuals die of starvation. Cold nights often occur in the central black earth regions, where the pest spreads strongly in warm weather.

It is necessary to fight the whitefly throughout the season. Processing is carried out repeatedly with an interval of 5–7 days. For 3–5 treatments, it will not be possible to get rid of the whitefly on tomatoes. She very quickly gets used to insecticides, therefore, repeated treatment with the same drug is not carried out, with the exception of biological products.

The wax coating that covers the larvae makes it difficult to destroy pests. Not all substances are able to act on an insect through such a barrier.

Contact and systemic insecticides are used to kill whiteflies. The preparations are used during the period of flowering and filling of the first two brushes. Insecticides must not be used 14 days before harvest. And since tomatoes ripen unevenly, after pouring the first fruits, chemicals are not used.

The «Tanrek» systemic contact insecticide will help get rid of the whitefly. Spraying is carried out no more than 3 times per season. Carefully process the leaves from the top and bottom side. The drug is dangerous for bees, so spraying is carried out on the street in the evening, or at hours when the bees do not fly. The insecticide adheres well to the leaves and is not washed off by rain. The interval between treatments is 7 days.

Biological methods include the use of biological products and natural enemies of the whitefly. «Fitoverm» – the biological product does not penetrate plant tissues and does not accumulate in them, so it can be used at any stage of tomato development, including the day before harvest. When whiteflies appear, spraying is carried out on the upper and lower sides of the leaves. It can be used repeatedly during the entire period of pest control.

Encarsia is a whitefly parasite that will gladly help you get rid of harmful insects. Females lay eggs in larvae of 2-4 instars, but this does not interfere with their development. The death of the whitefly occurs when the larva turns into an adult insect.

Encarsia pupae are sold in packs of several thousand pieces. If there is a tense background for the pest, then in the greenhouse with tomatoes, and in the southern regions and on the street in the beds with tomatoes, cucumbers, zucchini, they put

cards with mummified insect pupae (sold in pet stores). After a few days, adults of encarisia appear.

Bug macrolofus – a predator that feeds on pests. This is one of the most effective, reliable, and safe ways to deal with whiteflies. One bug in its life (30-35 days) destroys about 2,5 thousand larvae. 1–2 individuals are usually enough for a greenhouse, 3–5 bugs in open ground. Many of them are not released, because with a lack of food they are able to survive by feeding themselves on the juices of plants, including tomatoes.

The fight against the whitefly is a very difficult task and is carried out with varying degrees of success. And if it is possible to get rid of a pest in a greenhouse, then it is almost impossible to do it on the street.

Dangerous pests are a large group of isopterous sucking insects, which includes about 800 species. A special group is formed by the family of Aphids – *Aphidoidea* (Figure 2).



Fig. 2. *Aphis gossypii* (Glover, 1877):
1 – affected leaf; 2 –colony of the adult

Of 4400 aphid species, 250 are harmful to plants, which is why you may see white aphids, black aphids, red aphids, non-flying aphids along with winged aphids on tomato plants.

Aphids are a pest that affects many vegetable and flower crops, and every gardener knows about it. It can infect some plants completely along with the fruits, and in some, only the vegetative mass is affected, while the fruits do not suffer. This is exactly the case for tomatoes. Even though only tomato leaves are affected by aphids, this still affects the yield. The fact is that the plant is forced to fight the invasion of pests on its own, immunity decreases, and the ripening of the fruit goes into the background, unripe tomatoes in this case are deformed. In addition, aphids can provoke the development of fungal infections on tomatoes.

Both greenhouse and ground tomatoes are attacked by aphids. Seedlings may also be affected. Different types of aphids can parasitize on tomatoes: black, green, white, melon and peach. Regardless of which kind of tomato has settled, processing is done in the same way in all cases.

Aphids are small (2-4 mm), pear-shaped, soft-bodied insects. They can be green, gray, black, brown, yellow, or white – often mimicking the color of the plant they feast on. And these buggers just won't quit. Aphids are very prolific. Females can give birth to up to 80 offspring a week. That's a whole lot of aphid nymph mouths to feed, especially when you don't want your tomato plant to be part of the aphid nursery. And all those nymph babies can turn into adults in just 7 or 8 days. They don't limit themselves to tomatoes. You can find aphids on cucumbers, squash, melon, peppers, potato, and a host of other crops.

Aphids use their mouthparts to eat sap. They suck out juices and nutrients from tomato leaves, stems, and fruits. Their sap-sucking stunts plant growth, causes leaves to curl, and makes leaves turn to yellow. Plus, as aphids use their snouts to penetrate your tomato plants, they often transmit viruses like the tomato yellow leaf curl virus, the cucumber mosaic virus, the potato virus, and the tomato etch virus. And aphids keep on giving. They secrete a white sticky substance called honeydew. Left unchecked, honeydew attracts other pests like ants and leads to sooty mold and powdery mildew on your tomato plants.

Aphids attack tomato plantings when warm and dry weather is stable. The aphid does not touch the fruits of tomatoes, but the pests cause irreparable harm to the plant itself, with a massive invasion: the growth of tomatoes stops, flowering stops, and new tomatoes do not tie. As with any pest, the fight against aphids must begin as soon as they are noticed.

Aphids in greenhouses appear much earlier than on tomatoes in the open. Greenhouse conditions are more favorable for her – warm and dry. At the beginning of summer, you should carefully inspect the plants, looking under each leaf.

Control measures are the same, and on the open ground. When working in a greenhouse with pesticides, precautions should be strictly observed: be sure to protect exposed areas of the body, use a respirator and goggles.

In the spring, before planting seedlings, it is desirable to treat the entire structure of the greenhouse and the ground with karbofos. The greenhouse must be regularly ventilated. Sometimes it is useful to leave it open at night.

Prevention from aphids begins in the fall, immediately after harvest. Since eggs and some individuals hibernate on foliage or in the ground, all plant debris is removed and destroyed, and the earth is dug up by 10-15 cm. The earth is not leveled for the winter but left loosened. In the spring, a plot of the garden allotted for tomatoes is treated with karbofos. Observe the distance between plants when planting. Between the beds, you can plant herbs with a strong smell: dill, celery, marigolds. Watering is carried out only with warm water, between watering the soil should dry completely. Near plantations with tomatoes, all anthills must be destroyed. If you leave them unattended, then the ants will bring aphids to the tomatoes.

When dealing with aphids, chemicals should be used with caution. Do not forget that the active ingredients are removed from tomatoes no earlier than 25 to 30

days after treatment. If it became necessary to treat the tomatoes with insecticides, then the fruits, painted in pinkish or brown color, are removed in advance and placed for ripening in a dark place.

Insecticides to control aphids:

«Biotlin» – destroys not only adults, but also prevents the development of the young generation of aphids. Not addictive. Recommended for use in greenhouses. Dilute 5 ml per 10 liters of water, this solution is enough to process 30 sq.m. planting areas;

«Akarin» is an insecticide of intestinal-contact action. 8 ml mixed with 1 liter of water. One liter of solution is enough to spray 10 sq.m. tomato plantation;

«Spark» – the drug has a wide spectrum of action, is used to combat other pests. 1 tablet is diluted in 10 liters of water, used to kill aphids per 50 sq.m. landings.

The preparations «Aktara», «Fufanon», «Commander» are also recommended. Use them according to the directions on the package.

The drug «Fitoverm», or its analogue «Aktofit», can be used 2 days before picking the fruit from the bush. Tomatoes are processed at a temperature not lower than 16 °. At lower temperatures, the drug will not work. If the air temperature is close to 30 °, which often happens in greenhouses, then the dose of the drug is reduced by 1 liter.

Thrips are another important pest of tomatoes. Thrips have been known for a long time, they are broad polyphages, damaging a wide range of cultivated and wild plants (from 100 to 400 species). For example, the most common of them is *Heliothrips haemorrhoidalis* (Bouché, 1833) (Figure 3).



