SPECIFICS OF PROJECT MANAGEMENT IN THE CONTEXT OF COMPETITIVE ADVANTAGE, SUSTAINABLE DEVELOPMENT, DECENTRALIZATION AND ECONOMIC SECURITY

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Project management is undoubtedly necessity in today's management conditions. The unstable and changeable environment of today dictates that organizations need to find new and untypical ways of managing projects. Primarily, they must meet the criteria of flexibility and willingness to change, but at the same time - be clear and consistent.

A project management methodology is a clearly defined and scientifically proven combination of logically related practices and methods that enable effective planning, implementation, monitoring and control, and bringing a project to successful completion [5; 7].

The right methodology, properly chosen and rigorously followed, provides a solid guarantee that the project work will be completed on time, within budget and according to specifications. There are various methods in project management that can be used in different types of project management. In general, they can be divided into traditional and modern approaches (agile).

The most common modern project management methodologies include the following: RMVOC; ISO 21500; PRINCE2; SRM; SSRM; Six Sigma; Scrum. Lets analyze their advantages and disadvantages (Table 1).

The economic organization of the country looks at the coexistence of three main sectors - public, private and third. The third sector consists of non-profit organizations working in the gaps left unanswered by the other two.

In order to carry out their activities, non-profit organizations» acquire ownership of funds and other property transferred to them by their founders, members or by the State, acquired from admission and membership fees, donated by citizens, enterprises, institutions and organizations, as well as property acquired from their own funds or on other grounds not prohibited by law» [1].

Table 1

Advantages and disadvantages of project management methodologies [9, 10]

Methodology	Advanteges	Disadvantages
RMVOC	The most elaborate; universal; methodology, a considerable amount of documentation detailing the algorithms for the application of project management tools	Difficult to implement methodology; includes many generalised characteristics
ISO 21500	Ability to integrate with other ISO standards;, more accessible and simple methodology	No guidelines on the management of projects docking, programmes and project portfolios
PRINCE2	Attractions to knowledge consolidation; Using the project product structure as a basis for project planning	Difficulty in obtaining up-to-date documentation
SRM	Detailed time planning; clear control of the project work by the schedule	Complication of modifications to the timetable (need for a complete rescheduling of hours)
SRRM	Reducing the risk of the project not being completed on time and within the planned budget	The need to extend the project realization time and reserve resources through the creation of relevant buffers
Six Sigma	Substantive minimisation of deviations project characteristics of realization of project, improving the quality of project management	The methodology is more adapted to the management of project product defects, while the management of parameters of quality of project solution is complicated by the need for a substantial amount of statistical data
Scrum	Practical methodology; customer-orientation; simplicity; time and cost savings in work coordination	Inability to plan; increased costs for recruitment, training and motivation

Despite on the name of the organizations, which emphasizes the peculiarity of the lack of profit as a mission, it is important to note that, according to the law [8], non-profit organizations have the right to make a profit for their activities.

This is necessary to ensure their sustainability as well as their ability to invest and achieve their key objectives.

A non-profit organization is thus very similar in its legal status to a business organization. As a business structure, it is characterized by freedom and autonomy in such matters as: the shaping of activities program, selecting clients, attracting material and technical human and informational resources. At the same time, it has significant differences from a business organization, the main one being the absence of the objective of making a profit in order to redistribute it among its members.

As non-profit organizations seek to fill social needs that traditional companies cannot satisfy - they need to adopt new approaches to solve the challenges. In turn, effective project management presents a high potential for these organizations to gain a unique competitive advantage.

In fact, the nonprofit sector is becoming increasingly dependent on project realization to achieve its strategic goals. Faced with the problem of using limited resources to achieve ambitious goals, nonprofit organizations often turn to the management practices of the business sector. However, adapting the processes used in the business sector without study their effectiveness can have detrimental consequences.

Unlike businesses, non-profit organizations start with a mission, i.e. a clear definition of the following questions: Who are we? Why do we exist? What are we doing? For whom? They do not have financial assets, but only manage what their funders have entrusted to them.

Public and communal organizations start from a desire to satisfy needs, not from an organizational structure - this is the fundamental difference between them. In this regard, the role of professional management of an organization and, in particular, its resources, increases considerably [4].

All project organization activities within non-profit organizations go through four stages (Fig. 1).

The general technology of project management includes: formulation of project objectives, project justification, development of project structure; identification of the scope and sources of funding; costing; timing of project activities, project implementation schedule calculation and allocation of resources; selection of project team; quality management; risk management; project realization organization, preparation and signing of contracts; communication with customers and consumers of the project products; monitoring [3].

It is similar regardless of the sector of activity.

However, the difference in project management in the commercial and non-commercial sectors should be identified according to the main criteria (Table 2).

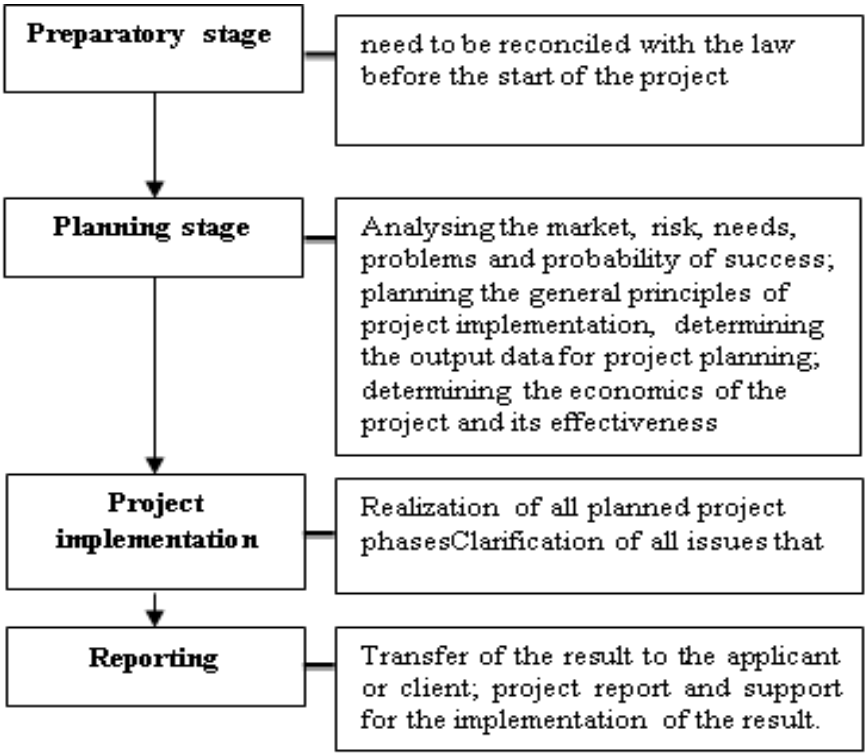

Fig. 1. Non-profit organizations go through four stages

Table 2

Differences in project management in the commercial and non-commercial sectors [3; 6; 9]

Criterion	Commercial sector	Non-profit sector
Responsibility to	Shareholder / Top Manager	Volunteers, donors, the public, clients, partners
Human resources	Professional paid staff	Volunteers, professional staff (often underpaid)
Income	Based on profit	Contributions, grants, budget, profit from non-profit business
Time resources	Mostly constant	Changeable
Knowledge base	Purposeful	Changeable

Stakeholders of non-profit organizations projects are also different from those of business structures projects. There is a denoted specificity

in the selection of the main participants in the project. In the first case, the initiator is usually the organization itself. The client can be a local authority, a business entity, a higher executive authority or others. The client has requirements regarding the end result. The project of a public organization is usually financed by sponsors, whereas enterprises can implement projects on their own account. Individuals, charitable foundations and other institutions may act as sponsors. The project manager coordinates the activities of participants and staff [2].

To manage projects effectively, non-profit organization managers should ask themselves and the project team the following questions:

Is the project good for society?

Do you have all the tools you need to get the project?

Does the team have the necessary skills?

Are the tasks and responsibilities of each team member clearly defined?

Which financial and non-financial risks may arise in the project?

Is the scope of the project defined correctly?

Does the project contribute to self-sufficiency?

Do all stakeholders have the necessary information about the project?

Does the project adhere to the legal framework?

Does the project creates a sense of involvement?

Because projects link the present and future of organizations, they have the potential to transform today's goals into realistic future outcomes. The ability to ensure sustainability of programs or projects is a critical issue at all levels and in all environments. Unfortunately, when projects are phased out due to the expiry of their funding, the hard-won improvements may disappear. In order to maintain positive outcomes for society, stakeholders need to understand all the factors that contribute to project sustainability. By being aware of these critical factors, stakeholders can strengthen their capacity for sustainability and calculate their efforts in a way that ensures long-term success [2].

The concept of sustainable development in the context of project management has evolved steadily over the past decade, illuminating different perspectives on the foundations on which project management processes and procedures in organizations should be based. The arguments presented by academics point to the existence of different ideas on the foundations of sustainable development in the context of project management. As no study has lumped the different principles under one framework, we suggest that all eight principles identified in the literature should be considered equally.

Domestic organizations can face numerous barriers in implementing sustainability principles at the tactical level of a project. So, further research can be based on assessing and finding ways to eliminate these barriers and developing prescriptions, and recommendations to overcome them.

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THEORETICAL ASPECTS OF FINANCIAL SECURITY OF THE ENTERPRISE: ESSENCE, COMPONENTS, THREATS

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In modern economic conditions, the financial results of the enterprise are determined primarily by its financial capabilities. With the further deepening of the economic crisis in the country and in the world, the survival of economic entities is becoming the highest priority of the top management.

The statistics of unprofitability of Ukrainian enterprises is quite disappointing; the number of unprofitable enterprises in the total number is 42.3%, which is a very high figure, which shows that almost every second enterprise has insufficient amounts of financial support. The number of bankrupt enterprises is growing; such data indicate the financial state deterioration of enterprises. Therefore, ensuring proper financial security of enterprises in the current economic environment should become a priority of financial strategy and business practices.

Sustainable development of the enterprise is impossible without a reliable system of its financial security. The company's ability to grow steadily, efficiently and actively conduct business is determined by its resistance to internal and external negative factors (threats) that affect its potential, which characterizes the financial security of the enterprise. This fact encourages entrepreneurs to pay special attention to the development and implementation of measures to ensure the financial security of enterprises and organizations.

In much of the scientific work, the concept of financial security is considered in the context of economic security, however, it should be noted that this concept should have an independent definition. The issue of studying and ensuring financial security is covered in the works of both domestic and foreign scientists, in particular I. Blank [1], T. Vasyltsiv [2], M. Yermoshenko, K. Horyacheva [3], L. Donets [4], T. Ivanyuta [5], O. Ponomarenko [6] and others.

Scientific views on the concept of financial security of the enterprise differ. Thus, N. Poida-Nosyk [7, p. 168] understands under the concept of financial security a complex characteristic of the system that reflects the level of protection of financial interests of the business entity in a dynamic

environment from the negative impact of external and internal financial threats and its ability to maintain financial stability and balance through effective use of financial potential to ensure sustainable growth in the future. According to Yaryshko O., Tkachenko E. [8], financial security - is a component of economic security, which consists in ensuring the efficient use of enterprise resources under the influence of external and internal threats and aimed at achieving financial equilibrium of the enterprise in the long and short term. Mogylina L. [9, p. 5-6] keeps the mind that financial security is a dynamic financial condition of the enterprise, characterized by stable protection of its priority financial interests from identified endogenous and exogenous threats and the ability to ensure the realization of its financial interests, mission and objectives, as well as its own development of sufficient financial resources.

We can conclude that most authors consider financial security as an integral part of economic security of the enterprise. According to another approach, the authors consider the financial security of the enterprise as a state that protects financial interests from identified real and potential dangers and threats that have external and internal manifestations, financial balance, solvency, stability and liquidity.

Based on the analysis, we can conclude that in most cases the concept of «financial security» is interpreted as a state, security, process, set of measures and methods, a set of certain properties and conditions, as part of economic security.

Based on the above, the financial security of the enterprise can be understood as its financial position, which is primarily characterized by the balance and quality of the set of financial instruments, technologies and services used by the entity; secondly, it is resilience and resistance to internal and external threats; third, it is the ability of the financial system of the entity to ensure the realization of its financial interests, goals and objectives with sufficient financial resources.

In our opinion, the concept of financial security of the enterprise is a synthesizing concept that combines such separate elements of such categories as «economic security» and «enterprise finance», which are sufficiently studied in the modern scientific literature, are characterized by a sufficient methodological basis that can be used in the study and research of the concept of «financial security of the enterprise». It is worth noting a thorough study of I. Blank [1], which highlighted the key characteristics of the concept of «financial security of the enterprise»:

• first, financial security is an element of economic security of the enterprise;

• second, financial security is a set of qualitative and quantitative indicators that characterize the financial condition of the enterprise, which

characterizes the level of its financial security and stability;

• third, the object of financial security of the enterprise is a set of its most important interests that require protection in the process of financial and economic activities;

• fourth, the formation of the financial security of the enterprise is influenced by external and internal factors;

• fifth, for each company the level of qualitative and quantitative parameters that characterize the protection of its financial interests will be different and depends on the financial strategy and financial philosophy of doing business;

• sixth, an important area of financial security is the creation of financial preconditions that are the basis for current and future development of the enterprise.

Based on the above mentioned characteristics, we can substantiate the conditions for ensuring the financial security of the enterprise:

• high level of coordination of financial interests of the enterprise with the interests of the external and internal environment;

• the presence of a stable financial system at the enterprise, which is able to ensure the realization of financial interests, goals and objectives;

• balance, consistency and complexity of financial instruments and technologies used by the enterprise;

• ensuring the dynamic and systematic development of the financial system of the entity.

The analysis of scientific sources on the researched subject gives the opportunity to work out the classification of approaches to definition of concept «financial security of the enterprise» (Fig. 1).

In our opinion, the features that characterize the concept of «financial security of the enterprise» are important, they include such concepts as financial condition, financial resources and interests, the degree of their protection, the level of financial stability and development of financial relations.

The financial security of the enterprise includes a number of categories, in particular:

1. The object of financial security, which means its financial activities, the security of which must be ensured.

2. The subjects of financial security are directly the heads of the institutional and middle level of management, as well as employees, in accordance with their positions and responsibilities.

3. The subject of financial security of enterprises means the activities of financial security entities, which involves the implementation of specific measures to ensure financial security, and these measures should be aimed at specific objects of financial security.

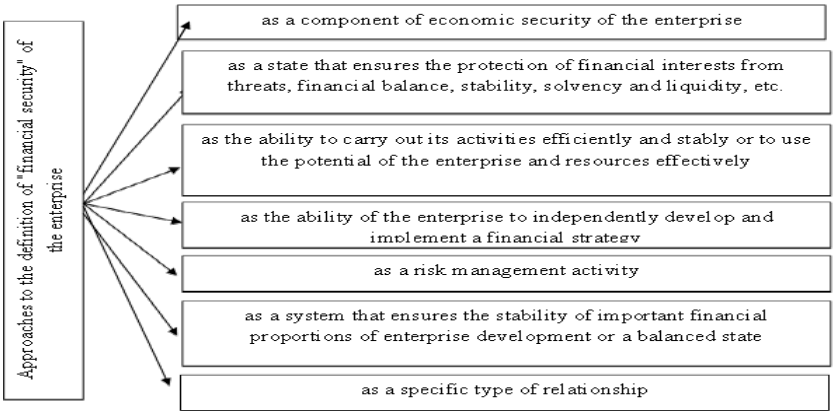

Fig. 1. Classification of approaches to the definition of «financial security of the enterprise»

4. The purpose of ensuring financial security is to constantly maintain a state of financial activity, characterized by balance, consistency and quality of all financial instruments, services, technologies used by the enterprise; in ensuring resilience to internal and external threats; the ability of the financial system of the enterprise to ensure the realization of its financial interests, goals and objectives with a sufficient level of financial resources.

5. Risks of financial security of the enterprise are dangers which can be connected with failures of certain actions taken at emergence of danger; the emergence of a certain unfavorable situation that hinders the implementation of the mission, goals, objectives and interests of the enterprise; an opportunity or situation that could lead to failure or significant deterioration of the enterprise to bankruptcy.

6. Threats to the financial security of the enterprise - a concept that is close to the danger and is one of its forms and is manifested as a danger that is at the stage of potential transition to reality; and the threat is considered as a set of reasons that pose a danger to the company and its interests, hinder the achievement of goals and mission.

Thus, threats to the financial security of the enterprise are forms of danger and factors that complicate the conduct or hinder economic activity, can lead to a violation of stability, and in difficult cases may cause the cessation of economic activity as a result of loss of solvency and profitability.

All threats to the financial security of the enterprise can be classified on certain grounds, including:

- by source: external, internal;
- by the degree of predictability: force majeure threats (circumstances), threats (circumstances) close to force majeure, predictable;

• the degree of complexity and severity of consequences: threats with high severity of consequences, threats with significant severity of consequences, threats with medium severity of consequences, threats with low severity of consequences;

• by subjects: threats from criminal structures, threats from competitors, threats from contractors, threats from their own employees, threats from the state, force majeure threats;

• by objects: threats to labor resources (personnel), threats to material resources, threats to financial resources, threats to information resources;

• by the possibility of implementation: real threats, potential threats;

• by the duration of action: temporary, permanent;

• by frequency of action: single, multiple;

• by the form and amount of losses: threats, the implementation of which causes direct damage, threats, the implementation of which will lead to lost profits.

The external threats to the financial security of the enterprise include the following: speculative transactions with corporate securities (aggressive acquisition of shares); high level of financial liabilities of the enterprise; low level of capital market development and imperfection of the legal framework for regulating the economic activity of enterprises; economic instability and financial crisis; imperfection of the economic policy of the state; price and non-price competition; illegal actions of competitors; the influence of competitors on public authorities and the possibility of lobbying their own interests; industrial espionage; raiding and illegal actions by criminal structures. Internal threats to financial security often include the following: disclosure or leakage of trade secrets; low level of qualification of employees; problems in the activities of the economic security service at the enterprise; inefficient planning of financial resources and their management.

The greatest impact on the activities has external threats, because for the company they are almost uncontrolled, it is appropriate to classify them according to the degree of unpredictability: force majeure (natural disasters, man-made disasters, etc.), and circumstances close to them, such as embargo, blockade, a sharp change in the exchange rate; circumstances that can be foreseen.

Objective threats to financial security are understood to be those that are caused by environmental factors and do not depend on the management decisions made at the enterprise, ie those that are external: economic, political, and religious. Subjective threats most often include those that are associated with conscious or unconscious harmful actions of staff, partners, suppliers, competitors.

Modern types of threats to the financial security of the enterprise include greenmail, raiding, competitive intelligence, carding.

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ASSESSMENTS OF BUSINESS ACTIVITY AND EFFICIENCY OF THE ENTERPRISE IN THE SYSTEM OF ECONOMIC SECURITY

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Increasing the efficiency of economic activity of each enterprise has a positive effect on the state economy, the formation of local budget revenues, the level of welfare of the population. Therefore, today there is a very important problem of determining directions for increasing the efficiency

of the enterprise, among which the efficiency of production and economic activity should be the main part of developing a management project measures for the development of the enterprise. In this regard, the issue of developing a scientific base for managing the efficiency of production and economic activity of the enterprise becomes relevant.

Due to the fact that the concept of efficiency characterizes the ratio of different aspects: result and cost (cost-effectiveness), result and goals (effectiveness), result and needs (optimality), the ratio is currently proposed to be considered as parameters of efficiency. The value of each indicator determines the degree of intensity of a certain property of the result, which is important in terms of the established purpose (goals, interests, costs).

The efficiency of production and economic activity of the enterprise should be determined in order to solve two main tasks. First, to identify and assess the level of use of particular types of costs and resources, as well as the economic efficiency of production. Secondly, for economic justification and selection of the best production and economic solutions (introduction of new equipment, technology and organization of production, labour and management, investment options, etc.) [4]. The most important characteristics of production and economic activity, such as integrity, multidimensionality, dynamism and the correlation of its various aspects are reflected in the category of efficiency.

The sphere of business activity of the enterprise includes the processes of production, reproduction and circulation. Production processes ensure the implementation of tasks of preparation and development of the realization process of other services, maintenance of the production process. Work on the renewal of fixed assets, expansion and technical re-equipment of enterprises, training and retraining is related to the processes of reproduction. Circulation processes include logistics and realization of services. These processes are provided by the relevant subsystems of production and economic activity. Therefore, the significance of the problem of efficiency of production and economic activity of the enterprise necessitates the need to consider and analyze the level and scale of efficiency at the level of all subsystems of production and economic activity. This condition, according to the author, should characterize the systemic part of efficiency.

In addition, attention should be paid to the importance of ensuring the effectiveness of measures aimed at achieving environmental goals of the enterprise. There is a close, often positive, connection between these aspects: for example, minimizing the company's environmental impact has a direct positive effect on improving the quality of life and health strengthening of not only the company's staff but also the local population. That is, the socio-ecological component of production and economic activity is reflected in the conscious and motivated participation in a variety of preventive

environmental damage and irrational use of nature measures, in ensuring public, social and environmental benefits.

These conditions allow us to identify the main components of the formation of the efficiency of production and economic activity of the enterprise:

• efficiency of subsystems of enterprise activity, which is determined by the obtained results, which reflect the achievement of the goals of development of the main subsystems of enterprise activity and competitive success in the market;

• efficiency of use of certain types of resources;

• socio-ecological efficiency, which is characterized by the level of fulfillment of social and ecological obligations of the enterprise.

All types of efficiency together make a synergistic efficiency of production and economic activity of the enterprise. The presented model characterizes the efficiency of production and economic activity of the enterprise as a concept that reflects an independent process in the economy of the enterprise. It is the efficiency by the established criteria of economy, effectiveness and optimality determines not only the result but also the feasibility and usefulness of implementing measures for the development of the enterprise and achieving certain results of production and economic activity. On the basis of the generalization of the above, it is proposed to determine the efficiency of production and economic activity of the enterprise as a complex characteristic of its development, which in accordance with the criteria of effectiveness, economy and optimality reflects the level of goals achievement of production and economic activity. The implementation of controlling of the production and economic activity of the enterprise involves the formation of a system of indicators. The presence of a reasonable system of controlled indicators is an important component of success for the organization of effective controlling, which will allow you to diagnose the current state of the enterprise and its prospects for the future objectively, determine the size and direction of change, identify growth factors, develop plans or forecasts for improving the processes of use and reproduction of resources.

In modern management theory and practice, indicators are the basis for analysis, evaluation, control of the effectiveness of the enterprise activity, because it is on their basis to make management decisions. The versatility and complexity of different characteristics of the economic condition of the enterprise determines the presence of a large number of indicators. At the same time, none of them can be universal for controlling, calculating which we could unambiguously draw a conclusion regarding the activity of the enterprise.

According to Avdey O.K., the key criteria for selecting indicators for

the system are the following: compliance with targets, flexibility, logical integrity, the presence of clearly defined critical values, availability of information base for calculations, minimization of time and financial costs for calculations [1, p. 142]. Instead I. I. Stets believes that forming a system of indicators that are considered as parameters for assessing the production and economic activity of the enterprise should comply with the following requirements: indicators should reflect the goals within the management task; the system of indicators should reflect the functioning of key subsystems of the enterprise; suitability of the system of indicators for measuring the results of activities and implementation of corrective measures; comparability of indicators in the system; the clarity of the algorithm for calculating indicators [6, p. 187]. The author does not define that the indicators in the system should complement each other, not duplicate, be characterized by a high degree of analyticity and ensure effective management decisions in the future. Given the ambiguity of views and generalizing the approaches of leading experts, it is advisable to follow the principles in forming a system of indicators, which are presented in table 1.

Table 1

Principles of building a system of indicators of business activity of the enterprise

The name of the principle	The content of the principle
complexity	comprehensive characteristic of different spheres of the enterprise activity
systematic	orderliness of indicators, because the enterprise is considered as a system
representativeness	sufficiency of a set of indicators in the absence of duplication
certainty	use of reliable sources of information
comparability	summary of multidirectional in action indicators and harmonious combination
informativeness	reflection of the real financial condition of the enterprise
optimality	compliance with a certain ratio between absolute and relative indicators
controllability	the ability to influence the structure of the system of indicators in the presence of the need for such actions
adaptability	the ability to easily adjust the structure of the system of indicators in view of the change of activity direction and goals of the enterprise

timeliness	indicators should reflect the state of the enterprise in real time to prevent risk situations
clear direction	indicators must meet the needs of a particular group of consumers
positive effect	the positive result from the use of the system of indicators should outweigh the possible negative consequences and costs of its operation

Source: created by the authors by [5; 7; 9]

Based on the analysis of existing approaches to the selection of systems of indicators, as well as considering the radical changes in the environment and management structure there are basic requirements of the selection of indicators and the formation of the system of controlled indicators:

1. Indicators should reflect the efficiency of use of basic resources and the enterprise as a whole.

2. Indicators should be as simple as possible and not require significant consumption of time and resources to maintain them. It is necessary to compare the costs needed for the development and operation of this system and its usefulness in the future.

3. The number of main indicators should not be too large, because attention is distracted and there are difficulties in presenting them.

4. For each indicator the desired or recommended value of measurement and subsequent evaluation of the results should be specified.

5. A system of indicators should be calculated and submitted to management within a clearly defined timeframe.

6. Methods for calculating the system of indicators should not be changed for a long enough period to ensure their comparability.

Most economists believe that the economic activity of the enterprise is a complex system that includes its own set of individual subsystems that ensure its proper functioning. Analyzing different approaches to the allocation of the enterprise subsystems, we concluded that it is advisable to allocate the following subsystems to control the production and economic activity of the enterprise: production, financial, personnel, marketing, innovation and investment subsystems, because work performing within each of them is a main condition for enterprise surviving.

The main subsystem of the enterprise is the production one, because it is characterized by a high degree of influence on the production and economic activity of the enterprise and reflects the efficiency of fixed assets use in the process of creating finished products or providing services. It reflects the maximum production volumes in terms of maximum use of available resources.

The implementation of controlling over production and economic

activity is provided by the interaction with the management functions, as controlling supports them with information. The scheme of the forming process of the controlled indicators system of production and economic activity is presented in Fig. 1.

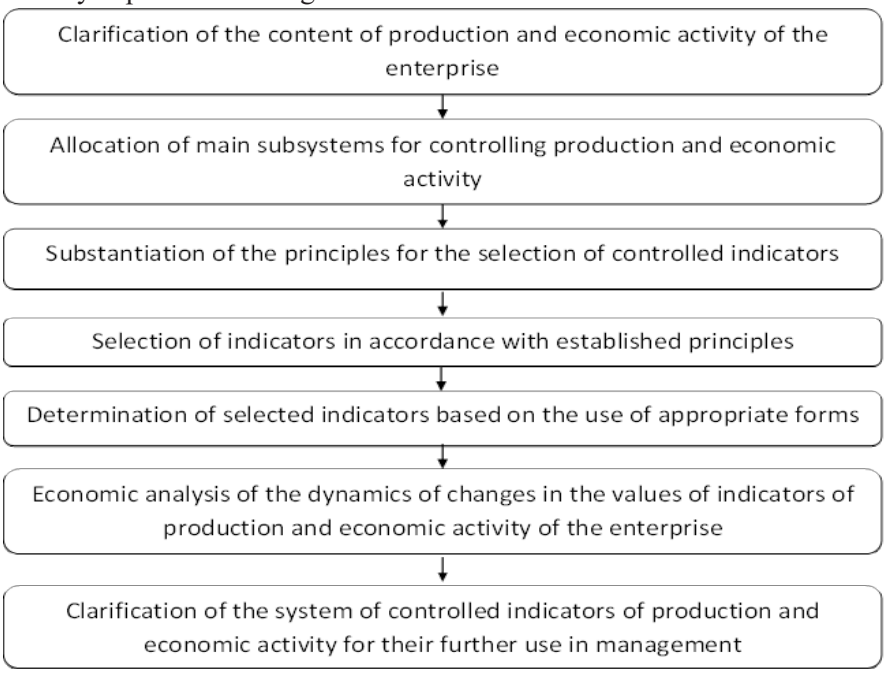

Fig. 1. The scheme of the forming process of the system of indicators for controlling the production and economic activity of the enterprise

Source: created by the authors by [9]

The personnel subsystem ensures personnel management, is characterized by an average degree of influence on the activity of the enterprise, as well as its operation is provided by methods and means aimed at organizing and directing to achieve the goal of personnel activity [8, p. 187].

The financial subsystem is a providing one and is characterized by a high degree of influence on the activities of the enterprise, because it is responsible for the movement of financial resources intended for the implementation of functions and tasks of the enterprise in accordance with the developed strategy. Within the framework of this system the issues related to the availability of own financial resources or the possibility of attracting from abroad are regulated [5, p. 384].

After a thorough analysis of leading experts in the field of economic analysis and management, in particular by the frequency of use of individual

indicators within each of the identified subsystems, we found that controlling production and economic activity should be based on the following partial indicators (table 2).

Table 2

Indicators for assessing the subsystems of production and economic activity of the enterprise

Subsystem name	Key indicators of the subsystem
Production subsystem	indicators that reflect the efficiency of resource use, production efficiency
Financial subsystem	indicators of liquidity, financial stability, profitability, business activity, performance of the enterprise in the capital market
Personnel subsystem	indicators of efficiency of forms and methods of work with personnel, labour activity and management of working hours, social and psychological efficiency of work with personnel
Marketing subsystem	indicators of efficiency of strategic marketing management, organization and functioning of marketing service, implementation of tactical marketing programs, functioning of marketing information system
Innovation and investment subsystem	indicators of efficiency of introduction of innovations in production and management processes, introduction onto the market of new goods or services

Source: created by the author by [2; 3; 6]

The marketing subsystem studies the demand and market requirements of the current time and involves a comprehensive analysis of the obtained information to improve the production and sales activities of the enterprise with a focus on the production of competitive products. This subsystem has a high degree of influence on the activity of the enterprise [8, p. 79].

The innovation and investment subsystem determines the conditions for the implementation of innovative activity and options for its providing in order to obtain investment resources. This system is characterized by a high degree of influence on the activity of the enterprise, as it is a kind of generator of ideas and their direct implementer.

This system of indicators of production and economic activity in terms of its main subsystems is sufficiently informative and reflects all aspects of the enterprise activity for effective management with minimal resource costs.

The analysis of business activity within the management system allows to ensure the adoption of relevant management decisions regarding the

search, formation and improvement of the enterprise potential in order to ensure their sustainable economic development and ensure a high level of competitiveness.

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EVOLUTION OF ECONOMIC SECURITY STUDIES OF THE MICROLEVEL

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Economic security studies form one of the directions in security studies overall, coexisting along with other its types, such as environmental security studies, information security studies and so on.

The very definition of "economic security studies" in Ukrainian science is being used to cover the field of knowledge about economic security (of a state, a region, an enterprise). From the standpoint of trinity wholeness and perception of socioeconomic realities as an unstructured and off-structured system [1], economic security studies become a field of knowledge about the nature of economic security in relation to different objects (national economy, region, economic sector, an enterprise) as well as about its sources and preconditions, evaluation and provision. By its constitution, economic security studies can be also understood as a teaching and/or a body of interrelated ideas, a system of knowledge which is holistic but differentiated internally. Within this system, some elements depend on the others, while its very basis rests on a set of statements, notions and categories defined as per certain methodological principles and rules [2].

The status of economic security studies as a separate scientific branch is predetermined by the features which are present in any science [3]:

• compartmentalization of the cognitive objects (economic security, security-providing activities; security object; the system of economic security; security-oriented management and so on);

• interrelatedness of cognitive objects through fixed relations: they are interacting with each other, thus transforming through interaction, and this process becomes the subject matter of science;

• presence of a range of problems, the selection and the contents of which are changing in line with the development of science itself, maintaining a certain consistent legacy at the same time;

• orientation of the research methodology on the solution of the problems that can be determined with precision, using the truth criterion commonly used in science overall;

• the use of the commonly accepted criteria of scientific knowledge;

• availability of the reference empirical basis;

• availability of theoretical knowledge that is peculiar for economic security studies alone. Together these numerous concepts, principles, requirements and preconditions form the theory of science;

• absence of a separate, formal and artificial language that would have been applicable to economic security studies only.