Fig. 3. *Heliothrips haemorrhoidalis* (Bouché, 1833)

1 – adult of trips; 2 – symptoms of damage to tomatoes by thrips

This is the most common and dangerous polyphage, which has inhabited almost all greenhouses due to its close relationship with plants, where its entire life cycle develops – from eggs to adults. In the natural conditions of the southern region of Ukraine, the tobacco thrips were found on large areas of vegetable crops with the

seedling method of their cultivation, mainly cucumbers, tomatoes, onions, cabbage, watermelons, and the like. It harms bulbs in vegetable stores, which leads to a deterioration in the quality of garden plants and gardening material. The reaction of the plant to the damage by the trips is desensitization, which is manifested in growth retardation, distortion, and loss of turgor of damaged leaves, which later become yellow and dries.

This pest is a small insect whose body size does not exceed 3 mm. Thrips have an elongated body and a cone-shaped head. The pest has three pairs of legs, which are equipped with special teeth and suckers. This allows the insect to move easily from the underside of the leaves and lead a hidden lifestyle.

The oral apparatus of the pest is of a sucking type. Thrips feed on tomato cell sap, which disrupts metabolic processes in tissues and slows down the development of seedlings.

The main reasons for the appearance: temperature within + 25–30 °C; low air humidity; contaminated soil; density of landings; lack of timely feeding.

In closed ground conditions, thrips can remain viable and reproduce year-round.

Adult females overwinter in greenhouses – in various openings, and in open ground – in the upper layer of the soil at a depth of 7–10 cm, under plant remains or in the rootstock of perennial plants or weeds. Insects die at temperatures below 0°C and in the absence of snow cover.

The pest spreads at all stages of development – eggs, larvae, adults – with planting material of vegetable crops (with plants or in the soil), transport, containers, workers' tools, their clothes, or shoes. It happens during the collection, packaging, and sale of contaminated products.

Tobacco thrips can develop in open soil at temperatures above 10 °C during the growing season from the second decade of May to the end of September in the conditions of the steppe and forest-steppe zones of Ukraine, causing significant damage to vegetable crops. Depending on the weather conditions, the pest can produce from 3-4 to 5-6 generations.

Thrips larvae initially live on the above-ground part of the plant, and then go into the substrate for ten days, where they continue their development. Currently, they affect the root system of tomatoes, which leads to the appearance of constrictions on them, which interfere with metabolic processes in the tissues.

When characteristic signs of thrips damage appear on tomato seedlings, as in the Figure 2, complex control measures are necessary. However, you should be prepared for the fact that not one, but several treatments will be required, depending on the number of pests. At the same time, you need to know exactly after what period they are carried out so that this procedure is as effective as possible. The drugs and agents used can have a detrimental effect on adults and larvae, but they cannot penetrate the outer shell of the eggs.

With the mass reproduction of pests, it is necessary to use chemicals. After their application, insects initially lose their ability to eat, and after a day they die. However, thrips are characterized by increased survivability and quickly get used to

the action of chemicals. Therefore, when using them, it is recommended to alternate them periodically.

Systematic treatment of plants with the following insecticides gives satisfactory results in the fight against tobacco thrips: Akketlik, Aktara, Phytoverm, Karate Zeon, Confidor Maxi (with irrigation water) and others. It is obligatory to change preparations during the growing season. On the onion fields thrips is successfully reduced with insecticide of natural origin Spintor when using periodic spraying of plants.

An effective method of combating thrips on tomatoes is the use of biological products, such as Fitoverm. This tool is safe for humans, as it is based on the waste products of soil microorganisms. Its use is justified not only against thrips, but also ticks, whiteflies, aphids.

To prepare an effective remedy for pests on tomato seedlings, it is necessary to dilute 5 ml of the drug in 500 ml of water. After processing, Fitoverm begins to act after 3-4 hours, and the death of pests occurs after 3-4 days.

Since thrips are very persistent pests in addition to insecticides, predatory mites, *Acari barken*, *Acari derenerans*, as well as predators *Orius laevigatus*, *Orius magusaculus*, should be used.

Today, the protection of vegetable crops takes the direction of the use of biological agents against pests – polyphages, special attention should be paid to the use of natural enemies of tobacco thrips.

The cotton bollworm (*Helicoverpa armigera* Hübner, 1808, Lepidoptera, Noctuidae) (Figure 4) is widespread in the southern and central regions of Ukraine. It tends to populate even part of the northern regions.



Fig. 4. Larvae of the *Helicoverpa armigera* Hübner, 1808

The pest damages corn, cotton, tomatoes, tobacco, chickpeas, sorghum, pumpkin, etc. The wingspan of a butterfly is 30-40 mm. The front wings are grayish-yellow with a red, pink or greenish tint, males are lighter than females. The spots are rounded and kidney-shaped dark gray, indistinct, longitudinal stripes are also indistinct. The hind wings are lighter, with a brown stripe near the outer edge and a dark echo-shaped spot in the middle. The egg is 0,5-0,6 mm in diameter, 0,4-0,5 mm high, initially light yellow, later greenish in color, with 26-28 radial ribs. The larvae is 35-40 mm long, varying in color from light green and yellow to red-brown and even black. The head is yellow, with spots, the chest shield with a dark marble pattern, along the body – three wide dark stripes. There is a yellow stripe above the spiracles, the ventral side of the body is light. Light-colored caterpillars are almost without a pattern. The body, except for the thoracic shield, is covered with small spines. The pupa is 15-22 mm long, reddish brown; the cremaster is small, smooth, with two spines curved like a hook at the top.

First instar caterpillars damage the leaves of corn, tomatoes, and alfalfa; from the second age, they switch to nutrition by generative organs: they damage the threads of cobs, corn grains, buds, flowers, ovaries and fruits of tomatoes, tobacco, beans and chickpea seeds, etc.

Humidity and temperature are important for the survival of pupae in the winter-spring period. The death of pupae that enter diapause is caused by sharp temperature fluctuations and freezing of the soil at high humidity. The development of flowering nectarines is influenced by a warm spring with a sufficient amount of precipitation, which contributes to the nutrition of females, which in such years lay many eggs, and later to the nutrition of caterpillars. A dry and hot spring or a sharp cold snap limit the reproduction of the pest.

Protection measures: agrotechnical: deep plowing, inter-row cultivation of row and vegetable crops during the period of mass pupation of caterpillars, destruction of weeds in the spring, in order to worsen the feeding conditions of butterflies and caterpillars, destruction of plant residues after harvesting.

Biological: during the egg-laying period, release 50-100 thousand *Trichogramma* egg-eaters/ha in two periods: at the beginning and during the period of mass egg-laying.

Chemical: during the revival of caterpillars, insecticides approved for use in Ukraine are used. On corn, it is primarily Ampligo (0,2-0,3 l/ha) and tank mixtures of Aktellic and Karate Zeon (0,8 l/ha + 0,2 l/ha).

Insect pests are very dangerous for greenhouse tomatoes. They not only cause damage to various parts of the plant, but are also carriers of various diseases.

Therefore, to prevent the emergence and reproduction of insect pests, preventive measures should be applied: compliance with the temperature regime and optimal humidity; application of fertilizers according to the recommended

agrotechnical norms; enrichment of the soil with organic matter; soil loosening; timely destruction of weeds; compliance with crop rotation; joint landings.

Getting rid of pests in a greenhouse is very difficult. It is much easier to prevent their occurrence. For this, the plants, and the greenhouse itself are subjected to mandatory preventive treatments.

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QUARANTINE SPECIES OF STEM NEMATODES ARE LIMITED IN UKRAINE

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Abstract. In the article, the authors analyzed and systematized the results of research obtained during the processing of domestic and foreign information sources regarding the prevalence, harmfulness, and bioecological features of stem nematode species of limited distribution in Ukraine, which are included in the A2 list by the State Production and Consumer Service. In Ukraine, there are two such species: potato stem nematode (*Ditylenchus destructor* Thorne) and stem nematode (*Ditylenchus dipsaci* Filipjev). In contrast to European countries, where the potato stem nematode is not of significant economic importance, in Ukraine its mass distribution in field conditions and the manifestation of the disease during the storage of agricultural products lead to significant crop losses. The stem nematode is considered one of the most harmful species of phytonematodes, especially in temperate climates. Without proper control, the stem nematode can lead to a complete loss of the crop (primarily onions, garlic, cereals, strawberries, decorative bulbous plants). *D. dipsaci* is locally distributed in temperate climates almost all over the world (Europe, North and South America, Africa, Asia, Australia and Oceania), but the species is unable to survive in tropical climates except in some mountainous areas.

Keywords: stem nematodes, plant quarantine, A2 list, prevalence, harmfulness, phytosanitary risk.

Potato stem nematode *Ditylenchus destructor* Thorne (KKB – DITYDE) belongs to the type Roundworms – Nematoda, order Tylenchida – Tylenchida, family Anguinidae (Anguinidae).

The main food plant of the nematode is the potato, but the species was sometimes detected on plants of the following genera: cocks (Iris) (on bulbs and rhizomes), carrots (Daucus), clover (Trifolium), peanuts (Arachis), as well as on seeded garlic. It is believed that *D. destructor* can parasitize 70 crops and weeds and about the same number of mushroom species.

In contrast to European countries, where the stem nematode has no significant economic importance, in Ukraine its massive spread in the field and the manifestation of the disease during the storage of agricultural products leads to significant crop losses.

In recent years, the potato stem nematode has been frequently detected in peanut plantations in South Africa. There is an assumption that this population may be a separate ecotype or pathotype. Until now, it has not been registered on local potato plantations.

As of 2022, the potato stem nematode is widespread in many European countries: Austria, Albania, Belgium, Belarus, Bulgaria, Great Britain, Greece, Estonia, Ireland, Italy, Latvia, Lithuania, Luxembourg, Moldova, the Netherlands, Germany, Norway, Poland, Russia, Romania, Slovakia, Hungary, Ukraine, Finland, France, the Czech Republic, Switzerland and Sweden; Asia: Azerbaijan, Iran, Kazakhstan, Kyrgyzstan, China, Korea (South), Pakistan, Saudi Arabia, Tajikistan, Turkey, Uzbekistan and Japan; Africa: South Africa; North America: Canada and the USA; Central America: Mexico; Oceania: New Zealand (Figure 1).



Fig. 1. World range of *Ditylenchus destructor* Thorne

The nematode cannot withstand prolonged drying, so the species has significant economic value only if it parasitizes in cool, moist soil. In the absence of a special rest phase in the development cycle, the species overwinters in the egg phase (in temperate climates) or any other phase (in warm climates). Under favorable environmental conditions, the larvae are reborn and immediately inhabit the plants. In a temperate climate, the optimal temperature for the revival of larvae is 15-20 °C, while in South Africa this indicator is 28 °C.

Invasive larvae enter tubers mainly through wounds on their surface, as well as through holes (although there is evidence that nematodes can enter newly formed

tubers from the soil at any point). Inside the plant, nematodes actively feed and reproduce. A mature female lays about 250 eggs, which begin to develop immediately. After 4-5 days, larvae hatch from the eggs, the development of which takes 67 days to the stage of a sexually mature individual. Thus, in the middle of the tubers, one female initiates the development of several generations, the life cycle of which is on average 15-45 days (depending on environmental conditions). Nematode development and population growth continues inside the tubers after harvest.

The potato stem nematode has a slender worm-like body, the morphometric characteristics of which can vary depending on the age of the pathogen and the species of the host plant. Males and females are very similar in appearance (Figure 2).

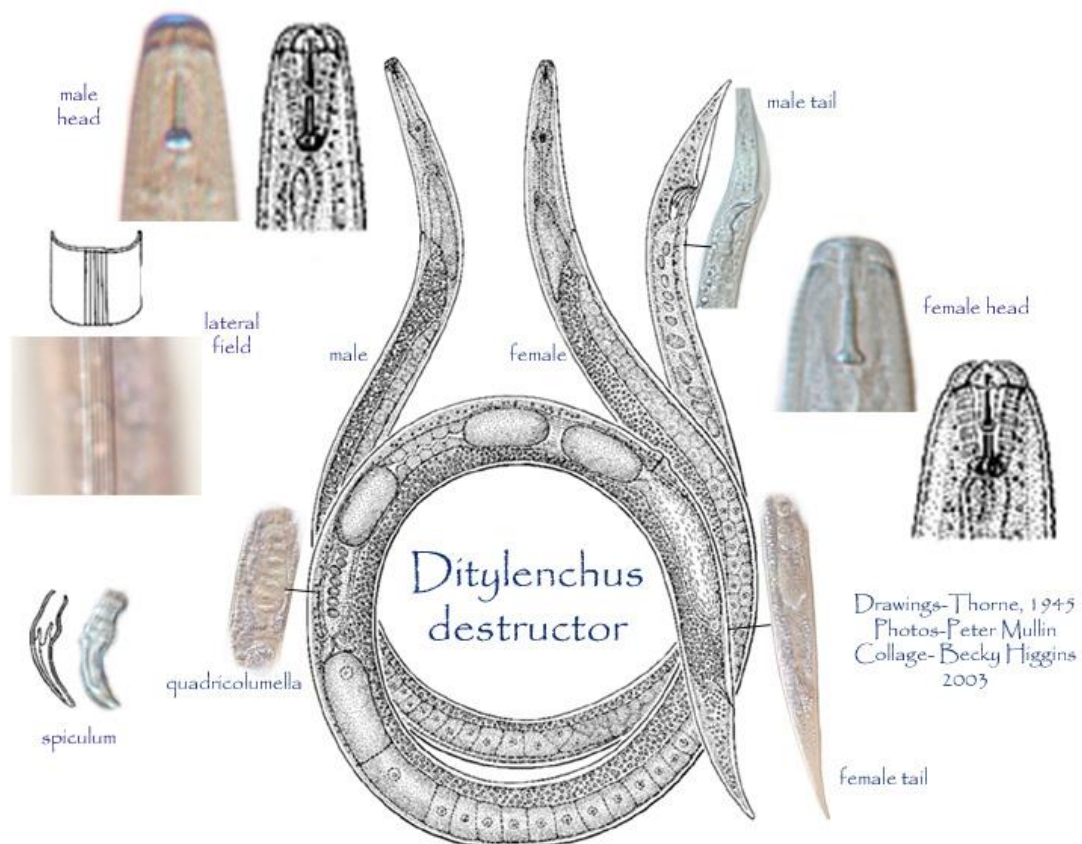


Fig. 2. Potato stem nematode

Female: 0.72-1.44 mm long and 20-30 μm wide, stylet 10-12 μm , vulva – 78-83%, ovary unpaired, anterior (Figure 2).

Male: 0.75-1.35 mm long, 20-25 μm wide, stylet 9-11 μm , spicules paired, well-developed bursa, which begins at the level of the heads of the base of the spicules and extends for 2/3–3/4, covering the tail (Figure 2).

The larva: in all 4 stages of development (the first stage takes place in the egg) is very similar to the adult, but smaller in size and does not have developed genitals. It differs from the closely related species *D. dipsaci* by the longer length of the posterior uterus and the smaller size of the eggs (Figure 2).

There are no specific terrestrial symptoms of potato disease, only with a high degree of infection, the plants have a depressed appearance and prematurely wither.

Invasion at the initial stage can be detected by cutting the skin of the tuber and seeing small white dots that stand out against the background of healthy tissue. Later, these dots increase in size, darken, and their texture changes. Over time, the disease can be detected by dark, as if depressed, spots on the surface of the tubers, in some places the skin of the tubers in these areas is separated from the pulp and shriveled. The tissues under it acquire a gray or dark brown color (the latter mainly occurs due to the colonization of tubers by secondary pathogens – fungi, bacteria and saprobiotic nematodes). However, damage to plants by other stem nematodes, *D. dipsaci*, does not lead to shriveling of the tuber skin, and the interlayer of the affected (darker) tissue penetrates the inside of the tuber in strands. Symptoms of the disease in this case are more noticeable on the above-ground organs of plants, in particular, diseased plants are distinguished by small, deformed leaves (Figure 3).