• accumulation of knowledge about the economic security of a state, region, enterprise has caused the accumulation of the vast volumes of knowledge about economic security as such. Various definitions have been used to outline and separate this area of knowledge. For a certain period of time English-based shortened terms have been used to define the area of knowledge about economic security (of a state, region, enterprise), namely:

• ecoseciety (merged from "economic security of society"): the area of knowledge about the preconditions of secure functioning of the

socioeconomic systems and the ways to achieve it [4, p. 3];

• ecosecent (merged from "economic security of enterprises"): the area of knowledge about the economic security at the level of economic entities [4, p. 3; 5];

• ecoseced (merged from "economic security of education"): the area of knowledge about the economic security of educational institutions [6];

• ecoserg (merged from "economic security of a region"): area of knowledge about the economic security at the regional level [7].

However, such merged transliteration of English-based terminology did not find its place in the security studies of other countries, Ukraine in particular. In other languages such terminology loses its essence, thus, research interest to the notions cannot be maintained at a sufficient level.

From the ontological point of view, Ukrainian economic security studies on the microlevel have not stayed still. Its evolution has been taking place in parallel to accumulation of theoretical knowledge about the phenomenon of economic security as well as accumulation of the practical experience concerning security provision at all levels (state, region, enterprise).

Overview of this evolution process would be useful from the standpoint of security evaluation and the related issues. At the same time, we would need to take into consideration the specific features of evolution within Ukrainian economic security studies by their levels.

Accumulation of knowledge within Ukrainian economic security studies was never a linear process. Just like with any other scientific branch, its development was rather dialectical. Therefore, we are able to divide it into the following stages of economic security studies evolution of the microlevel: phenomenological, divergent, convergent-sedimentative.

Table 1 provides the description of the contents and results for each stage in the evolution of Ukrainian economic security studies along with the chronological timeline.

Table 1

Stages in the evolution of the economic security studies of the microlevel

Stage	Contents	Result
Phenomenological, 1992-2000	Economic security was acknowledged as a separate category and a standalone research object. Objects of economic security were distinguished - the state, region, enterprise. However, interpretation of the category was very simplified and even primitive as this was preconditioned by the empirical approach to studying it.	Formation of a new direction in security studies: acknowledging economic security as a phenomenon that requires research; primal formulation of the contents of this notion; outlining the factors of influence on economic security of enterprises.

Divergent, 2000-2010.	Deeper understanding of economic security; first object-oriented research on the topic (economic security of strategic alliances; economic security of enterprises by sectors; economic security of universities); very first studies on the systemic problems of economic security management. Emergence of several approaches to determination of the notion "economic security of an enterprise", each of them having its own empirical, theoretical and methodological grounds. Much more active research on the types of economic security and also on evaluation and provision of economic security at an enterprise level.	Formation of the research fundamentals (a set of initial assumptions, key notions and categories). Identification of new objects of economic security. Implicit manifestation of the attributive nature of the notion "economic security" due to the lack of its explicit interpretation.
Convergent-sedimentative, 2010 - till now	Conceptualizing of the accumulated experience, its formalization. Shaping of the whole picture of economic security on the microlevel through harmonization and generalization of the available study results on the issues of enterprise economic security. Finalizing the explanatory basis, strengthening the methodological basis and conceptualization of all the accumulated knowledge.	
Integrational-pragmatic	Aligning of the already available views on the nature of economic security, its place in the thesaurus of economic science and in enterprise management: explanation of the presence of several approaches to understanding the nature of economic security at the enterprise level from the standpoint of the contextual approach; determination of the attributive nature of the notion "economic security of an enterprise"; formulation and aligning of goals within the system of enterprise economic security; objectivation of the system of enterprise economic security.	Integration of the toolkit used for evaluation, provision and support of economic security; the use of this toolkit as applied to the institutional basis of the enterprise management system.

While the latter is somewhat relative, the contents of each stage is rather

peculiar.

Development of economic security studies on the microlevel in Ukraine has started with the phenomenological stage. On this stage, the very phenomenon of economic security of the economic subjects was identified and the initial vision on enterprise economic security was shaped, both being extremely simplified though (for example, seen as "providing the conditions for keeping the proprietary information safe" [8, p. 69]). Obviously, this was not enough for proper explanation of the nature of economic security. The toolkit to be used for its provision and evaluation was also very poor.

At the divergent stage in evolution of economic security studies of the microlevel in Ukraine notions of the economic security (or a state, region, enterprise) have been actively developing:

• several approaches to interpretation of its contents were singled out - the protective, resource-based, activity-based, etc.; the toolkit to be used for evaluation of economic security and its provision became much more elaborated;

• much more relevant became the research on the type-based notions related to security (the algorithm of their division was described by O.V. Illyashenko in [9, p. 14], including information security, food security and so on. Here appeared the first applied studies of economic security (on enterprises with specific types of activities);

• new objects of economic security were identified (for example, economic security of higher education institutions [10] and economic security of strategic alliances [11]).

Also, at this stage, the notion "enterprise economic security" started to manifest its attributive nature. This manifestation was yet implicit, thus causing the emergence of multiple definitions for this notion. High number of definitions for the notion "economic security of an enterprise" did not get a sufficient explanation at the divergent stage of evolution, therefore, they were often in conflict with each other, thus leading to a substantial contradiction within the categorial toolkit of economic security studies of the microlevel. In its turn, such a competition between the fundamental categories of the economic security studies of the microlevel was not contributing to the formation of a holistic view on its contents.

At the divergent stage, system-shaping studies on economic security became much deeper. Thus, the fundamentals of these studies were practically finalized (as a set of initial assumptions, key notions and categories defined following certain methodological principles and rules). At the same time, this stage of evolution was also suffering from the lack of finality in the explanatory basis of the economic security studies of the microlevel, weaknesses in its methodological basis and also poor conceptuality of the accumulated knowledge which did not explicitly demonstrate the

dependencies between the elements.

Presence of several approaches to understanding the economic security of enterprises, contradictions between these approaches, high number of interpretations of the very notion "economic security of an enterprise", incompleteness in system-building of the economic security studies together have led to the following stage in the development of economic security studies in Ukraine. Following E. Husserl [12], this stage can be called convergent-sedimentative - as the stage of experience "sedimentation", its formalization and creation of a holistic picture of an object/phenomenon under study. Such "sedimentation" has allowed:

- not only aligning the existing approaches to interpretation of the notion "economic security of an enterprise" but also acknowledging the legitimacy of the each by means of the contextual approach [9, pp. 27-34];
- adjusting numerous definitions of the notion "economic security of an enterprise" through determination of its attributive nature [11, pp. 17-20; 9, pp. 21-26], thus getting a holistic view on the nature of enterprise economic security;
- progressing in solving multiple problems related to the system-building of the studies in question [13].

This convergent-pragmatic approach allows having a multivariate view on economic security of an enterprise through explanation of its nature with simultaneous use of the key denotata belonging to several approaches and taking into account the attributive nature of this notion.

For now, it would be too soon to talk about the final results of the convergent-sedimentative stage in the evolution of the economic security studies of the microlevel in Ukraine since we are still going through it.

However, with some degree of probability we can already assume that the next stage in the evolution of the economic security studies of the microlevel, by its contents and orientation, would be an integrative one, and in the pragmatic context: once the general vision on the subject of economic security studies of the microlevel has been formed, and there is a sufficient number of well grounded views on enterprise economic security, along with the developed recommendations concerning the provision and evaluation of enterprise economic security, there would be a need to integrate the toolkit to be used for evaluation, provision and maintenance of economic security at the enterprise level. Till now, the issues of evaluation of the economic security at its microlevel and of its influence on enterprise performance are considered somewhat isolated from the system of enterprise management. Obviously, this isolation is causing, at the very least, inconveniences for enterprise management. Thus, the following stage in the development of the economic security studies of the microlevel should be oriented on overcoming these inconveniences.

Therefore, evolution of economic security studies as a science is taking place following the standard rules applicable to any other science: its development is preconditioned by the actual practices of the society; it is developing as a relatively independent science; it has its own legacy; evolutionary and revolutionary stages in the development are interchanging; it is interacting and is interdependent with other scientific branches, etc.

These development rules demonstrate that economic security studies have already become an independent science. On the one hand, these rules are uncovering themselves in the course of progressive development of scientific knowledge about economic security of various objects. And on the other, they reveal the peculiarities of this scientific system formation, the nature of its relations with other economic theories, formation of its own dependable generalizations and specificity of dialectical relations between its key notions.

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BUSINESS-INCUBATORS AS AN ELEMENT OF THE SOCIAL-ECONOMIC SYSTEM "AUTHORITY-BUSINESS-COMMUNITY" IN THE CONTEXT OF ECONOMIC SECURITY OF UKRAINE

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The high effectiveness of the relations management in the social economic system «authority-business-community» and stimulation of the small and medium-sized businesses become more and more important in the context of creating of the modern democratic and information society in Ukraine and radical modernization of the social-economic system.

One of the ways to fulfill this task is to implement business-incubators as infrastructural mechanism of business support, designed for the long term.

The business-incubators essence, classification and functioning were studied by a number of foreign and domestic authors, such as: Boychenko E.B. [1], Vasilyeva L.M. [2], Vodianka L.D., Goroshovska K.V. [3], Shevchenko O.V., Romanova V.V., Zhalilo Ya. A. [4], Zavadyak R.I., Kopusyak J.F. [6], Mykytyuk O.P. [9], Nemchenko A.B. [11], Pulina T.V., Teslenok I.M., Nosov M.P. [13], Stepanenko V.V. [14, 15] .

However, the role of business-incubators in the social economic system "authority-business-community" has not been adequately studied yet.

Business-incubators help to create small and medium companies, usually of the innovative type. This function is becoming more important, because the enterprises entry into the old and new markets is complicated by the increased internal and external competition. The necessity to develop the processes of business incubation is aimed at supporting and disseminating innovation and it is confirmed by the experience of the world's leading economies [1]. Business-incubators help to attract investment and entry the market of new innovative products [13].

The opinions of different researchers about the essence and main purpose of business-incubators differ, but it is common to say that these organizations are created to help and promote small and medium-sized businesses at both regional and state levels. Such researchers as T.V. Pulin, I.M. Teslenok, and M.P. Nosov noted, that by solving the problems of small and medium-sized businesses, we solve the problems of the region, because the entrepreneurship is the basis of economic and social state and development [13].

One of the priority areas for improving the efficiency of communities' activities is the formation of the strategic vision of the community development. It is done by assessing its weaknesses and strengths, determining competitive advantages, planning social and economic processes in the medium- and long term, foreseeing the possible consequences of the implementation of such goals and objectives [10, p. 6].

Business-incubators should provide the significant assistance in formation of the strategic vision of the community development.

As it is stated in the scientific report of the National Institute for Strategic Studies, the successful further promotion of the decentralization consist in both the promotion of state processes of openness and transparency and the involvement of local communities in these processes [4, p. 119]. We believe that participation in these business-incubator processes will help businesses and local communities to reach a common opinion, find common ground and work together to achieve common results.

Business-incubators will allow creating the effective tools for the budget funds usage that will help to achieve a cumulative effect. Thus, it is possible to create the added value and additional working places, attract investors and provide citizens with educational, medical, social services of high quality [10, p. 6].

The classification of business-incubators is quite complex. There are several different classification criteria. The majority of the domestic researchers [1; 3; 9; 11; 13; 14] adhere to the following classification:

1) based on the approaches of the "companies incubation":

• "classic business incubators" - structures that help new companies at the stage of their formation;

• "virtual business incubators" – structures that offer their services in

cyberspace - the unique IT product created to help entrepreneurs;

• "business incubators focused on the development of knowledge-intensive small companies" – structures that are focused on the development of knowledge-intensive small companies;

• "venture incubators" – structures that use the umbrella brand of the business incubator and establish interaction with venture investors - public authorities, large companies from other countries [1, 3, 13];

2) based on the organizational forms of implementation of the business-incubator functions:

• "industrial zones" - they provide a dynamic approach to the problems of regional social and economic development, taking into account the interests of local municipalities and regional development bodies;

• "export-oriented zones" – they promote business services by providing access to the infrastructure and tax benefits, they also promote foreign direct investment;

• "scientific (technological) parks" are scientific and productive territorial complexes; their main task is to form the most favorable environment for the development of small and medium-sized innovative and scientific-intensive companies;

• "territorial productive complexes and cooperation networks" - companies associations that work in geographical proximity to each other in one industrial sector [1, 3].

Unfortunately, it can be stated that business-incubators in Ukraine is not properly developed yet. It happens due to a number of problems, including:

• lack of the legislative basis for business-incubators;

• uneven concentration of the existing network of business- incubators in different regions of Ukraine;

• low awareness of local businesses and communities about the opportunities of business-incubators in the process of entrepreneurship development in the region;

• low level of interest and support of local authorities in the establishment and operation of business-incubators [13].

Despite the difficulties, Ukraine has several examples of successful experience of business-incubators creating and operating. Let's focus on a few basic examples that relate to the interaction in the social-economic system "authority-business-community".

In 2018, the Association of Cities of Ukraine, within the PULSE project, implemented the initiative "Incubator of able (successful) communities". It is a virtual system of various ideas, tools, models and relevant practices and exercises, aimed at creating and implementing of a comprehensive (synergistic) competitive model of development for each selected united territorial communities. Each model of such type is based on the synergy

of different components and it is individual for each community, it has its own algorithm and it is combined with different tools and models, taking into account the characteristics of the community. These models aim at systematic increasing and multiplying own resources to ensure economic development. The best practices of optimization and rationalization of usage of the recourses, which were received as a result of decentralization, are implemented within the frame of "Incubator of able (successful) communities". These resources are used for economic development, according to the designed models. The exchange of models or best practices between communities is foreseen in order to use them for study by other communities [10, p. 6].

One of the options for the business-incubators implementation is the project "Network business incubator for business development in the sphere of creative industries, tourism and production of goods by local brands in the communities of Kharkiv region". It helps to expand the infrastructure of support to the small and medium-sized businesses, improve the system of specialists training in small and medium companies and provide the resource and information support of the small and medium companies' development.

The entrepreneurship centers will be created in all united territorial communities of Kharkiv region. 25 courses about starting the own business in different spheres are developed. When a person listens to the training course, he or she will be involved into a business-incubator. Additionally, all possible resources, which promote the development of entrepreneurship, will be added to this platform, i.e, this platform will allow to discuss funding issues [8].

Ukrainian business-incubators exist mainly at the expense of funding from international donor organizations, the premises are provided by employment services at state administrations of cities and regions. The sources of their funding are often from international funds and grant programs, and only to a small extent from local administrations and sponsors. The Ukrainian Association of Business-Incubators and Innovation Centers was established to promote the development of business-incubators in Ukraine. Eastlabs, iHUB, Happy Farm, GrowthUp, Wannabiz, Voomy IT-park and Polyteco are considered to be the most successful business incubators in Ukraine [5].

Thus, it can be stated that despite of the number of problems, challenges and difficulties, business-incubators as an element of the social and economic system "authority-business-community" have significant prospects for successful operation and development. The state has to play a key role in this.

The first and main step should be to ensure the development of business-incubators at the legislative level. At the same time, definitions, functions of business-incubators and services, provided by them, should be clearly

formulated. The state must create the most favorable conditions for the development of business incubation in Ukraine. In addition, the state must ensure proper protection of intellectual property, including the distribution of intellectual property rights between the developer and the research center.

The second step should be to provide support from research institutions and higher education institutions. However, to do this, the state should encourage educational institutions to create business-incubators, assist in the projects' development and implementation. This is one of the main factors in the emergence of innovations in production and planning. Research centers can be created both on the basis of research institutions and educational institutions, and in abandoned buildings, which are in almost every city.

The third step should be to ensure adequate support from local authorities and communities. Local executive and local governments should provide financial support and, if necessary, premises.

The fourth step should be the study and dissemination of the best practices of business incubators, the development of information and methodological framework for the creation, operation and work of business-incubators.

The development of business-incubators as an element of the social and economic system "authority-business- community" will certainly help to improve the investment climate and innovation. This, in turn, will improve both the competitiveness of individual companies and the economic security of the state as a whole.