Fig. 3. Consequences of damage to potatoes by the potato stem nematode

Affection of bulbs of roosters and tulips usually starts from the bottom, spreading later to newly formed scales that cover gray and black necrotic spots. The roots of the plants also darken, the leaves do not develop well, and in some places they have yellow tips. Black spots appear on the shell of affected peanut plants, which stretch along the veins. The fruit acquires a flabby brown or black color, the embryo has brown chlorotic spots.

Nematodes spread along with infected seed and planting material (potato tubers, bulbs, rooted plants), soil and agricultural tools. Possible spread by birds, irrigation water, etc.

The best results in controlling stem nematodes are achieved using clean planting material. Stem nematodes in bulbs, tubers, roots of asparagus and strawberries are destroyed with the help of disinfection (Hydrogen cyanide). Infected bulbs of roosters are disinfected by immersing them in water containing 0.5% formaldehyde at a temperature of 43.5 °C for 2-3 hours. (contradicted for some varieties that cannot withstand such processing).

Stem nematode – *Ditylenchus dipsaci* Filipjev (KKB – DITYDI). Synonyms: *Anguillula devastatrix* Kühn, *A. dipsaci* Kühn, *A. secalis* Nitschke, *Anguillulina dipsaci* (Kühn) Gervais & Van Beneden, *A. dipsaci* var. *communis* Steiner & Scott, *Ditylenchus allocotus* (Steiner) Filip'ev & Sch. Stek., *D. amsinckiae* (Steiner & Scott) Filip'ev & Sch. *D. dipsaci* var. *tobaensis* Schneider, *D. fragariae* Kir'yanova, *D. sonchophila* Kir'yanova, *D. trifolii* Skarbilivich, *Tylenchus allii* Beijerinck, *Tylenchus devastatrix* (Kühn) Oerley, *T. dipsaci* (Kühn) Bastian, *T. havensteinii* Kühn, *T. hyacinthi* Prillieux, *T. putrefaciens* Kühn., belongs to the type Roundworms – Nematoda, order Tylenchida – Tylenchida, family Anguinidae (Anguinidae).

The stem nematode is capable of parasitizing more than 450 plant species, including weeds. Among the main fodder plants are onions, garlic (*Allium*), peas (*Pisum*), beans (*Phaseolus*), alfalfa (*Medicago*), corn (*Zea mays* L.), rye (*Secale*), potatoes (*Solanum tuberosum* L.), strawberries (*Fragaria*), beet (*Beta*), tobacco (*Nicotiana*), hyacinth (*Hyacinthus*), narcissus (*Narcissus*), tulip (*Tilira*), phlox (*Phlox*).

At the same time, *D. dipsaci* has more than 10 physiological races, for which the range of host plants is very limited. For example, a race that can reproduce on rice, rye, and onions can be considered polyphagous, since it can inhabit many other plants. It is most likely specific on alfalfa, clover, and strawberry, because there is an extremely limited range of alternative hosts for it. The tulip race can be a parasite on the daffodil, and the one found on the daffodil cannot survive on the tulip. Among the most famous races of the stem nematode, we can distinguish strawberry, red clover, alfalfa, rye, oat, beet, phlox, hyacinth, tulip, but the most harmful is the onion–garlic race. Parasitism of the latter on onions and garlic in some places leads to losses of 40–60% of the crop in field conditions, and, in addition, a significant part of it is lost during storage.

D. dipsaci is considered one of the most harmful species of phytonematodes, especially in temperate climates. Without proper control, the stem nematode can lead to a complete loss of the crop (primarily onions, garlic, cereals, strawberries, decorative bulbous plants).

D. dipsaci is locally distributed in temperate climates almost all over the world (Europe, North and South America, Africa, Asia, Australia, and Oceania), but the species is unable to survive in tropical climates except in some mountainous areas.

As of 2022, the stem nematode is common in many European countries: Austria, Albania, Belgium, Belarus, Bulgaria, Bosnia and Herzegovina, Great Britain, Greece, Denmark, Estonia, Ireland, Iceland, Spain, Italy, Cyprus, Latvia, Lithuania, Malta, Moldova, the Netherlands, Germany, Norway, North Macedonia, Poland, Portugal (including the Azores), Russia, Romania, Serbia, Slovakia, Slovenia, Hungary, Ukraine, Finland, France, Croatia, the Czech Republic, Montenegro, Switzerland and Sweden; Asia: Azerbaijan, Armenia, Georgia, Yemen, Israel, Iraq, Iran, Jordan, Kazakhstan, Kyrgyzstan, China, Cyprus, Korea (South), Oman, Pakistan, Syria, Turkey, Uzbekistan, Japan (Honshu Island); Africa: Algeria, Kenya, Morocco, South Africa, Reunion Island and Tunisia; North America: Canada and the USA; Central America and the Caribbean: Haiti, the Dominican Republic, Costa Rica and Mexico; South America: Argentina, Bolivia, Brazil, Venezuela, Ecuador, Colombia, Paraguay, Peru, Uruguay and Chile; Australia and Oceania: Australia and New Zealand (Figure 4).



Fig. 4. World range of *Ditylenchus dipsaci* Filipjev

D. dipsaci is a migratory endoparasite that inhabits parenchymal tissues of stems, bulbs, and tubers of plants, causing the destruction of the inner layer of cell walls.

After diving into plants, stem nematode larvae molt several times, turning into adult males and females. After fertilization, the female lays eggs (from 200 to 500),

from which the next generation of nematodes develops immediately, without a resting stage, and the cycle repeats again.

With an increase in the number of nematodes inside the plant, the disease progresses rapidly. Later, the dead plant cells are colonized by other microorganisms and rot, while the nematode larvae crawl onto healthy parts of the same plant or migrate into the soil, where they infect new plants. During one growing season, several generations of stem nematode develop, the duration of development of each of which, depending on the fodder plant and environmental conditions, can be from 20 to 73 days.

The stem nematode can maintain viability for many years both in air-dry conditions and in clay soils. It has been established that the harmfulness of nematodes is much higher on such soils than on sandy soils.

To isolate nematodes, it is enough to grind the suspicious plant organ and put it in water: the nematodes will leave plant remains and actively move in the water. An 800-fold increase is sufficient for morphological and morphometric studies. Nematodes at all stages of development have a slender worm-like body, narrowed on both sides (Figure 5).

Female 1.2 mm long ("giant race" on beans – 2 mm); stylet – 10-12 μm with clearly developed basal tubercles. Ovary unpaired, vulva – 80-82%; lateral fields with four incisions; the terminus of the tail is sharp (Figure 5).

Male 1.0-1.3 mm long, 27-34 μm wide; spicules paired; a bursa is present, which starts from the base of the spicules and ends before reaching the end of the tail (Figure 5).

Nematode parasitism often causes deformation of shoots, leaves and flowers of plants, necrotization and subsequent rotting of the neck of the stem, roots, bulbs and tubers are observed.

During the growing season, onion plants affected by ditylenchosis have chlorotic, deformed leaves that wilt prematurely. Deformation of leaves has not been established on garlic plants, but they turn yellow prematurely and die; in some places the stalk of garlic thickens, cracks appear on it. The bulbs become plump, and their bottoms become rotten (Figure 6).

Garlic heads are mostly loose and loose. By cutting a damaged bulb crosswise, you can easily notice unevenly thickened scales, which later turn brown or gray because of their colonization by various putrefactive microorganisms. A clear sign of damage to plants by ditylenchosis is round or crescent-shaped cracks at the bottom of the bulbs. Sometimes the thickened outer and inner scales of the bulb gradually slide up, forming "rags" in the area of the bottom.

Ditylenchus dipsaci
(After Thorne) Thorne, 1961

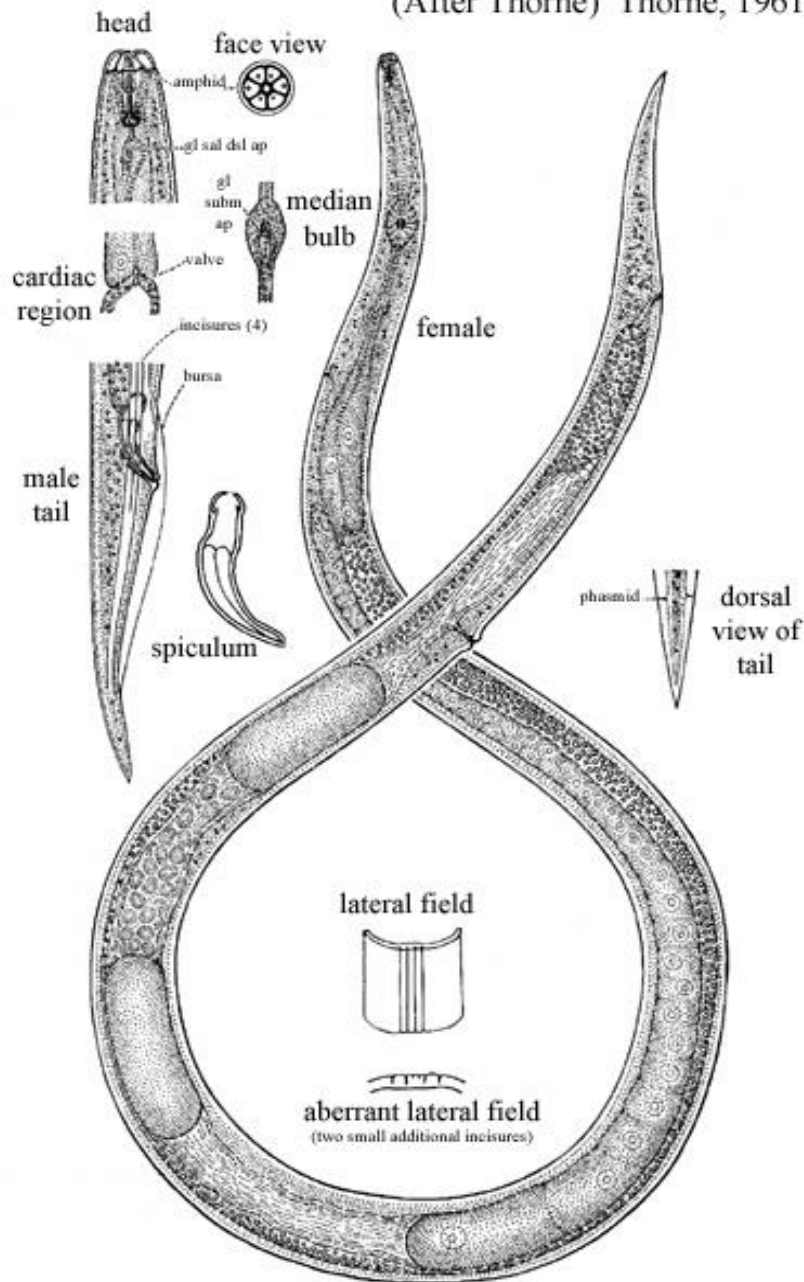


Fig. 5. Stem nematode

Another visual sign of ditylenchosis is the formation of the so-called nematode "felt" on the surface of affected bulbs during their storage in storage (Figure 7).

It has a grayish color, very similar to mold. These are tens of thousands of nematode individuals that have crawled to the surface of the affected dry bulb and are there in a resting stage until more favorable conditions for further growth and development occur. During storage, the specific strong smell of bulbs and garlic affected by ditylenchosis is especially clearly manifested, which also helps to identify the nematode disease.



Fig. 6. Bulbs affected by stem nematode

It is difficult to diagnose a weak infection, because in this case the outer scales of the bulbs have a completely healthy appearance, while the inner ones are destroyed, sometimes completely. Such "empty" bulbs are characteristic of an infected seedling that is stored at relatively high temperatures. On alfalfa crops, the disease manifests itself in clusters, more strongly in a humid climate. Infected plants are delayed in growth and development, the base of the stem thickens (swells), it becomes noticeably shorter. With a strong degree of damage, plants die. Parasitism of the stem nematode on tobacco plants also causes deformation of the base of the stem, which subsequently breaks ("stem break").

In addition to the above symptoms (swelling, deformation of the stem), necrosis is visible on the beans, which later turn red-brown, later – black (depending on the variety and environmental conditions). Necrosis covers the stem over time and increases in size. Newly formed fruits have a dark brown color. Infected seeds are darker, smaller, and sometimes speckled. A giant race causes more symptoms on culture. In natural conditions, in the absence of a host plant or in the case of arid conditions, *D. dipsaci* can survive for many years. The nematode spreads mainly together with seed and planting material (in particular, with bulbs), being both in the middle of tissues and on the surface – in the form of "nematode felt". The distribution of nematodes is also possible together with agricultural tools, sewage and rainwater, plant remains, weeds, birds, etc.



Fig. 7. Nematode "felt"

One of the effective ways to prevent the spread of *D. dipsaci* can be the timely culling of diseased plants throughout the entire cycle, starting with the seed material before planting, then – the detection of ditylenchosis foci directly in the field, then – picking the harvested crop before putting it in storage, and finally – periodic removal affected plants (bulbs, garlic, etc.) during storage. Preventive measures should also include the removal of weeds and post-harvest residues from the infected areas, deep early plowing helps the best decomposition of post-harvest residues in the soil. The use of crop rotations cannot effectively control the spread of infection because the stem nematode has many host plants. Due attention must be paid to the cleanliness of agricultural tools, containers, and storage facilities. They can be disinfected using a 4% formalin solution.

Crops, planting material or seeds collected from infected areas should not be stored for a long time, especially next to uninfected lots; it should be used only for commercial purposes. If it is necessary to use seed or planting material from these batches, it is recommended to pre-treat with hot water, the temperature regime of which operation depends on the type of plant material and its condition.

It is recommended to use nematicides on some ornamental plants. Certain efficiency is provided using nematode-resistant plant varieties.

Conclusions. 1. According to the results of the analysis of domestic and foreign professional information sources, it was established that in Ukraine there are two types of stem nematodes limited to common quarantine species: potato stem nematode (*Ditylenchus destructor* Thorne) and stem nematode (*Ditylenchus dipsaci* Filipjev).

2. In contrast to European countries, where the potato stem nematode does not have significant economic importance, in Ukraine its massive spread in the field and the manifestation of the disease during the storage of agricultural products leads to significant crop losses.

3. The stem nematode is considered one of the most harmful species of phytonematodes, especially in temperate climates. Without proper control, the stem nematode can lead to a complete loss of the crop (primarily onions, garlic, cereals, strawberries, decorative bulbous plants). *D. dipsaci* is locally distributed in temperate climates almost all over the world (Europe, North and South America, Africa, Asia, Australia and Oceania), but the species is unable to survive in tropical climates except in some mountainous areas.

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HOST PLANTS AS RESERVOIRS OF MAIN OIL PRODUCING CABBAGE CROPS PESTS IN THE EASTERN FOREST-STEPPE OF UKRAINE

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The identification of conditions that contribute to the reproduction of the harmful insects in one place or another in many cases makes it possible to scientifically substantiate and implement the measures to limit their harmful activity and even completely eliminate the danger.

It is well known that the insects, both geographically and locally, are extremely unevenly distributed. This unevenness is caused by the differences in the natural and economic conditions of the particular regions, the differences on which both the possibility of existence and the intensity of the insect reproduction depend. Such biotic factor as the vegetation distribution, which is the forage base for most insects, influences their spreading greatly. This connection is strongly expressed among the harmful herbivorous insects (Dobrovolskyi, 1959).

To a greater extent this connection is inherent in the insects feeding on a single kind of food or monophagous pests as well as in the insects feeding on a limited variety of food or oligophagous pests (Kozhanchikov, 1955).