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IMPACT ASSESSMENT OF THE HORIZONTAL LEVEL ACTORS ON THE STATE OF ECONOMIC SECURITY OF THE INTEGRATED INDUSTRICAL STRUCTURE BY FINANCIAL COMPONENT

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Integrated industrial structures (hereinafter IIS) have long been key objects in many sectors of the domestic economy and are of great importance for the economic security of the state, regions and industries. However, the dynamic change in world economic trends, the complication of the market environment, the growth of unpredictability and fluidity of change requires IIS management to closely monitor the state of economic security and make prompt management decisions to counteract financial and resource losses and risks of such losses using rapid methods for the detection of impact of different level actors(horizontal or/and vertical) by assessing them.

The analysis of recent studies has shown that now in Ukraine there is an actualization of the problems of economic security, accompanied by a deep understanding of phenomena and processes, the generation of new ideas, the emergence of fresh views, the formulation and clarification of the conceptual and categorical apparatus [1; 2; 8; 10; 12].

The issue of identifying the concept of «economic security of the IIS» should begin with an analysis of the basic concept and the way it is interpretered by different authors. Most of the security sphere researchers, as a rule, define economic security (with reference to a specific object, such as a state, region, industry, enterprise, etc.) as a certain result, which manifests itself through the state or the degree of its achievement (security of the object's potential and/or its activities, coordination and harmonization of interests, economic freedom, etc.) [10].

Taking into account the concept of «economic security» and the specifics of the essence of the IIS, in the study, the economic security of the IIS is understood as such a state of integrated entity, which ensures the preservation of integral economic, technological and organizational and social conditions for the functioning of the structure due to counteracting threats to the external and internal environment by aligning the interests of the IIS with the actors' interests, as well as the interests of the actors among

themselves, and achieving a balance of their resources in order to reduce actual or potentially expected losses [12]. The economic security of the IIS as a state is influenced by the states inherent in its actors as separate socio-economic units of an integral structure.

It is an indisputable fact that any condition must be supported. Involving the support of scientific research [9; 10; 11; 12], «ensuring the economic security of IIS» should be understood as the process of achieving a consolidated result - a state of protection against threats, which is formed under the influence of resilience to the lives of actors; the extent of individual actors' impact on the results of the functioning of IIS as a whole; efficiency of actors' business relations with the main superstructure of IIS and among themselves on horizontal and vertical levels of structure; level of actors' compensatory capabilities, etc.

Among all the stages that shape the process of ensuring the economic security of IIS, it is the assessment that is a fundamental element which helps to objectively determine the current (initial) state of IIS economic security in general and its actors in particular, and, most importantly, to determine directions for achieving the desired (optimal) state of IIS economic security, taking into account the influence of the states of IIS actors. Of particular relevance is the issue of assessment in relation to the efficiency of obtaining information to make quick but effective management decisions to strengthen the security of IIS. The purpose of the study is to reveal the content and prove the importance of the financial component as a functional element in the structure of the economic security of IIS and its actors, the assessment of which will quickly establish the actual state of IIS economic security and identify areas of change under the influence of actors; development of methods for identifying the impact of horizontal actors on the state of economic security of IIS through the determination of the starting position and changes in the risk areas of IIS as a whole and its actors according to estimates of rapid indicators of the financial component; testing of the proposed method on the example of IIS – Metinvest Holding,LLC.

Economic security of IIS is a systemic concept, which includes subjects, objects, functional components and the implementation mechanism of security of IIS and its actors. The functional components of economic security are represented by the main areas that differ significantly in their content. These include the following components: energy, political and legal, power, intellectual and personnel, technical and technological, financial, investment and innovation, information and communication and other [11].

All these components are closely interconnected, interact and cause significant influence on each other. However, the financial component is considered to be the leading and decisive, because the effectiveness of

management of any other element of economic security of the IIS and the system as a whole is most evident through the results of the financial component, and its reactions to changes in external and internal environment of the structure's functioning are faster, more dynamic, indicative and readible. The study supports the view that the financial component of the economic security of the entity (in the case of this study it is IIS and its actors) is associated with a condition that is confirmed by: 1) the profitability of IIS and its actors; 2) cash flow efficiency and solvency of IIS and actors; 3) financial stability of IIS and actors. It is important to note that the assessment of economic security by these criteria is primary and relevant until the application of more complex methods and techniques that involve in the assessment a larger range of structural functional components of economic security of IIS.

Complexity is added by the object of assessment, which is the economic security of IIS: hierarchically and heterarchically structured holistic entity of actors whose interests are realized through joint activities to achieve common goals and confront and overcome threats that exist in the external and internal environment of the whole structure [11; 12]. It will be recalled that the purpose of the study is narrowed to identify the impact of only horizontal level actors on IIS economic security. IIS horizontal level actors are generally considered associations of agents with homogeneous activities operating on the same link in the production or trade chain of the same industry. The procedure for assessing the impact of horizontal actors on the state of IIS economic security by financial component is to consistently perform the following steps:

Step 1. Assessing the financial condition of the integrated industrial structure based on the calculation of quantitative indicators in terms of assessing financial stability, cash flow and solvency and efficiency.

Step 2. Identification of actual and / or potential financial losses (profit, income or equity) on the basis of the obtained deviations of the actual and maximum allowable values of financial component indicators and establishing the starting position of IIS risk zone .

Step 3. Assessing the financial stability of horizontal level actors in terms of assessing financial stability, cash flow and solvency and efficiency of activities on an expanded set of indicators.

Step 4. Establishing actual and / or potential financial losses of actors on the basis of deviations of indicators' values of a financial component (actual from optimum), and also risk zones of their activity.

Step 5. Determining the state of IIS economic security on the basis of the established risk zone of its activity taking into account financial losses, which are a clear and quick demonstration of actual and / or potential threats to IIS activity.

Step 6. Determining the nature of the impact (positive or negative) of horizontal level actors (one industry affiliation) on the economic security of the integrated industrial structure based on information about the risk areas of IIS actors, taking into account their threats related to types and amounts of financial losses. Establishing the adjusted position of IIS in the risk zones' field .

In order to test the proposed methodology, the integrated mining and metallurgical group of companies Metinvest Holding,LLC was selected to assess the impact of horizontal level actors on the state of IIS economic security by financial component. As actors of the horizontal level, which are part of Metinvest Holding,LLC, operate on the territory of Ukraine and have approximate conditions of activity, the following enterprises of the metallurgical industry are selected: PJSC Azovstal, PJSC Ilyich MMK and PJSC Zaporizhstal. Before proceeding to assess the impact of the horizontal level actors selected for the study of the «metallurgy» group on the economic security of the holding by financial component, it is necessary to conduct a preliminary assessment of the financial condition of the corporation as a whole. The obtained estimates will allow to determine the area of financial risk of the holding, which will be the starting point for determining the participation of individual actors in ensuring the economic security of the integrated structure by financial component. It should be noted that the participation of actors is manifested through positive and negative consequences for the state of IIS economic security. The positive consequences include potential financial gains, which, in accordance with the consolidated participation in the IIS, affect the improvement of the zone's position in the risk field of its activities. The negative consequences are evidence of potential financial losses of actors and increased risk of IIS activities. The assessment results of the financial condition of the integrated industrial structure using the example of Metinvest Holding LLC to determine the risk zone of its activities are presented in Table 1.

Table 1

Assessment of the financial condition of the integrated industrial structure using the example of Metinvest Holding, LLC to determine the risk zones of its activity [5]

Parameters	2018	2019	Changes
Assessment of IIS solvency			
Net assets share in total assets	0.483	0.501	+0.018
Financial independence ratio	0.483	0,501	+0.018
Financial risk ratio	0.936	1.003	+0.067

Assessment of efficiency of IIS cash flow and solvency			
Cash flow liquidity ratio of operating activities	1.698	1.660	-0.038
Cash flow efficiency ratio	0.411	0.397	-0.014
Total solvency ratio	1.618	1.327	-0.291
Assessment of IIS effectiveness			
Sales revenue growth	-	-0.110	-
Operating activities profitability	0.100	0.030	-0.07
Net profitability of equity	0.220	0.049	-0.171
Return on assets	0.106	0.025	-0.081

The obtained assessment of the financial condition indicate that Metinvest Holding LLC is in the zone of acceptable risk of activity approaching to the critical risk zone.

Having established the starting position of the zone in the risk area of Metinvest Holding LLC with the help of financial component indicators , we will proceed to assess the participation of horizontal level actors of the metallurgy group in ensuring IIS economic security with fast indicators of the financial component.

The evaluation results are given in Tables 2, 3 and 4.

Table 2

Assessment of horizontal level actors' solvency of "metallurgy" group of Metinvest Holding LLC

Parameters	PJSC Azovstal [4]			PJSC Ilyich MMK [3]			PJSC Zaporizhstal [6]		
	2018	2019	Changes	2018	2019	Changes	2018	2019	Changes
Net assets share in total value of actor's assets	0.328	0.296	-0.032	0.352	0.275	-0.077	0.451	0.488	0.037
Net working capital share in total working capital of the actor	0.060	0	-0.060	0,030	0	-0.03	0.241	0.198	-0.043
Current debt share in total actor's capital cost	0.624	0.652	0.028	0.560	0.634	0.074	0.505	0.452	-0.053
Actor's financial independence ratio	0.328	0.296	-0.032	0.352	0.275	-0.077	0.451	0.488	0.037
Extended financial independence ration of the actor	0.376	0.350	-0.031	0.440	0.366	-0.074	0.495	0.548	0.053
Actor's financial risk ratio	2.048	2.374	+0.326	1.841	2.636	+0.795	1.256	1.050	-0.006
Financial leverage effect	negative value			negative value			negative value		

Table 3

Assessment of horizontal level actors' cash flow and solvency of "metallurgy" group of Metinvest Holding LLC

Parameters	PJSC Azovstal [4]			PJSC Ilyich MMK [3]			PJSC Zaporizhstal [6]		
	2018	2019	Changes	2018	2019	Changes	2018	2019	Changes
The share of positive cash flow from operating activities in the total positive cash flow of the actor	0.998	0.998	0	0.996	0.992	-0.004	0.992	0.985	-0.007
The liquidity ratio of cash flow of actor's operating activities	1.050	1.378	0.328	1.034	1.027	-0.007	1.019	1.009	-0.01
Actor's cash flow efficiency ratio	0.067	0.048	-0.019	0.060	0.037	-0.023	0.053	0.024	-0.029
The absolute solvency coefficient of the actor	0.015	0.007	-0.008	0.031	0.026	-0.005	0.012	0.004	-0.008
Intermediate solvency coefficient of the actor (taking into account the collected receivables)	0.855	0.712	-0.143	0.783	0.666	-0.117	1.114	1.058	-0.056
The total solvency ratio of the actor (subject to the monetization of all types of current assets)	1.063	0.852	-0.211	1.031	0.826	-0.205	1.318	1.247	-0.071
The ratio of receivables and payables of the actor	0.839	0.704	-0.135	0.751	0.640	-0.111	1.101	1.054	-0.047

Table 4

Assessment of horizontal level actors' effectiveness of "metallurgy" group of Metinvest Holding LLC

Parameters	PJSC Azovstal [4]			PJSC Ilyich MMK [3]			PJSC Zaporizhstal [6]		
	2018	2019	Changes	2018	2019	Changes	2018	2019	Changes
Increase / decrease in income from sales of the actor's products	–	-0.301	-0.301	–	+0.023	+0.023	–	-0.214	-0.214
Actor's stock turnover, times	3.712	4.920	+1.208	4.132	4.835	+0.703	6.516	4.547	-1.969
Actor's receivables turnover, times	1.714	1.613	-0.101	2.452	2.232	-0.220	2.024	1.222	-0.802
Actor's payable accounts turnover, times	1.433	1.141	-0.292	1.842	1.428	-0.414	2.134	1.346	-0.788

Actor's commercial profitability	0.091	0	-0.091	0.107	0	-0.107	0.165	0	-0.165
Actor's operating activities profitability	0.063	0	-0.063	0.056	0	-0.056	0.110	0	-0.11
Actor's return on equity	0.122	0	-0.122	0.125	0	-0.125	0.158	0	-0.158
Actor's return on assets	0.041	0	-0.041	0.044	0	-0.044	0.077	0	-0.077

Thus, the assessment of the financial condition of the horizontal level actors in order to identify the risk zone of activity to further determine their impact on the economic security of IIS using rapid parameters-indicators of the financial component revealed the following:

• the result of the activities of all studied actors of Metinvest Holding LLC, regardless of the dynamics of net income from sales of products, is a loss, starting with the gross loss result. That is, the activity of IIS actors fell below the break-even point, which indicates their financial losses in the amount of profits (gross, operating profit and net profit of the enterprise) compared to the corresponding indicators of the previous period. Financial losses in the amount of profit against the background of maintaining net income from sales are evidence of the entry of such actors in the area that is at the intersection between the areas of acceptable and critical risk of their activities;

• assessment of cash flow efficiency proved the full security of operating expenses of all IIS actors at the expense of revenues from the same activities. However, insignificant amounts of net cash flow from operating activities do not allow to keep in the accounts of the actors of Metinvest Holding LLC the optimal amount of cash balances for urgent payments, as well as to create reserves for other activities, such as innovation and investment and / or financial. Insufficient liquidity reserves of current assets of PJSC Azovstal and PJSC Ilyich MMK, as well as a decrease in its amount during the study period, led to a partial violation of payment discipline in relation to the current obligations of IIS actors. At PJSC Zaporizhstal , despite the availability of sufficient liquidity reserve for operating costs, solvency can be defined as an increased level of risk due to the main component - receivables, which is a riskier type of liquidity reserve compared to inventories. Therefore, according to the assessment of this area, the actors do not change their positions and remain in the area defined in advance (i.e. at the intersection between the areas of acceptable and critical risk of their activities);

• the low level of financial stability (with a tendency to further decrease) of two actors, such as PJSC Azovstal and PJSC Ilyich MMK, against the background of unprofitable activities during the last period under study,

indicates the presence of actual risks and the actual occurrence of the situation of loss of equity of these actors, which reduces their position in the zone of critical risk. Unlike the mentioned actors of Metinvest Holding LLC, at PJSC Zaporizhstal provided that the level of financial stability rises towards the optimal value, but taking into account unprofitable activities in 2019 and changes in the ratio between equity and borrowed capital not in favor of equity, the activity can be recognized as having the risk of potential loss of equity in the future. Therefore, PJSC Zaporizhstal remains on the line between the zones of acceptable and critical risks of the actor's activity.

Approbation of the proposed method of identifying the impact of horizontal actors on the economic security of the integrated industrial structure based on the assessment of the financial component using the example of Metinvest Holding LLC allowed to quickly establish the following:

1) the economic security of the holding as a whole is at an acceptable level with a downward trend, as evidenced by the risk zone of its activities, which involves the loss of consolidated income, a significant reduction in profitability and changes in the capital structure of IIS and, consequently, the tendency to potential loss of equity;

2) among the horizontal level actors of the "metallurgy" group of Metinvest Holding LLC, PJSC Zaporizhstal has the negative nature of the impact, provided the existing level of economic security of IIS (i.e. financial losses of the actor are identical to the losses of IIS);

3) PJSC Azovstal and PJSC Ilyich MMK have a negative impact on the condition of lowering the starting position of the level of IIS economic security (the financial losses of these actors are much lower than the losses of IIS). Further development may require the method of identifying the impact or its procedure, which may take into account other important factors that significantly affect the values of indicators of the financial component. As an example, it should be noted that two of the three actors of Metinvest Holding LLC, such as PJSC Azovstal and PJSC Ilyich MMK, together with their production areas are located in Mariupol, Donetsk Region, which is close to the demarcation line in the area of environmental protection, which creates significant challenges in the activities of enterprises-actors and can have an additional impact on the level of their economic security. However, it should not be forgotten that the main aspect of the proposed methodology is the efficiency of its application and the speed of obtaining information, which may suffer due to excessive expansion or deepening the methodology.