The presence and distribution of the plants which are cultivated or used by humans and on which the insects are fed is certainly the first and basic condition for the emergence of a zone or a breeding ground of harmfulness. The presence of the most preferred by the insects fodder plants often leads to the formation of a zone or a centre of the greatest damage (in the presence of other favourable conditions for the existence and reproduction of the pest) (Dobrovolskyi, 1959).

The monophagous pests that feed and reproduce on the crops which occupy a restricted area have the most sharply restricted zones or the breeding grounds with the greatest harmfulness. At the same time the ecological connections which are based on a high degree of physiological and ecological adaptation to the feeding on the certain plants and to the conditions of growth and agricultural techniques of cultivation of the insect nourishing crops are revealed (Kozhanchikov, 1955).

In the first turn the human economic activity leads to the change of the natural vegetation cover and replacement it by a few new species of plants and this fact is extremely strongly reflected in the quantitative and qualitative indices of the entomofauna (Buch, 1998). The pure crops in nature do not occupy the large areas,

but they can occupy 100 or more hectares in the agroecosystems and much more heavily populated by the pests (Tachvanainen, Root, 1972).

As B.V. Dobrovolskyi (Dobrovolskyi, 1959) notes the first and the main condition for the emergence of the harmful zones of any kind of insects is the presence and distribution of their fodder crops (in the presence of other favourable conditions for their reproduction and spreading). Under natural conditions the insects feed on the wild growing plant species and weeds; this fact greatly regulates their number. Therefore, the anthropic factor begins to play a significant role. In the first turn the human economic activity leads to the change of the natural vegetation cover and replacement it by a few new species of plants which is extremely strongly reflected in the quantitative and qualitative indices of the entomofauna. New relationships are formed between the species; the trophic chains are restructured and the adaptations to exist in a changed environment are arisen. Certain species of the pests also become dominant under favourable weather and biological conditions (Buch, 1998).

A striking example of this is the pests of the cabbage crops. According to the data of M.M. Bogdanov-Katkov (Bogdanov-Katkov, 1920) the pests of the cabbage crops under natural conditions feed on the following plants: field shepherd's purse (*Capsella bursa-pastoris* Moench.), field pennycress (*Thlaspi arvense* L.), yellow rocket (*Barbarea vulgaris* R. Br.), field pepper weed (*Cardaria campestre* R. Br.), pepper grass (*Cardaria draba* L.), camelina (*Camelina dentata* Pers.), wild radish (*Raphanus rapanistrum* L.) and others. Timely destruction of these weeds in all crop rotation fields limits the development of the pests.

The number of weeds in the natural biocoenosis is not significant and therefore the cultivated plants from the Brassicaceae family play the decisive trophic role for the insects; the acreage under these crops is constantly increasing. Their species and variety composition are very diverse. In 2018 according to the State Register of Plants Varieties Suitable for Distribution in Ukraine the following number of the cabbage crops varieties is indicated: white cabbage – 242 varieties, cauliflower – 77 varieties, red cabbage – 33 varieties, Pe-tsai cabbage – 27 varieties, broccoli cabbage – 22 varieties, Savoy cabbage – 10 varieties, turnip-rooted cabbage – 9 varieties, Brussels sprouts – 6 varieties, small radish – 76 varieties, garden radish – 10 varieties, perennial wall-rocket – 3 varieties, turnips – 2 varieties, green mustard – 2 varieties, field mustard – 2 varieties, rocket salad – 1 variety, black radish – 1 variety, field turnip – 1 variety, winter rape – 257 varieties and 114 parent components, spring rape – 54 varieties and 16 parent components, spring leaf mustard – 11 varieties, white mustard – 10 varieties, spring false flax – 9 varieties, oily radish – 5 varieties, winter leaf mustard – 7 varieties, field mustard – 3 varieties, annual turnip rape – 2 varieties, black mustard – 2 varieties, green mustard – 2 varieties and colza – 1 variety.

Today the main oil producing crops from the Brassicaceae family in the world and in Ukraine are winter rape (*Brassica napus oleifera bienis* D. C.) and spring rape (*Brassica napus oleifera annua* Metzg.). Currently the acreage of these crops in the world is over 40 million hectares, and in Ukraine there are more than 1 million hectares. Less common crops are white mustard (*Sinapis alba* L.) and Chinese mustard (*Brassica juncea* Gzem.). The world acreage under mustard is about 3,0

million hectares (in Ukraine there are about 100 thousand hectares). Other oil producing crops from the Brassicaceae family such as spring winter cress (*Brassica campestris* L.), winter rape (*Brassica rapa oleifera* DC), winter false flax (*Camelina sativa subsp. pilosa* N. Zinge), spring false flax (*Camelina sativa var. Glabrata* (DC.)), oily radish (*Raphanus sativus* L. var. *oleiformis* Pers) and black mustard (*Brassica nigra* (L.) Koch) occupy only a small area, while the Abyssinian mustard (*Crambe abyssinica* Hosts. ex. RE Fr.) is not grown in our country at all. In addition, the new fodder crops from the Brassicaceae family such as perko and cow cabbage that are new for our country, are being tested at the research stations.

It is impossible to obtain high and sustainable yields of all agricultural crops without protecting the plants from the harmful insects. The losses of the crops because of the pests are enormous, especially during their mass reproduction. The entomocomplex of the rape agrocenosis consists of several hundred species. As a result of the vital activity of the insect pests up to 50% of the crops (and even more) can be lost, and the yield increase at the level of 25-55% can be ensured due to the activity of the insect pollinators (Pruszynski, 1995).

According to a number of the authors (Kryshtal, 1959; Vasyliiev, 1989; Yevtushenko, Stankevych, Vilna, 2014; Yevtushenko, Vilna, Stankevych, 2017) the cruciferous bugs from the *Eurydema* genus, the cruciferous fleas from the *Phyllotreta* genus, the rape blossom beetle (*Meligethes aeneus* F) and the rose chafer (*Epicometis (Tropinota) hirta* Poda.) cause the annual significant losses of the oil producing cabbage crops in the Forest-Steppe zone of Ukraine. In the studied literature we have found sometimes quite contradictory information as for the wild plants on which the pests of the oil cruciferous crops can feed. Even less data on this issue can be found regarding the Eastern Forest Steppe of Ukraine and the Kharkiv region.

Therefore, the purpose of our research was to identify the main host plants as reservoirs of the oil producing cabbage crops pests under the conditions of the Kharkiv district of the Kharkiv region as well as to identify the stations where such plants are concentrated in large quantities, which promotes the mass reproduction of the pests which then populate the agrocenoses.

The research regarding the identification of the host plants as reservoirs of the main oil producing cabbage crops pests were carried out in 2011–2014 in the biocoenoses in the territory of the settlement Rogan, villages Mala Rogan, Elitne, Vilkhivka, Biskvitne and Koropy of the Kharkiv district of the Kharkiv region. The meadows (the valley of the Roganka river), the perimeters of the fields and the roadsides of highways where the species of the researched host plants as reservoirs of the main oil producing cabbage crops pests grew were chosen as the stations for conducting the research. From each of the studied stations a section of about 1 km in length was chosen and in hundreds plants of one species were inspected and visually counted the detected pests, and then their density per plant was calculated.

The cruciferous fleas on the farms of the Eastern Forest-Steppe of Ukraine appear in early spring (I-II decades of April). The beetles cause harm to all species of plants, but initially they feed mainly on different cabbage weeds. According to the literary data among the wild growing cabbage plants the beetles prefer Indian cress, hedge mustard, hoary alyssum, tansy mustard, pepper weed, sea kale, garlic mustard,

erysimum, yellow rocket, wild radish, gillyflower, pennycress, etc. Undulating flea beetle and mesographe flea beetle feed on the leaves of field shepherd's purse and flea beetle feeds on the leaves of candytuft. When the sprouts of spring rape appear most beetles migrate to them and within 2-3 days completely destroy the sprouts during the reproduction on a mass scale. The beetles scrape the epidermis from the leaves and eat out the terminal bud. Hot and dry weather favours the increasing of the cruciferous fleas' harmfulness. On the one hand it is explained by the increased activity and voracity of the beetles connected with restoring the water balance of their bodies, and on the other hand it is explained by the fact that in dry weather the plants are more weakened and vulnerable to damage by the insects. The beetles cause damage beginning from the phase of sprouting and up to the crops harvesting. The larvae of the large striped flea beetle penetrate the leaf, mine it and stay there until turning into a pupa, and the larvae of the horseradish flea beetle develop inside the leaf stalk and in the medial vein of horseradish and cabbage leaves (Yevtushenko, Stankevych, Vilna, 2014). One of the most dangerous pests of the cabbage crops in all areas of their cultivation is the rape blossom beetle (*Meligethes aeneus* F.); it can damage the plants in the budding and flowering phenophases. At first the beetles populate the flowers of dandelion, tall buttercup and yellow rocket and later they appear on the flowers of fruit trees (cherry-tree, apple-tree, etc.). The beetles appear on the cultivated cabbage crops with the emergence of the first green buds. The beetles feed on the inner parts of the flowers (pistils, stamens, pollen, and petals). The damaged buds turn yellow and fall down. Feeding mainly on the pollen of the opened flowers the rape blossom beetles are less harmful during the friendly and rapid flowering. However, the mass appearance of the beetles can also cause the significant damage during the period of flowering (Yevtushenko, Stankevych, Vilna, 2014). The cruciferous bugs actively populate the crops of oil producing cabbage crops beginning from the stemming phase. According to the literary data among all wild growing plants the bugs prefer different types of hedge mustard. The damage is caused by the adult bugs and their larvae; they pierce the skin of the leaves or the flower-bearing shoots with the proboscis and suck the juice from them. The light spots appear at places of piercing, the tissue dies, falls out and the irregular holes are formed. When the seeds are damaged, the flowers and ovary fall down and the quality of the seeds deteriorates. The harmfulness of the bugs increases significantly in dry and hot weather (Yevtushenko Vilna, Stankevych, 2017).

The mustard bug (*Eurydema ornata* L.) damages the seeds of the cruciferous crops, especially cabbage, garden radish, black radish as well as the oil producing crops, namely mustard, false flax, rape, sea kale, etc. It is also closely associated with the wild growing cruciferous plants on which the bugs are often numerous (Puchkov, 1961). The cabbage bug (*Eurydema ventralis* Kol.) damages almost all cabbage plants as well as the caper plants. It is dangerous for the cabbage seedlings and causes severe weakening or complete death of the plants (Puchkov, 1961). Pentatomid rape bug (*Eurydema oleracea* L.) damages different varieties of cabbage, radish, Russian turnip, common turnip, horseradish, rape, false flax and sea kale; and during the period of the additional feeding it also damages sunflower, sugar beet transplants,

ears of rye, wheat, barley, leaves of potato and other plants on which the larvae can develop (Puchkov, 1961).

Rose chafer (*Epicometis hirta* Poda.) is a dangerous pest of almost all agricultural crops in the budding and flowering phases. In recent years the pest has gained the economic importance not only for the fruit, but also for the field crops including the oil producing cabbage crops. The damage is caused by the beetles which gnaw out the flowers of fruit trees, rose, rose-bush, rowan tree, June berry, almond, lemon, tangerine, grapes (buds, ovaries and young leaves), horse chestnut, snowball-tree, lilac, privet, beetroot, elderberries, golden currant, black currant (young leaves and flowers), Elea gnus, peony, poppy, black radish, rocket salad, rape, mustard, cabbage (seeds), beet (transplants), common flax, rhubarb, cucumbers, watermelons, melons, pumpkin, ambary hemp, cotton, castor-oil plant, strawberries, holy clover, peas (leaves and sprouts), clover, vetch, beans, soybeans, haricot, alfalfa, gram chick-peas, sunflower, safflower, tomato, daisy, tulip, ears of rye, wheat, barley, panicles of millet, corn and other plants (Rozova, 2011; Chernii, 2011).

The population density of the main pest species of oil producing cabbage crops on the host plants as reservoirs at the researched stations in 2011–2014 is presented in Tables 1 and 2. The research has shown that among all host plants as reservoirs dandelion (*Taraxacum officinale* Wigg.) and caustic buttercup (*Ranunculus acris* L.) are the first plants that appear in spring. These species of plants are the typical representatives of meadow vegetation. Dandelion is also spread along the highways and around the perimeters of the fields, but buttercup only occurs on the meadows under the conditions of high humidity. Their main role is to be the host plants as reservoirs for the insects that feed on the pollen of flowers; these insects are the rape blossom beetle and rose chafer. These plants begin to bloom in late March, but feeding of the cruciferous fleas has not been noted on them.

Other five plant species, namely field mustard (*Sinapis arvensis* L.), hedge mustard (*Sisymbrium Loeselii* L.), tansy mustard (*Descurainia Sophia* (L.), Webb. ex Prantl.), yellow rocket (*Barbarea vulgaris* R. Br.) and common shepherd's purse (*Capsella bursa-pastoris* Moench.) are the plants of the Brassicaceae family and serve as a forage base for the specialised cabbage pests and multi-faceted pests. They can be found at two other investigated stations: on the roadsides of highways and along the perimeters of the fields.

In early April we have found the rape blossom beetle and rose chafer on the flowering plants of buttercup and dandelion. The imagoes of these pests' species feed on the pollen of flowers, stamens, and pistils. Caustic butter cup only occurred on the meadows; its population density during the years of the research ranged from 16 to 29 plants/m². On the average each plant had 0,2-0,4 specimens of the rape blossom beetle and rose chafer (Tables 1, 2). Dandelion occurred at all three investigated stations. On the meadows its population density was 22-29 plants/m², along the perimeters of the fields it was 14–18 plants/m², and on the roadsides of highways it was 13–18 plants/m². The population density of the rape blossom beetle ranged from 1,9 specimens/plant on the roadsides of highways to 3,6 specimens/plant on the meadows, and that of the rose chafer was 0,3-0,8 specimens/plant.

Table 1
Population density of main pests of oil producing cabbage crops on host plants as reservoirs at researched stations of Eastern Forest-Steppe of Ukraine in 2011–2012

Variant		Year of research																
		2011						2012										
		population density at station, pieces/m ²		pests population density, specimens/plant		population density at station, specimens/plant		Phyllotreta spp.		Meligethes aeneus F.		Eurydema spp.		Epicometis (Tropinota) hirta Poda.				
<i>Taraxacum officinale</i> Wigg.	stations																	
	meadows	22	0	2,6	0	0,4	25	0	3,1	0	0	0,6						
	roadsides of highways	15	0	2,2	0	0,3	13	0	1,9	0	0	0,5						
	fields	16	0	2,3	0	0,3	18	0	2,8	0	0	0,6						
	perimeters	29	0	0,2	0	0,3	24	0	0,4	0	0	0,4						
<i>Ranunculus acris</i> L.	meadows																	
	roadsides	0	0	0	0	0	0	0	0	0	0	0						
	highways																	
	fields	0	0	0	0	0	0	0	0	0	0	0						
	perimeters	0	0	0	0	0	0	0	0	0	0	0						
<i>Sinapis arvensis</i> L.	meadows																	
	roadsides	3	15,3	5,2	2,1	0,1	2	14,2	4,8	2,6	0,1							
	highways																	
	fields	4	18,5	5,4	2,0	0,1	2	20,1	5,1	2,3	0,1							
	perimeters	0	0	0	0	0	0	0	0	0	0	0						
<i>Sisymbrium Loeselii</i> L.	meadows																	
	roadsides	4	14,2	4,1	2,4	0,1	4	13,8	3,4	1,7	0,1							
	highways																	
	fields	4	16,8	4,3	2,4	0,1	3	19,9	3,7	2,1	0,1							
	perimeters																	