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METHODICAL SUPPORT FOR ASSESSING THE LEVEL OF ECONOMIC SECURITY OF AGRICULTURAL ENTERPRISES

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The basis for ensuring economic security is the development of effective measures in order to increase the efficiency of the agricultural enterprise and eliminate different problems in various economic activities. Management of a company uses all appropriate tools for diagnosing economic security to implement this basis. The complexity of this procedure is the subjectivity of assessments. It is also not easy to take into account the factors of the internal and external environment of the enterprise, which emphasizes the relevance of the study.

Nowadays, many different methods of assessing economic security have been well-formed. Their importance and feasibility are determined by each user on a case-by-case basis.

So, according to Vasyltsiv T.G. [1], it is necessary to identify such methods that are most appropriate for assessing economic security: expert assessment, monitoring of socio-economic indicators, analysis and processing of scenarios, optimization, multivariate statistical analysis, methods of game theory and a theory of artificial neural networks (ANN).

Dovbny S.B. and Gichova N.Y. [2] distinguish complex methods among a big number of different methods of assessing economic security: methods of comprehensive threat assessment (integrated risk assessment, assessment of the effectiveness of proper protective measures); methods of comprehensive assessment of the economic potential of the enterprise (assessment of the competitive status of the business entity, integrated assessment of compliance with the interests of the enterprise, SWOT-analysis).

Sudakova O.I. [3] and Kirichenko O.A. [4] recommend providing a formation of a management system for economic security of entrepreneurship.

According to S. Mishchenko [5], it is necessary to apply some other hierarchy of methods: extrapolation (extrapolation of parametric dependencies, extrapolation of past trends), expert methods (survey, method of expert assessments, drawing up and making analytical reports, brainstorming, the Delphi method or Delphi technique), structural and analytical methods (modeling, hierarchical decomposition, morphological analysis, SWOT).

A number of researchers (Bilyk M.D., Kasatkin G.I., Ligonenko L.O.) proposes to use statistical models to assess the risk of bankruptcy in order

to analyze the economic security of the enterprise. Still, it is necessary to admit that the essence of methods of predicting bankruptcy is outlined only by revealing of symptoms of financial crisis of the enterprise. That is why the essence of the investigated concept is essentially limited.

The analysis of these methods which help to assess the economic security of economic entities, allows scientists to conclude that its assessment should not be limited to the analysis of economic conditions of the enterprise.

Business entities concentrate their production in the agricultural sector of Ukraine. They focus only on increasing gross income and maximizing profits. Thus, they level the existing potential of the industry. They minimize innovation activity and reduce the monitoring of the level of economic security to the calculation of net profit (loss).

There is a wide variety of models, methods and techniques which help to assess the economic security of enterprises. We can systematize them and distinguish in Table. 1.

Table 1

Characteristics of the main approaches to assessing the level of economic security of enterprises

The name of the approach	Author(s)	The essence of the approach
An «Indicator-Threshold» approach.	Bendikov M.A., Kotenko N.O., Matsekha D.S., Senchagov V.K.	There is a comparison of the actual performance of the entity with the indicators (threshold values) that characterize the level of security.
A Resource-Functional Approach	Reverchuk N.Y. Shtovba S.D. Oleynikov E.A.	This approach involves assessing economic security by assessing the efficiency of enterprise resources. In this case, the assessment of the level of economic security of the enterprise is often identified with the analysis of the state of its financial and economic activities.
A program-targeted approach	Dovbnya S.B., Gichova N.Y.	This approach is based on an integrated set of indicators. They determine the level of economic security of the enterprise. Cluster and multicriteria analysis is used here.
A cyclical approach	Kozachenko G.V.	This approach is based on the application of the theory of economic cycles associated with the rise and fall of business activity. New forms of transition to a new cycle of economic development are implemented at the junction of ups and downs. There may also be a loss of competitive advantage. At the same time, threats to economic security are also formed at these junctions.

Minimum of total damage that can be caused to safety	Buchwald E.M., Glovatskaya N., Lazurenko S., Shlykov V.	This approach sets certain thresholds for the financial security of the enterprise. Deviation from the threshold level can lead to bankruptcy. However, there are some difficulties, because the criterion is difficult to calculate due to the lack of necessary accounting and statistical data. Such an indicator can be calculated only by an expert, which may have its limits of accuracy.
Profit and investment approach	Ponomareva V.P., Lyashenko O.M.	Here we have a comparison of the volume of investment of the enterprise (reinvested income) with the amount of investment funds needed to ensure the economic security of the enterprise.
An approach based on the theory of economic risks	Marushchak S.M., Dotsenko I.O.	It is used to determine the list of threats to the enterprise and the probability of their occurrence. This method calculates the damage from adverse events.
A process approach	Scarlett S.M.	This approach characterizes the level of economic security as a real effect of economic activity. This effect can be observed in the form of increasing the usefulness and certain result (quantity of products, quality of services, etc.) and reducing the cost of achieving it by rational combining certain factors of resource usage.
An complex approach	Matveev M.V.	This approach is based on a surplus (cost-profit) scheme and is calculated according to the main economic indicators of the enterprise. Modern economic and mathematical methods are used here.
Cluster (infrastructure) approach	Kostyukevich D.W.	This approach defines economic security as the ability of a system to achieve certain set goals due to its supporting factors (including infrastructure). These factors are related to the quality of products (services), market size, competitive advantage, risk minimization or economic losses, etc.).
Economic and mathematical approach	Vartanyan V.M., Skachkov O.M., Revenko D.S.	The approach is based on the construction of an economic and mathematical model that reflects the level of economic security of the enterprise and has the form of a function with many variables.
Methods of expert evaluation	Kozachenko G.V.	This approach is used in the diagnosis of objects (processes, phenomena). The assessment of such phenomena is not subject to formalization and, accordingly, unambiguous interpretation, where the possibility of applying evaluative indicators is limited.

System approach	Pilipenko N.M., Pilipenko V.V.	This approach defines economic security as a set of elements that make up its structure. Based on the level of significance of each of the elements and the quantitative measurement of its state, the integrated level of economic security of the organization is determined.

Source: summarized by the author based on [2, 6-14]

Based on this, we can say that there are powerful tools in the practice of economic analysis. These tools allow making a comprehensive analysis of the level of economic security of the enterprise, although the studied category is complex and multifaceted.

The usage of each of these methods and approaches requires additional assessment of the feasibility in the current economic conditions of the agricultural enterprise. Therefore, it requires a comprehensive study.

It is really a fact that agriculture is the main basis of Ukraine's agro-industrial complex and a key element in strengthening the country's food and national security. It is necessary to admit that a comprehensive study of levels of economic security should be an important aspect of the analysis of economic security of agriculture.

So, Golovich N.M. in [15] proposed a method for assessing the level of economic security of agricultural enterprises. The methodology takes into account the internal structure of the industry. This technique can be used as a conceptual approach and requires adaptation to a specific agricultural enterprise.

Therefore, we consider it necessary to deepen the methodology for assessing economic security and conduct it on the following indicators of assessment: economic independence and sustainability; efficiency of functioning; ability to develop; bankruptcy prediction; competitiveness and market advantages; risk and uncertainty; staff and intellectual potential; land resources and their usage (Fig. 1).

Each of the proposed sectors of the level of economic security of the agricultural enterprise consists of criteria. The assessment of their condition should be compared with their regulatory values of the industry. As a result, being based on the analysis, the integrated indicator is calculated, which is the sum of the eight proposed components. It is based on the weighting coefficient of each. It should be emphasized that the analysis by this method takes into account the state of the main components of economic security. In our opinion, this method reflects the peculiarities of the functioning of the agricultural enterprise most accurately.

We have thoroughly studied the methodological approaches to assessing the economic security of agricultural enterprises. It is found that there is no established system of indicators for its evaluation, which take into account

and reconciles all methods of assessing the economic security of the state, because we have noticed some relationship between them.

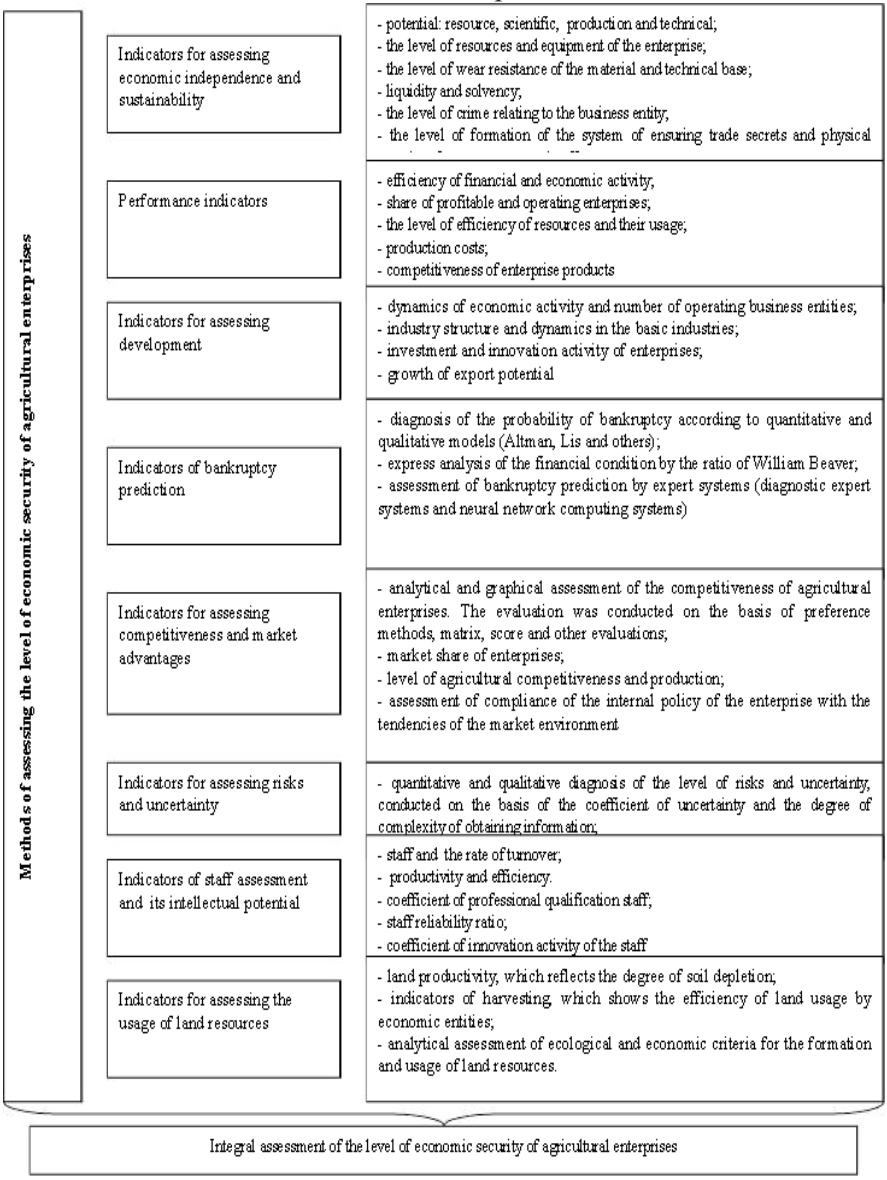

Fig. 1. Methods for assessing the level of economic security of agricultural enterprises

Source: improved by the author on the basis of [15]

So, as a result of the study, we have found that the modern scientific literature offers a large number of different models and approaches. There are both general scientific and author's methods among them. However, there are currently no universal methods for assessing the economic security of the enterprise. Each of them has both advantages and a number of disadvantages or inaccuracies.

Improvements in the methods of assessing the economic security of an agricultural enterprise should be carried out using the method of selecting the necessary indicators for a particular business entity. It is necessary to assess and build an integrated consolidated criterion, which can be the basis for further assessment of the level of economic security of the agricultural enterprise. Further application of methods of economic security assessment will allow to obtain more accurate information concerning the economic condition of the agricultural enterprise and to determine effective ways to increase the level of economic security.

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PART 3. THE MECHANISMS OF ENSURING ECOLOGICAL, FOOD, TECHNOLOGICAL, AND ENERGY SECURITY IN THE DYNAMIC ENVIRONMENT

ENERGY EFFICIENCY MANAGEMENT OF AGRI-FOOD ENTERPRISES

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In the context of intensifying the processes of national economy integration into the world economy, one of the main conditions that ensures the stable development of the economy of any country is the introduction and optimization of energy efficient technologies use in the production activities of enterprises. At the same time, the use of these innovations is the most relevant for agri-food enterprises due to their high level of consumption of raw materials, auxiliary materials, fuel, and energy. However, energy efficiency management of the mentioned enterprises is complicated by the lack of investment in the agri-food sector as a whole, low efficiency of the use of its financial resources by an individual agricultural enterprise, high level of credit risk, which inherent in innovative projects. In this regard, the priority in the development of agri-food enterprises is the constant modernization of production technologies, optimization of the interaction between financial and credit organizations and agri-food enterprises, development and implementation of economic management mechanisms that will ensure the most efficient use of resources.

The need for further research to improve energy efficiency management in agri-food enterprises is worth noting. In this regard, the study aims to develop a methodology for assessing the economic efficiency of innovative energy efficiency projects.

In our opinion, analyzing the effectiveness of innovative energy efficiency projects in agri-food enterprises, it is advisable to compare two alternative situations when an enterprise implements or does not implement

these projects. In a modified form, this situation can be represented as a formula (1):

$$P = \Delta P_{n.p.} - \Delta K_{n.p.} \quad (1)$$

where P - profit due to resource savings in the implementation of an energy saving program;

$\Delta P_{n.p.}$ - changes in profits due to resource savings in the implementation of an energy saving program;

$\Delta K_{n.p.}$ - changes in costs due to resource savings in the implementation of an energy saving program.

This approach characterizes the economic efficiency of energy saving projects. However, its detailed study requires the use of a more advanced instrument.

Based on the methods of investment project analysis [1-8], the economic efficiency of energy efficiency projects in agri-food enterprises can be determined using a system of indicators that reflect the ratio of costs and results. These indicators include PV - current value, NPV - net discounted profit; IRR - internal rate of return of a project; PBP - payback period; PI - profitability index and $MIRR$ - modified internal rate of return. Consider these indicators in more detail.

Thus, PV characterizes the current value of a cash flow generated by an energy efficiency project (2):

$$PV = \frac{P_m}{(1+r)^m}, \quad (2)$$

where m - the number of years during which calculations are made.

Since the NPV indicator is significantly influenced by the discount rate (i), it is advisable to calculate the dependence of NPV on a discount rate to assess and analyze the economic efficiency of energy efficiency projects.

The IRR indicator is a discount rate i*, at which the cost of energy and resource savings expected from an innovative project on energy efficiency in agri-food enterprises is equal to the cost of expenses on its implementation, i.e. the total economic effect covers the number of borrowings involved, interest on them and corporate income tax.

The value of an indicator is the threshold value of a discount rate at which the implementation of a project is appropriate. The decision on project financing should be made on the basis of comparing the IRR with the normative profitability of an energy efficiency project, and the higher the value of the IRR is, the greater the difference is between its value and

the normalized discount rate, the greater the financial safety margin of the given project is.

PBP - the payback period of an innovative energy efficiency project is defined as the time period t* that is necessary for refunding the investment with the money saved during the project implementation and accumulated by an enterprise. Analytically, the payback period of a project is defined as follows (3):

$$PBP = t^* for \{NPV(t^*) = 0\}. \quad (3)$$

The implementation of a project is reasonable if the calculated payback period does not exceed the repayment period of a loan, which is agreed with an investor.

PI - profitability index - reflects the relative profitability (discounted profitability) of a project.

This indicator characterizes the efficiency of investments made in a project and must comply with the condition $PI > 1$.

Another indicator similar in content to the IRR is the modified internal rate of return - $MIRR$.

It is necessary to determine the boundaries of the calculation period to assess the future costs and results of innovative energy efficiency projects. The duration of this period (time horizon) is taken on the basis of the duration of development and implementation of energy efficiency; the achievement of the set characteristics of savings from measures implementation; investor requirements.

We consider it necessary to introduce the following indicators to determine the economic efficiency of an energy efficiency project:

CJ_j - funds invested in the j measure;

NPV_j - return of the j measure;

PJ_j - profitability of the j measure.

Given that the projects implemented within one year are being considered, their current discounted value will be determined as follows (4):

$$PV = \frac{P}{1-i}, \quad (4)$$

where P - expected inflow of funds from savings during the implementation of a program;

i - discount rate.

It is possible to provide a certain weight indicator and build a rating of

energy efficiency measures through expert assessments without taking into account the probabilistic approach to each indicator. With this approach:

1) the more NPV relative to CJ is, the higher the "weight" of is NPV;

2) the greater the PJ and IRR are concerning the return on assets of an enterprise, the higher the "weight" of PV is.

One of the main problems in assessing the effectiveness of innovations is the uncertainty of an expected return. There is a risk of investing in energy efficient innovations due to the uncertainty of funds from the energy efficiency project implementation. It is advisable to use the coefficient of variation to assess this risk ("iota-coefficient") (5):

$$J = \frac{\sigma}{M}, \tag{5}$$

where J - iota-coefficient,

σ - standard deviation;

M - a mathematical expectation of evaluated value.

For the project of measures (6):

$$J = \frac{\sigma NPV}{NPV}, \tag{6}$$

where σNPV - standard deviation of net discounted profit from resource savings during project implementation.

In the simplest case, if the "weights" of the measures that can be included in the project have the same indicators (7):

$$\sigma = \sigma_m;\ NPV_j = NPV_m. \tag{7}$$

We get the ratio (8) from (7):

$$J = J_m / \sqrt{n}, \tag{8}$$

where

$$J = \sigma_m / NPV_m, \tag{9}$$

where Jm is the iota-coefficient of a measure, which is equal to the ratio of the project financing fund (CJ) to the cost of financing a medium measure.

The resulting ratio is equivalent to (10):

$$PFR = JFE / \sqrt{n}, \tag{10}$$

where PFR - the average risk of an insurer per agri-food enterprise;

JFE - the individual risk of an enterprise;

n - the number of identical insured enterprises.

Thus, the risk of project implementation is lessened by reducing the average cost of the measures included in its structure.

Taking risks into account, the guaranteed level of net discounted profit from energy and resource savings during the implementation of an energy efficiency project can be determined using the definition of the confidence interval of a random variable. It will be (11):

$$NPV \geq NPV - t \cdot \sigma_{NPV} = NPV(1 - t \cdot J_{NPV}), \quad (11)$$

where σNPV - standard deviation of the net discounted cost of a project;

JNPV- iota-coefficient of a project;

t - coefficient of a confidence interval.

To evaluate a project, the indicator of guaranteed NPV can be used, which is proposed to determine through the following formula (12):

$$NG = \frac{NPV_g}{NPV} = 1 - t \cdot J_{NPV}, \quad (12)$$

where NG - indicator of the guaranteed NPV of an energy efficiency project.

But under modern conditions, not only the flow of money from energy and resource savings but also the level of interest rates on loans and discount rates are unstable. Therefore, it is necessary to clarify the definition of the coefficient of variation of NPV, which depends on them.

Numerical characteristics of random variable functions are determined by their expansion into Taylor's series and are usually limited to a linear expansion.

Then the value of the iota-coefficient for the current value of cash flow will be determined by the formula (13):

$$J = \frac{\sigma\sqrt{n+2\sum k_{j_k}}}{\sum PV_j} = \frac{\sigma\sqrt{n+2\sum k_{j_k}}}{PV_m \cdot n} = J_m \cdot \sqrt{\frac{1}{n} + \frac{2\sum k_{j_k}}{n^2}} \quad (13)$$

From (13), performing mathematical transformations, we can obtain the following formula for estimating the iota- coefficient, which characterizes the overall risk of a project (14):

$$\frac{J}{J_m} = \sqrt{\frac{1}{n} + k\frac{n-1}{n}}. \quad (14)$$

Also, we think that in determining the economic efficiency of energy

efficiency projects, it is necessary to take into account the impact of volatile discount rates. In the first approximation (15):

$$D_{NPV} = (\frac{\partial NPV}{\partial PV})^2 D_{PV}^2 + (\frac{\partial NPV}{\partial i})^2 D_i^2. \quad (15)$$

where DNPV - variance of net discounted profit from project implementation;

DPV - variance of the current value of cash flow generated by a project;

D_i^2 - variance of the discount rate;

∂ - partial derivatives.

$$NPV = \frac{PV_j}{1+i} - CJ. \quad (16)$$

$$\frac{\partial NPV}{\partial PV_j} = \left(\frac{1}{1+i}\right). \quad (17)$$

$$D_{NPV} = (\frac{1}{1+i})^2 D_{PV} + PV^2 \frac{1}{(1+i)^2} \cdot D_i. \quad (18)$$

Thus, the parameters that influence the economic efficiency of innovative energy efficiency projects at agri-food enterprises are determined, namely:

- number of energy efficiency project measures (n);
- discount rate (i);
- profitability of energy efficiency (r);
- iota-coefficients of savings from the implementation of each of the project measures (JPV);
- iota-coefficient of the discount rate (Jj);
- ratio of the iota-coefficient of the discount rate and the iota-coefficient of cash flow generated by energy efficiency innovations (J/Jpv);
- correlation coefficients between the amount of savings from each of the energy efficiency project measures (k).

At the same time, it should be emphasized that effective management of innovative energy efficiency projects requires the improvement of a management mechanism of agri-food enterprises, its focus on program-target planning, and flexible organizational management structures that ensure the development of these entities in the context of fierce competition and constant changes in the environment.

As a result of the study, to optimize the management of innovative energy efficiency projects in agri-food enterprises, it is proposed to improve the methodology for determining the economic efficiency of these projects by assessing the risk of each measure that is part of a project, and

project as a whole. In this regard, the selection of measures for a particular innovative energy efficiency project should be based on the determination of the maximum economic efficiency and the minimum level of risk for each of them. From viewpoint of risk, the optimal structure of a project is provided through the effective diversification of risks, which consists in the selection of measures directed on the saving of energy and various types of resources. Risk reduction should be ensured by the introduction of an effective management system of an agri-food enterprise focused on the implementation of energy efficiency projects.

The use of the proposed methods of assessing the economic efficiency of innovative energy efficiency projects will make it possible to quickly improve solutions in the process of integrated energy efficiency management of agri-food enterprises by implementing basic standards of resource management taking into account possible risks.

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COMPREHENSIVE ASSESSMENT OF ENERGY SAVING PROJECT MANAGEMENT IN THE BUDGETARY SPHERE

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The main task of solving energy saving problems is to form institutional mechanisms that would encourage the city authorities and the administration of institutions to energy planning and an integrated approach to the modernization of the electrification system and heat supply of budgetary institutions.

In the current conditions of unrestrained political and economic pressure on the energy sector and the economy of Ukraine in general, educational institutions and budget organizations without effective management in conditions of uncertainty, it is increasingly difficult to maintain not only the stability of organizations, but also increase competitiveness. To achieve strategic goals, it is important to develop models for managing the portfolio of energy saving projects, taking into account not only the static but also the sensitivity of institutions to changes in external factors.

If to look at directions of energy saving, it is possible to allocate key - extensive and intensive.

Extensive (from the word extensivus - expanding, lengthening (Latin)) energy saving measures aimed at quantitative reduction of energy consumption (exclusion of lighting in daylight, the rigidity of energy consumption, elimination of theft of fuel and energy resources, etc.). Extensive (from the word extensivus - expanding, lengthening (Latin)) energy saving measures aimed at quantitative reduction of energy consumption (exclusion of lighting

in daylight, the rigidity of energy consumption, elimination of theft of fuel and energy resources, etc.).

Intensive (from the word intension - intense, enhanced (Latin)) energy saving measures, on the contrary, involve the construction of an innovative model while taking into account technological changes and the peculiarities of market consumption (replacement of quality of power plants and technological lines, liberalization of energy markets, implementation of foreign practices of energy efficiency project management, etc). Although the implementation of organizational, technological, information and communication digital technologies, technical and economic and other mechanisms of intensive energy saving measures requires capital investments and other investments, the effectiveness of such investments is higher than in other extensive measures.

When forming a model complex, it is necessary to consider, first of all, project development scenarios, which will allow to assess the impact on the project of «uncertain event or set of events and conditions», which in case of implementation will have a positive or negative impact on the strategic goal. When forming a model complex, it is necessary to consider, first of all, project development scenarios, which will allow to assess the impact on the project of «uncertain event or set of events and conditions», which in case of implementation will have a positive or negative impact on the strategic goal.

The formation of a model complex provides an opportunity to choose the optimal strategy, both for the near future and for the long term, with the possibility of simultaneous change of several variables due to the probability of each scenario.

The main goal of creating an optimal energy efficiency management system for any institution is to invent such a model for managing energy saving projects, which takes into account all the features and factors of the region's dynamics and the direct functioning of the institution itself. The development of a modern adaptive and sustainable energy efficiency management system of the institution is accompanied by a huge amount of information that must be processed and presented in a convenient and understandable form. Such challenges actualize the need for the formation of a model complex through the use of economic and mathematical methods and models.

To identify scenarios for the development of the energy sector, consider possible options. The results of economic modeling conducted by domestic scientists, presented in the report «Ukraine's transition to renewable energy by 2050» prove that Ukraine has every chance to overcome dependence on imports of traditional energy resources [1].

An important component of assessing the economic efficiency of energy saving measures is the procedure and criteria for assessing the economic

efficiency of project (investment) projects.

Analysis of scientific sources showed that almost all official specialized domestic methods that would establish the procedure for calculating the effectiveness of energy saving and energy efficiency measures [2-6] are based on foreign experience of investment analysis.

At the same time, despite the increased interest in this area of research by scientists, it is important to find new approaches to comprehensive assessment of economic efficiency of energy saving projects in the budget sphere from the standpoint of the interests of various participants in the investment process.

It is fair to say that analytical and effective evaluation, which reflects the economic benefits of implementing one project over another, is crucial for the implementation of any project.

The main task of economic analysis of the effectiveness of projects in the field of energy saving and energy efficiency is to assess strategies and measures to implement the results.

Let's highlight the basis of system indicators of the energy saving project in the budget sector (Fig. 1).

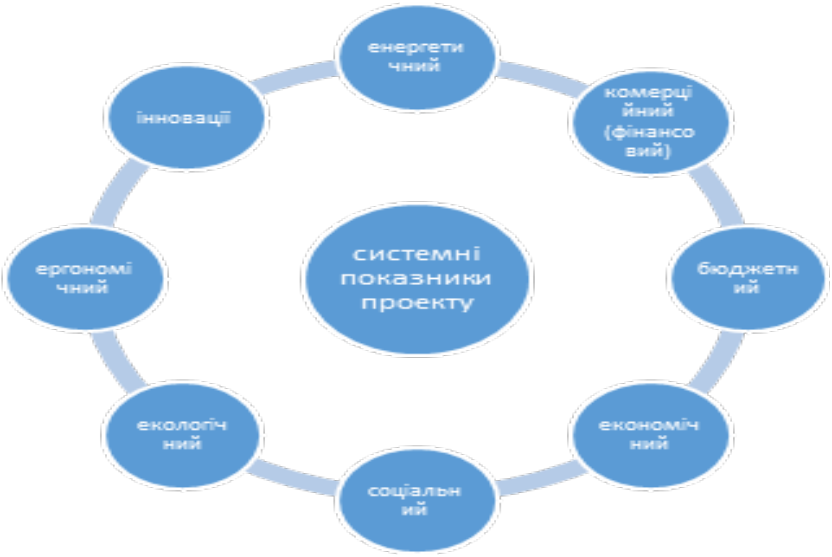

Fig. 1. The main system indicators of the project
Source: author's development

Energy efficiency indicator is the main indicator, which is determined by the degree of achievement of the set goals of energy supply (optimization of energy efficiency measures).

Indicator of commercial (financial) efficiency - is determined by the ratio of costs and financial results of the project for both the target institution and for the region / state as a whole. An important indicator in assessing the financial efficiency of energy-saving projects is the comparison of different cost indicators over time [7].

$$B(ф)t= R(ф)t - E(ф)\ t \quad (1)$$

where B(f)t is the commercial efficiency for the planned period; R(f)t - general commercial results; E(f)t - the amount of required costs.

The budget efficiency indicator reflects the impact of the energy efficiency project directly on the profits and expenditures of the state, regional or local budget. When assessing and justifying the measures of state or regional financial support included in the energy saving project in the budget sphere, a normative assessment can be used.

$$B(e) = R(e) - E(e) \quad (2)$$

For each stage (e), the budget effect B (e) is defined as the difference between the revenues R (e) and the expenditures E (e) of the respective budget

The integrated budgetary effect B (i) is calculated as the excess of the integrated budget revenues R (i) over the integrated expenditures of the budget E (i).

$$B(i) = R(i) - E(i) \quad (3)$$

Ergonomic indicator - assessment of the conditions of comfort of stay, microclimate in educational, working premises for a long time (season, year). Calculated by summing the parameters measured in the mode of operation of real buildings or dynamic computer simulations.

The unique social component is one of the most important, the essence of which is the exclusive role of ensuring the viability of institutions and establishments - compliance with the requirements of standards: reliable, high quality and safe electricity supply, as well as continuous technical and technological improvements to meet growing demand, an acceptable pricing policy for energy services, electricity supply to remote areas with low density and small population, etc.

The indicator of social efficiency is an indicator obtained on the basis of identification and economic assessment of qualitative characteristics that affect social change in society [8].

Assessment of the social effect is calculated by the following formula:

$$\hat{A}_{\tilde{n}} \equiv \sum_{n=0}^{t}\sum_{i=1}^{k}\frac{B_{C_n}}{(1+r_c)^n} - \sum_{n-0}^{t}\sum_{i=1}^{k}\frac{C_{\tilde{n}_n}}{(1+r_c)^n} \quad (4)$$

Where Bc - social effect from technological modernization / replacement or use of renewable energy sources in the n period;

$\hat{A}_{\tilde{n}_n}$ - social benefits and profits from technological modernization / replacement or use of renewable energy sources in the n period;

$C_{\tilde{n}_n}$ - social costs of technological modernization / replacement or use of renewable energy sources in the n period;

$r_{\tilde{n}}$ - social discount rate, which is used in projects aimed at improving the reliability of energy production and use by organizations in terms of public economic importance of the territorial community, region, state, etc.

When $\hat{A}_{\tilde{n}} > 0$ - the project is socially significant for the economy, $\hat{A}_{\tilde{n}}$ - <0 the project is unprofitable for implementation in terms of social significance.

The environmental component of energy saving project management in public sector organizations is the interaction of the energy sector with the environment and should be based on the following principles:

• increasing energy efficiency and improving air quality from harmful substances (nitrogen oxides, sulfur) and reducing the risk of industrial accidents;

• financial investment in infrastructure, technological restructuring (modernization) of production and increasing the use of RES;

• introduction of an emission monitoring system and, accordingly, reporting mechanisms to obtain adequate data on emissions from relevant sources of pollution;

• digitization of information support of the ecological situation of objects of pollution and changes that occur, etc.

Indicator of environmental consequences - assessment of environmental consequences of implementation of energy saving projects (use of international standards of environmental management systems, environmentally safe, resource- and energy-saving technologies, development of renewable energy sources, etc.).

The indicator of economic efficiency is a quantified impact of the project implementation process on the economy as a whole, industry, region, institution and not related to the financial interests of the participants.

That is, we can say that the economic efficiency of the project B(заг) = the ratio of R(заг) of the total result with E(заг) project costs:

$$B(\text{заг}) = R(\text{заг}) / E(\text{заг}). \quad (5)$$

For maximum efficiency and effectiveness of comprehensive evaluation of energy saving projects in the budget sphere, it is advisable to introduce an innovation indicator, which provides an opportunity to evaluate the project for the selection and implementation of innovations for the energy sector. Innovative technologies will provide an alternative to the traditional ones and should be aimed at updating the model of the energy sector.

The innovation indicator is a weighted aggregate indicator composed of a number of indicators that can be calculated according to the Methodology for calculating the Total Innovation Index [9].

Innovation makes adjustments to the development of the economy and society. Specialists of the London School of Economics and companies McKinsey concluded that the productivity and efficiency of companies by 56% depends on the choice of managers effective methods and methods of management [11, 12]. Innovative technologies will not only have a positive impact on the pricing of the energy sector, but also support the talented human potential of our country. There is no need for evidence that the development and implementation of innovative projects can be equated to intellectual capital.