<i>Descurainia Sophia</i> (L.) Webb. ex Prantl.	meadows	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	roadsides of highways	3	7,6	1,6	1,4	0,1	4	5,4	1,1	1,8	0,1							
	fields perimeters	3	7,8	1,5	1,4	0,1	3	6,3	1,3	2,6	0,1							
<i>Barbarea vulgaris</i> R.Br.	meadows	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	roadsides of highways	6	17,1	6,1	1,8	0,2	5	17,4	9,1	2,8	0,1							
	fields perimeters	7	19,4	5,3	1,9	0,2	8	23,2	12,3	3,2	0,2							
<i>Capsella bursa-pastoris</i> Medic.	meadows	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	roadsides of highways	18	0,2	0	0	0	15	0,1	0	0	0							
	fields perimeters	17	0,4	0	0	0	13	0,6	0	0	0							

Table 2

Population density of main pests of oil producing cabbage crops on host plants as reservoirs at researched stations of Eastern Forest-Steppe of Ukraine in 2013–2014

Variant	plants species	stations	Year of research															
			2013						2014									
			population density at station, pieces/m ²	<i>Phyllotreta</i> spp.	<i>Meligethes aeneus</i> F.	<i>Eurydema</i> spp.	<i>Epicometis (Tropinota) hirta</i> Poda.	pests population density, specimens/plant	population density at station, pieces/m ²	<i>Phyllotreta</i> spp.	<i>Meligethes aeneus</i> F.	<i>Eurydema</i> spp.	<i>Epicometis (Tropinota) hirta</i> Poda.	pests population density, specimens/plant				
<i>Taraxacum officinale</i> Wigg.	meadows		28	0	2,9	0	0,6	29	0	3,6	0	0,8						
	roadsides of highways		18	0	2,3	0	0,5	15	0	2,8	0	0,6						
	fields perimeters		14	0	2,6	0	0,4	17	0	3,1	0	0,8						

<i>Ranunculus acris</i> L.	meadows	16	0	0,3	0	0,4	18	0	0,2	0	0,3
	roadsides of highways fields perimeters	0	0	0	0	0	0	0	0	0	0
	meadows	0	0	0	0	0	0	0	0	0	0
<i>Sinapis arvensis</i> L.	roadsides of highways fields perimeters	2	12,1	3,3	2,1	0,3	3	10,7	3,1	2,2	0,3
	meadows	0	0	0	0	0	0	0	0	0	0
	roadsides of highways fields perimeters	3	13,3	3,7	2,2	0,3	2	12,5	3,3	2,4	0,4
<i>Sisymbrium Loeselii</i> L.	meadows	0	0	0	0	0	0	0	0	0	0
	roadsides of highways fields perimeters	5	10,4	2,2	2,3	0,1	6	9,2	1,7	2,1	0,2
	meadows	6	11,7	2,6	2,5	0,2	6	9,8	1,9	2,2	0,2
<i>Descurainia Sophia</i> (L.) Webb. ex Prantl.	meadows	0	0	0	0	0	0	0	0	0	0
	roadsides of highways fields perimeters	3	5,6	0,9	1,6	0,1	3	4,4	0,7	1,3	0,1
	meadows	4	5,8	1,2	1,7	0,1	3	4,9	1,0	1,4	0,1
<i>Barbarea vulgaris</i> R.Br.	meadows	0	0	0	0	0	0	0	0	0	0
	roadsides of highways fields perimeters	6	15,3	4,2	1,6	0,4	6	13,1	3,3	1,7	0,5
	meadows	7	17,1	3,1	1,9	0,4	10	18,3	4,6	1,8	0,6
<i>Capsella bursa-pastoris</i> Medic.	meadows	0	0	0	0	0	0	0	0	0	0
	roadsides of highways fields perimeters	12	0,1	0	0	0	16	0,1	0	0	0
	meadows	15	0,2	0	0,1	0	14	0,3	0	0,1	0

This fact makes it possible to suggest that most rape blossom beetles hibernate in the ground litter in the areas close to the meadows (Tables 1, 2).

Field mustard grows on the roadsides of highways (2–3 plants/m²) and along the perimeters of the fields (2–4 plants/m²). It was populated by all the investigated pest species. The population density of the cruciferous fleas on this weed species ranged from 10,7 to 20,1 specimens/plant. With the beginning of budding the rape blossom beetles and the cruciferous bugs began to populate the plants. The population density of the rape blossom beetle reached 3,1–5,4 specimens/plant, and that of the bugs was 2,1–2,6 specimens/plant (Tables 2.1, 2.2). In the flowering phase the population density of the rose chafer was about 0,1–0,4 specimens/plant (Tables 1, 2).

Hedge mustard is found on the roadsides of highways and along the perimeters of the fields. Its average population density is about 3–6 plants/m². All the investigated species of pests were noted on this plant.

The population density of the cruciferous fleas ranged from 9,2 to 19,9 specimens/plant. The rape blossom beetles, and the cruciferous bugs began to populate the plants at the beginning of the budding phase. The population density of the rape blossom beetle ranged from 1,7 to 4,3 specimens/plant, and that of the bugs was 1,7–2,5 specimens/plant. During the flowering phase the population density of the rose chafer was within the limits of 0,1–0,2 specimens/plant (Tables 1, 2).

Tansy mustard is found on the roadsides of highways and the outskirts of the fields. At the given stations the population density of this species of weed was 3–4 plants/m². Due to its small leaves and smaller size of the flowers tansy mustard is less populated by the cruciferous fleas, rape blossom beetle and rose chafer. The average population density of the cruciferous fleas was 4,4–7,8 specimens/plant. At the beginning of the budding phase the plants are populated by the rape blossom beetles and cruciferous bugs. The population density of the rape blossom beetle ranged from 0,7 to 2,6 specimens/plant and that of the bugs was 1,3–2,6 specimens/plant. The population density of the rose chafer in the phase of flowering was no more than 0,1 specimens/plant (Tables 1, 2)

Yellow rocket is one of the most common weeds from the Brassicaceae family. Along the highways and the perimeters of the fields we have noted the density population of yellow rocket at the level of 5–10 plants/m². The highest population density of the cruciferous fleas was noted on yellow rocket; it was from 13,1 to 23,2 specimens/plant. The rape blossom beetle populated yellow rocket most often in comparison with all the investigated weeds. Its population density ranged from 3,1 to 12,3 beetles per plant, and the population density of the bugs reached 1,6–3,2 specimens/plant. In the flowering phase the rose chafer also feeds on yellow rocket; its population density was 0,1–0,5 specimens/plant (Tables 1, 2).

Common shepherd's purse was found on the roadsides of highways and along the perimeters of the fields with a population density of 12–18 plants/m², which is 3,0–3,5 times higher in comparison with other weeds from the Brassicaceae family. However, we observed feeding of the cruciferous fleas on shepherd's purse with an average beetle population density of only 0,1–0,6 specimens/plant (Tables 1, 2).

This can probably be explained by the fact that the leaf rosette of shepherd's purse lies on the surface of the soil and is always covered with dust; this fact may not attract the insects and prevents them from feeding (Tables 1, 2).

Conclusions. 1. The host plants as reservoirs for the dominant pests of the oil producing cabbage crops in 2011–2014 were dandelion, caustic buttercup, field mustard, hedge mustard, tansy mustard, yellow rocket and field shepherd's purse. The largest number of species of host plants as reservoirs was found on the roadsides of highways and along the perimeters of fields (6 species) and on the meadows (2 species).

2. The cruciferous fleas, rape blossom beetles and cruciferous bugs visited such crops as field mustard, hedge mustard and yellow rocket most often.

3. Field shepherd's purse was the least significant among the identified host plants as reservoirs. Only a small amount of the cabbage fleas fed on this crop. This fact can be explained by the small white flowers that do not attract the rape blossom beetle and rose chafer as well as by a ground flat leaf rosette which is always covered with dust and prevents the fleas and bugs from feeding.

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