The component of science-intensiveness is the use of innovative advanced technologies and scientific achievements, which meet not only measures to replace equipment, facilities, installations for relevant facilities (which have improved energy and technical and economic indicators), modernization of industrial equipment (in order to change the operating parameters of equipment and energy and increase the efficiency), but also energy saving management through automation and digitization of all production cycles.

It should be noted that the system indicators allocated on the basis of implementation and consideration of potential energy saving projects in the budget sphere are quite artificial and are related to the definition of a single indicator of economic efficiency for different objects and levels of the economic system: the state as a whole(global criterion of economic efficiency), regional, sectoral, institution level or specific energy efficiency project.

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DIRECTIONS AND RISKS OF IMPLEMENTATION OF ENVIRONMENTALLY SAFE PYROLYSIS CYRULATION PROCESS OF SOLID ORGANIC WASTE DISPOSAL

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The removal of mixed solid waste (MSW) to landfills, or open incineration without energy recovery, leads to a loss of resources, environmental pollution (EM) and health problems.

Energy recovery from solid waste has various incentives: job creation, combating climate change, mitigating its effects, protecting emergencies and reducing dependence on traditional fuel sources, and more.

The growing demand for energy for industrial and domestic use motivates the constant search for alternative clean energy sources.

Attractive one from the known technologies for the utilization of organic waste are pyrolysis and gasification technologies, which allow to obtain energy, make environmentally friendly and economically feasible production that can be used in utilities, chemical, petrochemical and other industries to regenerate organic waste into low molecular weight liquid and gaseous.

Based on this, the original equipment of the new innovative technology «Ecopyrogenesis» (EPG) was developed, which combines multi-circuit circulating pyrolysis (BCP) with multi-circuit circulating dual-zone gasification (BCG), which provides deep decomposition of the components of polymer waste to obtain low molecular weight liquid fuel and generator gas [1; 2; 5].

The combination in one technological process of utilization of waste of the pyrolysis installation and the gas generator will allow to prove use of a full set of MSW. And if you add to equipment an autonomous power plant or cogeneration unit, using as fuel pyrolysis or generator gases, liquid pyrolysis liquid of light fractions, as well as solid residue, you can provide in the auto-power mode all technological processes of utilization and heat supply. The economic efficiency of the proposed complex of «Ecopyrogenesis» will be even greater if the liquid light fractions of pyrolysis are processed by known chemical technologies, which will solve environmental, economic,

technological and managerial issues.

In the process of developing EPG technology and non-standard equipment for it, the task was set to create a complex for the utilization of the entire composition of the organic part of solid waste, which would provide environmental safety for emergencies. The source products must be environmentally friendly and will have economic value and practical application in the field of district heating, and the technological cycle must ensure a minimum amount of residual waste during their subsequent safe disposal. Capital and operating costs of the complex should be significantly less than foreign models of similar plants and should provide autonomous operation using its own energy resources.

Consumers of raw materials can be local city and town authorities, which use the obtained liquid fuel in local boilers for heating the residential area, which can significantly reduce the payment for heating and hot water for residents of the neighborhood. And part of the received electricity can be supplied to the city electric networks, and due to this, the cost of electricity for the inhabitants of this residential area can also be significantly reduced.

The block diagram of the infrastructure of the neighborhood with flows of organic waste and installations for their utilization with the production of alternative fuels and their combustion in the boiler room is presented in Fig. 1 [3; 4].

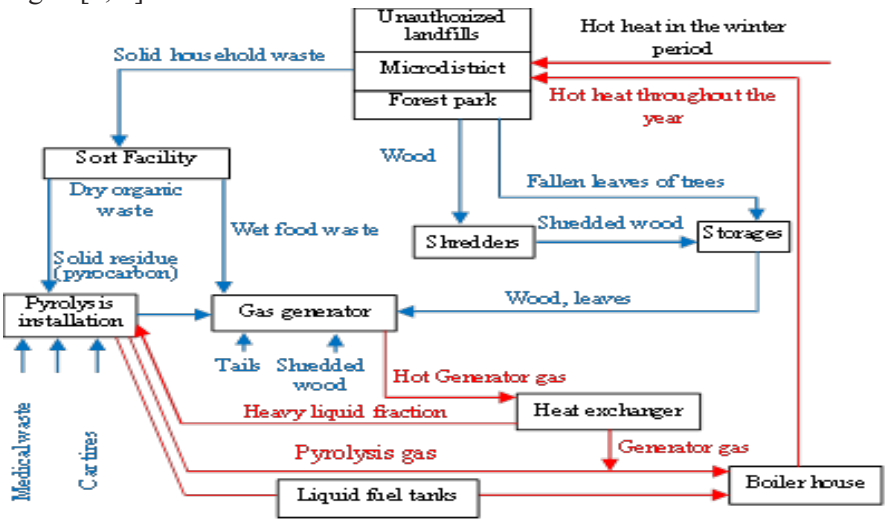

Fig. 1. Block diagram of the infrastructure of the neighborhood with streams of organic waste and installations for their utilization to obtain alternative fuels (blue arrows indicate waste streams, red arrows for obtaining alternative fuels and their use)

A characteristic feature of this technology is the production of its own liquid and gaseous fuel, electricity, which allows to ensure the autonomous operation of this complex, without the use of traditional energy resources, which is especially important for Ukraine at the time of the energy crisis. A general view of an industrial design of a pyrolysis plant is shown in Fig. 2.

Fig. 2. General view of laboratory experimental equipment in the Research Center for Pyrolysis Technologies and industrial design of the installation

Environmental friendliness and efficiency of the complex is achieved by introducing a new sequence of operations with a combination of BCP technology of polymer waste, medical waste, polymer packaging, worn car tires, etc. and dual-zone circulating gasification of various types of wet waste such as wood, paper, cardboard, fallen leaves and twigs and other organic wastes with a moisture content of more than 15%.

The intermediate output components of one technology are interconnected with the input components of the second technology, which will, due to hot pyrocarbon improve the energy parameters of wet waste and increase the specific output of generator gas and its calorific value, due to heat recovery of flue gases, reduce energy consumption for drying wet waste, and, through the use of its own generator gas in gas-piston power plants to provide energy-independent technology of thermal utilization of the entire volume of organic waste and additionally supply electricity to the neighborhood. The use of liquid fuel in city boilers will provide residents with cheap heating and hot water. In addition, the selection of heavy resins from the generator gas and their deep decomposition in the gasification process and the selection of high molecular weight hydrocarbons and other toxic components in the process of BCP polymer waste with deep thermal decomposition, provide environmental safety of this method of thermal utilization of organic waste.

Reconstruction of existing boilers by introducing advanced equipment with full automation, will increase the amount of heat produced at lower cost and in a shorter time compared to the construction of new boilers and

energy savings, which is relevant today. As practice has shown, the average payback period of investments in the transition of boilers from traditional fuel to alternative - 2-3 years, and as a result of modernization, operating costs for heat production of the boiler house will be reduced by at least 20 % [3].

Based on the Law of Ukraine of 14.01.2000 «About alternative types of liquid and gaseous fuels» [6], this approach will not only minimize the cost of disposal of various wastes and harmful substances, but also significantly raise the economic situation in the region, improve the environmental situation and will create new jobs.

Waste project management is based on the dialectical unity of economic, organizational and administrative management methods. A more detailed decomposition of management functions is provided by building an organizational structure (OBS) [7] for managing an organic waste recycling project. The main tasks of complex management by the technology «Ecopyrogenesis» are shown in Fig. 3.

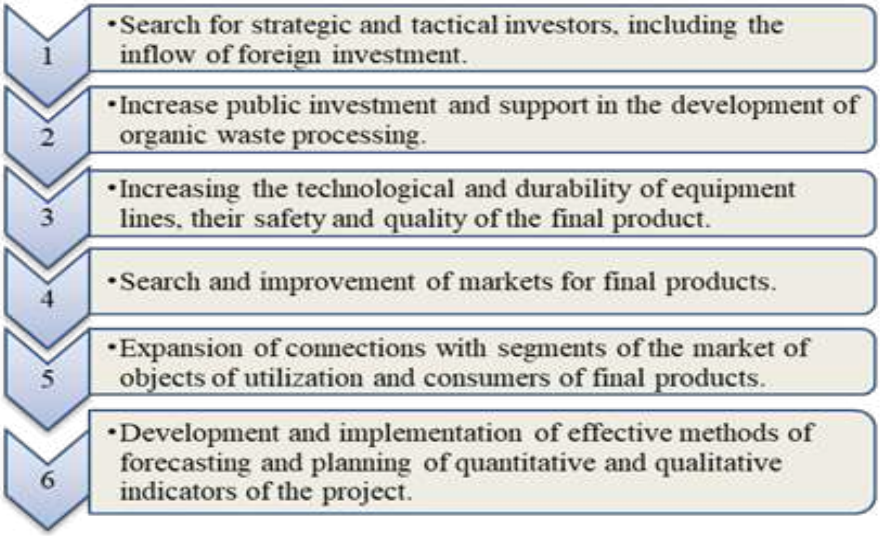

Fig. 3. The main tasks of the processing complex management by the technology «Ecopyrogenesis»

The economic attractiveness of the project increases with the increase in the amount of raw materials that are utilized, respectively, increases the number of useful energy products and decreases the payback period of the equipment.

Measurements and calculations of the main indicators of environmental safety of EPG technology and compared with VAT on specific emissions

showed that all indicators of raw materials and technological emissions meet the environmental standards of European countries [8]. The implementation of the project will have a number of positive socio-economic consequences for Ukraine and the Southern region: it will have a demonstrative effect, because for Ukraine the introduction of high-performance facilities for solid waste disposal will be performed for the first time; will lead to the improvement of the ecological climate in the region, will increase the allocations to the budgets of all levels, including for social needs; revive economic activity by involving local designers, engineers, contractors and manufacturers to implement the project; improve the overall efficiency of secondary resource processing and thus improve the position of related companies in this market; will have a positive impact on the preservation of jobs of employees directly or indirectly dependent on the activities of related companies.

The innovative project on «Ecopyrigenesis» technology uses new ideas, scientific theories and concepts. This resource has a significant specificity due to the fact that the use of research results as a resource requires the use of special methods and procedures that allow the effective application of science and technology in the implementation of knowledge-intensive projects. Such enterprises are the most vulnerable, as this area is characterized by high cost and duration of research and development (R&D), the use of expensive equipment, long production cycle, dependence on contractors and suppliers, the need and high cost of intellectual property protection and complexity market forecast [10].

The operation of such an enterprise is associated with the probability of dangerous situations of various kinds, so the urgent task is to assess the levels of hazards at all stages of the management process to ensure reliable, safe operation and management of the enterprise as a whole [11; 12].

In the course of risk analysis, it is important to study the nature of the risk, taking into account the impact of each component and a detailed meaningful description of the type of risk.

Today, for the waste processing enterprise, administrative factors have serious effects, first of all, it is the existing inconsistency of actions of municipal, regional, state structures that control, supervise and regulate the activities of enterprises - participants in the waste management market. This situation leads to «double control», hinders the economic activity of market participants. In addition, there is no normative mechanism of «absolute transparency» of waste generation and movement in the cycle of collection, processing and production of by-products from these wastes, the emergence of regional and municipal protectionist measures aimed at maintaining the existing waste management system.

The source of new risks may be the likelihood of conflict of interest

of stakeholders (designers, managers, workers, suppliers, population, community, consumers of products of different groups and categories) in the decision-making process (Fig. 4).

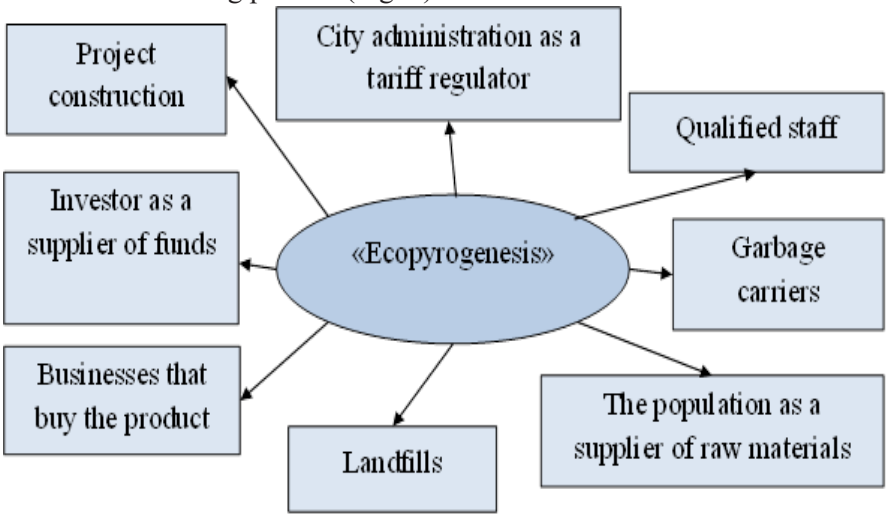

Fig. 4. Interaction of stakeholders of the company «Ecopyrogenesis»

The risks are compounded by non-transparent control over compliance with sanitary and environmental legislation and non-liability of violators, the existence of additional, duplicative functions and powers of different intersecting agencies, and ultimately lead to non-transparency of waste management and control system and complicate leading business in this industry.

Measures of administrative influence on violators of environmental legislation are insufficient: low fines and weak police control are not able to seriously affect the situation and timely identify violators, leaks of harmful substances, control cleaning equipment of enterprises, apply severe sanctions to violators.

An important social issue is the emergence of protest sentiments of residents of those areas where the construction of a new solid waste disposal plant is planned. In addition, waste sorting and transportation companies require a low-skilled workforce for a significant number of jobs and specialties. These jobs are not prestigious for the local population, but the emergence of foreign labor during unemployment will create additional social tensions. And it is necessary to consider that at realization of the enterprise on utilization of MSW, protest moods in a society will only amplify irrespective of a place of their deployment.

The manifestation of these risks leads to violations of construction

deadlines, overspending, non-compliance with the requirements for the end result, deterioration of the quality of the project, products and services, which in turn leads to reduced profits and often large losses. During the project life cycle, it is necessary to constantly re-evaluate risks and increase management efficiency, focusing on the risks that have the highest priority [8; 9].

Conclusion: Innovative technology Ecopyrogenesis is a solution to the problem of accumulation of large amounts of solid waste and the search for alternative clean energy sources. Provides ecological safety of the environment, is ecologically safe and will have economic value and practical application. Production of own liquid and gaseous fuel, electricity, allows to provide autonomous work of this complex, without use of traditional energy resources that is especially important for Ukraine at the time of energy crisis.

The implementation of the project will have a number of positive socio-economic consequences for Ukraine and the Southern region.

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EVALUATION OF EFFICIENCY OF RESOURCE-SAVING DEVELOPMENT MANAGEMENT OF AGRICULTURAL ENTERPRISES IN THE CONTEXT OF ENVIRONMENTAL SECURITY OF THE COUNTRY

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Agriculture is one of the priority sectors of the economy and society in general. However, the agriculture usage of aggressive and harmful production methods, which are aimed at the economic development of the enterprise, increasingly leads to a conflict of interaction between economic activity and the natural system upon the whole [1]. One of the mechanisms of ensuring the greening of agricultural production and increasing the environmental efficiency of all types of resources, including natural, is the introduction of resource-saving management of the enterprise [2].

The effectiveness of management of resource-saving development of

agri-food enterprises of Ukraine is the result of resource-saving measures and rational use of all types of resources, which operates the process of quantitative, qualitative and structural changes and affects the transition to a new quality [3].

The state of solving environmental problems caused by agricultural activities, as well as losses suffered by agriculture activity due to industrial emissions and other factors of environmental degradation in areas of agricultural production, can be assessed by an environmental efficiency system of enterprenurial resource-saving development management. Based on the assessment of listed indicators, it is necessary to ensure the integration of environmental interests and principle development in management decisions.

In order to assess the economic efficiency of resource-saving development management, agri-food enterprises of various ownership forms were selected in Poltava, Zaporizhia and Luhansk regions. The choice of these areas is justified due to the dynamics of agricultural production of enterprises in 2015-2019 (Table 1).

Table 1

Dynamics of agricultural production of enterprises of the Ukrainian regions for 2015-2019, billion UAH [formed on the basis of 4, 5]*

Region, Oblast	2015	2016	2017	2018	2019	Average value
Vinnytsia	18221	21319	51111	56521	57169	40868
Volyn	6434	6559	15835	16321	16541	12338
Dnipro-petrovsk	15141	15183	37617	38618	42468	29806
Donetsk	6938	7513	18422	16662	20261	13959
Zhytomyr	8063	9407	24256	27114	27363	19241
Zakarpat-tia	4096	3965	8214	8781	8858	6783
Zaporizhia	10056	9928	24466	20952	27137	18508
Ivano-Frankivsk	5697	5795	13512	13686	13301	10398
Kyiv	14154	15545	35902	44498	40802	30180
Kirovohrad	11000	12038	27723	33437	35995	24039
Luhansk	4036	4816	11573	12628	14448	9500
Lviv	9025	9255	22029	22819	23004	17227
Mykolayiv	8951	9714	22888	24280	25976	18362
Odessa	10642	11881	31634	31983	28279	22884
Poltava	16661	17213	36721	45466	43515	31915
Rivne	6409	6723	16452	16861	16753	12639

Sumy	9848	10193	27108	30168	30176	21498
Ternopil	8146	8524	23888	24800	24252	17922
Kharkiv	14680	15648	35373	37525	38463	28338
Kherson	10836	11232	27147	27290	28559	21013
Khmelny-tsky	11599	12549	36103	37022	35926	26640
Cherkasy	14622	14984	33570	41226	40276	28936
Chernivtsi	4287	4286	10198	10723	10249	7948
Chernihiv	9925	10372	28733	31915	31214	22432

** The data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, Sevastopol and parts of the temporarily occupied territories in Donetsk and Luhansk regions.*

According to the cluster analysis conducted by the authors, all regions of Ukraine are divided into 5 clusters, which are characterized by the average production of agricultural products of enterprises, calculated for 5 years (Tables 2).

Table 2

Distribution by clusters of agricultural production of Ukrainian regions [formed by the authors]

Cluster	Region	Agricultural products
Cluster 1	Vinnytsia, Poltava, Kyiv	>30 billion UAH
Cluster 2	Dnipropetrovsk, Cherkasy, Khmelnytsky, Kharkiv, Kirovohrad, Odessa, Chernihiv, Sumy, Kherson	20-30 billion UAH
Cluster 3	Zhytomyr, Zaporizhia, Mykolayiv, Ternopil, Lviv	15-19,9 billion UAH
Cluster 4	Donetsk, Rivne, Ivano-Frankivsk, Volyn	10-14,9 billion UAH
Cluster 5	Chernivtsi, Zakarpattia, Luhansk	<9,9 billion UAH

In order to conduct an objective assessment of the management effectiveness of resource-saving development of agri-food enterprises of Ukraine for analysis were selected:

- enterprises of Poltava region as a leader in the production of agricultural products (UAH 31915 billion);
- enterprises of Zaporizhia region, which are in the 3rd cluster, according to the indicators of agricultural production, which is characterized as an average level (18508 billion UAH);
- enterprises of Luhansk region, which are characterized as one of the lowest indicators of agricultural production (UAH 9500 billion).

The management of resource-saving development of agri-food enterprises should be represented as a complex process related not only to improving economic and social efficiency, but to the environment, since nature is the contributor of all resources, including material ones. That is why the last group of indicators that characterize the effectiveness of resource-saving development of the enterprise, are environmental indicators (Table 3).

Table 3

System of indicators for assessment of ecological efficiency of resource-saving development of the enterprise of agro-food area [formed on the basis of 6; 7; 8]

№	The name of the coefficient	Characteristics of the coefficient
1	Content coefficient of natural resourses	The ratio of the cost of used natural resources to net sales revenue
2	Natural resource efficiency	The ratio of net sales revenue to the cost of used natural resources
3	Coefficient of environmental friendliness	Characterizes the level of harmful effects on the environment per unit of used products or services obtained through this process
4	Coefficient of resource intensity of the process	Characterizes the costs of energy, water, air, land and other natural resources per unit of used products or services obtained by this process
5	Coefficient of environmental friendliness of the object	The ratio of the purely beneficial effect to the used natural resources
6	Coefficient of waste content	The ratio of wasted materials mass reduced to a single volume, considering the differences in the degree of their harmfulness (danger) per unit of output
7	Coefficient of environmental friendliness of production	The difference between the cost of raw materials, which is considered as 1, and the cost of waste generated

The coefficient of nature intensity shows the cost of used natural resources to net income from sales. For enterprises of the examined areas, this indicator is optimal and is at the level of 0.10-0.11. The natural resource efficiency is the opposite to the previous one, so its level is also optimal and is in the range of 9-10 (Table 4).

The coefficient of environmental friendliness indicates the level of harmful effects on the environment, which the company carries out in the

process of economic activity. This coefficient for all groups of enterprises is at the level of 0.01, which indicates the high environmental efficiency of economic entities.

Table 4

Ecological efficiency estimation of resource-saving management of the enterprise development in agro-food area [formed by authors]

Coefficient	Region, Oblast			
	Poltava	Zaporizhia	Luhansk	Normative value
Content coefficient of natural resourses	0,11	0,10	0,10	↓
Natural resource efficiency	9,18	9,75	10,16	↑
Coefficient of environmental friendliness	0,01	0,01	0,01	↓
Coefficient of resource intensity of the process	0,05	0,05	0,05	↓
Coefficient of environmental friendliness of the object	1,73	1,81	1,93	≥ 1
Coefficient of waste content	0,14	0,16	0,13	↓
Coefficient of environmental friendliness of production	0,86	0,84	0,87	→ 1

The coefficient of resource intensity of the process helps to determine the parts of water, energy, air, land and other natural resources cost used for production. This coefficient is at the same level - 0.05 for enterprises in Poltava, Zaporizhia and Luhansk regions.

The coefficient of environmental friendliness of the object represents the level of beneficial effect from the usage of natural resources. The highest level of environmental friendliness is characterized by the products of enterprises of Luhansk region, because this indicator is 1.93 and significantly exceeds the minimum allowable factor 1. Enterprises of Poltava and Zaporizhia region do not concede in terms of environmental friendliness and have coefficients of 1.73 and 1.81 respectively. Coefficient of environmental friendliness of production also has high indicators: Poltava region - 0.86, Zaporizhia region - 0.84, Luhansk region - 0.87, which represents an effective resource-saving policy of enterprises in order to improve environmental efficiency. The indicators of environmental friendliness of production and waste content

are interlinked, sequentially it is possible to make similar conclusions about the optimality of the values of the calculated coefficients.

Thus, in modern economic conditions, the activities of agri-food enterprises should be aimed not only at ensuring economic efficiency, but at promoting the conservation of land, water, genetic and other resources for future generations. The conditions for ensuring the environmental security of the country are the usage of environmentally friendly production methods as well as the most efficient usage of resources. A significant factor in ensuring the environmental security of the country is the usage of effective management methods for resource-saving development of agri-food enterprises.

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DEVELOPMENT OF BIOENERGY IN UKRAINE AS A DIRECTION OF STRENGTHENING ENERGY SECURITY

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In modern conditions, diversification of energy sources, strengthening their environmental friendliness, creating conditions for energy independence of the state is an important condition for ensuring the economic security of Ukraine.

Alternative energy sources are non-fossil, renewable energy sources that constantly exist or periodically appear in the natural environment [1]. According to the Law of Ukraine "On Alternative Energy Sources" they include energy: solar, wind, geothermal, hydrothermal, aerothermal, wave and tidal energy, hydropower, biomass energy, gas from organic waste, gas from sewage treatment plants, biogas, and secondary energy resources, which include blast furnace and coke oven gases, methane gas, degassing of coal deposits, conversion of waste energy potential of technological processes [2].

According to the International Energy Agency, one of the most promising sources of alternative energy today is bioenergy. It will become the driver of energy growth in the world in the next five years, due to the acceleration of production and use of environmentally safe, socially acceptable and economically competitive energy [3]. Bioenergy is a large separate sector of the bioeconomy, the development of which will continue, and which will soon play a key role in the decarbonisation of electricity systems by providing a stable source of electricity with low carbon content.

Attention to bioenergy in Ukraine began to be paid much later than in other European countries. While Denmark, Sweden, Austria, Finland, Germany, the Netherlands and others. actively introduced and improved bioenergy technologies for 20-30 years, Ukraine began to develop this sector only in the late 1990s [4, 130].

Renewable energy sources (RES) play a significant role not only in the country's energy security, ensuring the transition to energy efficient and energy-efficient use and consumption of energy resources with the introduction of innovative technologies, but also in global energy in general

– their contribution to gross final energy consumption is now 18%.

Consider in more detail the share of energy from biomass in the structure of gross energy consumption of the European Union and Ukraine (Fig. 1).

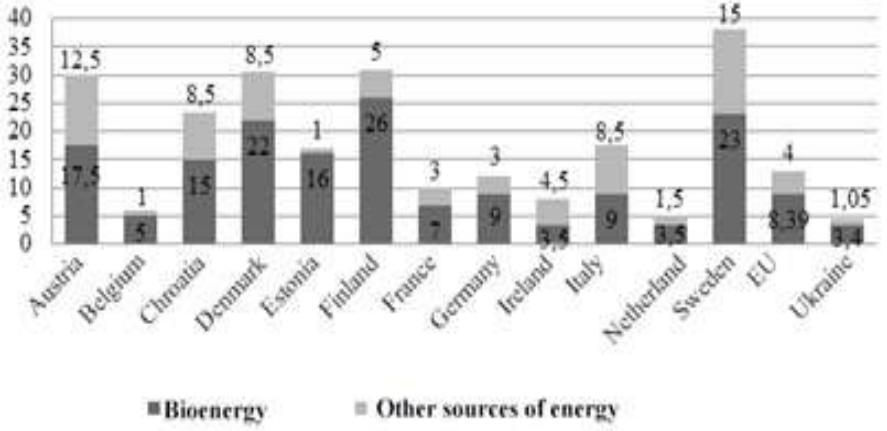

Fig. 1. Share of bioenergy and other types of RES in the structure of total energy consumption of the EU and Ukraine in 2018 (in %)

Compiled according to the existing data [5; 6; 7].

Bioenergy, as well as other types of RES, in the structure of gross energy consumption of the EU countries occupies a significant part – on average in the EU 8.39%. At the same time, some countries of the EU have a much higher level of bioenergy development than the EU average. Thus, in Finland the share of biomass in final energy consumption is 26%, in Denmark, Sweden – about 23%. Biomass and waste in the EU produce about 15% of the heat consumed, almost 4% of the electricity consumed and more than 4% of motor fuels today [8, p. 76].

The European Union is implementing the Energy Strategy 20/20/20, according to which the share of renewable energy in total final consumption by 2020 should be about 20% (27% by 2030), and EU member states should reduce greenhouse gas emissions increase energy efficiency by 20% and 20%. In addition, by 2020, at least 10% of public transport should run on biodiesel [9].

Regulation of the development of the bioenergy industry is based on state support of scientific support and innovative activities in the direction of improving new technologies for growing, processing biomass, manufacturing boilers and developing a national science-based strategy for the development of the industry.

As we can see, the economic and environmental situation requires new ways to provide humanity with energy, which involves the transition to

renewable energy resources as the only possible direction of sustainable existence and development. But, unfortunately, the pace of bioenergy development in Ukraine still lags significantly behind European ones. Currently, the vast majority of countries do not fully use the available bioenergy potential.

Therefore, the governments of these countries have developed strategies that take into account the priority goals – to increase the share of bioenergy and renewable energy sources in the energy balance of the country, and the possibility of achieving them.

Ukraine, following the unchanging global trend - the future of "green" energy – demonstrates the positive dynamics of energy development from biomass. The pace of development of Ukrainian bioenergy is still significantly behind European ones. However, the growth of its share in alternative energy can still be traced. Despite a significant leap in the development of solar energy (the so-called "solar boom"), bioenergy does not leave its leading position among all sources of renewable energy. According to the State Statistics Service of Ukraine, the share of bioenergy in alternative energy during 2015-2017 was over 80%, while in 2010 – 57% [10]. For comparison, in some EU countries the share of biomass from all renewable sources ranges from 30-40% (Luxembourg, Cyprus, Ireland) to 80-95% (Estonia, Latvia, Lithuania, Hungary, Poland, Finland) [7].

According to the Energy Balance (Table 1), in 2017, 58851 thousand tons of oil equivalent of energy were produced, of which 3618 thousand tons of biofuel and waste accounted for 6.15% of total energy production. The share of biofuels and waste is relatively small, but compared to 2010, when the share of biofuels and waste in the structure of energy production was 1.85%, the growth is obvious. In conclusion, every year the bioenergy sector not only maintains its position, but also develops steadily, as a result of which the share of biofuels and waste in the structure of energy production is steadily growing.

According to the National Plan, in 2017, bioenergy should replace 4.99 billion cubic meters of gas. In fact, in 2017, bioenergy reached 3.6 billion cubic meters. According to current indicators, according to the Bioenergy Association of Ukraine, in 2020 Ukraine will be able to replace no more than 4.4 billion cubic meters of natural gas with biomass.

In other words, Ukraine will not implement the National Plan for 2017 even in 2020. According to this plan, in 2020, bioenergy should replace 7.3 billion cubic meters of gas [30].

Such a pace of bioenergy development is clearly insufficient to achieve the goals approved by the National Renewable Energy Action Plan until 2020 and Ukraine's Energy Strategy until 2035, and therefore it will be very difficult to catch up with this "train".

Table 1

Dynamics of energy production in 2017 & 2010 (thousand tons /%)

Coal and peat	Crude oil	Petroleum products	Natural gas	Nuclear energy	Hydropower	Energy of the sun and wind	Biofuels and waste	Electricity	Heat energy	Total
2017										
13637	2208	-	15472	22453	769	149	3618	-	546	58851
23,17	3,75	-	26,29	38,15	1,31	0,25	6,15	-	0,93	100
2010										
33716	3590	-	15426	23387	1131	4	1458	-	-	78712
42,83	4,56	-	19,60	29,71	1,44	0,01	1,85	-	-	100

Source: based on data [10]

Renewable sources in the structure of primary energy supply in 2017 occupy 4.4%, while in 2010 they amounted to only 1.9%.

In the total energy supply in 2017, bioenergy accounts for 3.4%, wind energy – 0.1%, hydropower – 0.8%. For comparison, in 2010 these indicators were 1.1%, 0.003%, 0.8%, respectively. Comparing the growth rates of RES types, we can conclude that the fastest growing energy from biomass: in 2017 compared to 2010, the production of biofuels and waste increased by 148% [10].

According to the Energy Balance, the gross energy supply of biomass from 2010 to 2017 increased by 106%, in oil equivalent it is 1.57 million tons (from 1.47 to 3.04 million tons). Energy consumption of both heat and electricity produced from biomass in total energy consumption increased from 1.1% to 3.4% (Table 2).

Based on the analysis of table. 2 it can be concluded that during the study period the share of bioenergy in final energy consumption has been growing steadily. Thus, the share of energy from biomass in renewable energy sources in 2017 was 77%, while in 2007 – 63%. We emphasize that the share of biofuels and waste is much higher than the share of other types of RES combined.

The growth of the share of bioenergy both among other RES and in the overall energy balance is due to the reduction of traditional energy resources, high dependence of the country on imports, changes in the structure of agro-industrial production, constant growth of price disparities for energy, industrial and agricultural products.

Table 2

Total energy consumption based on RES for 2007-2017, thousand t. /%

Year	General supply of primary energy	including	Hydropower	Finally in %	Biofuel and waste energy	Finally in %	Energy of the sun and wind	Finally in %	Total energy from RES	Total supply of energy from RES	Share of energy supply from RES,%
2007	139330		872	0,6	1508	1,1	4	0,0		2384	1,7
2008	134562		990	0,7	1610	1,2	4	0,0		2604	1,9
2009	114420		1026	0,9	1433	1,3	4	0,0		2463	2,2
2010	132308		1131	0,9	1476	1,1	4	0,0		2611	2,0
2011	126438		941	0,7	1562	1,2	10	0,0		2514	2,0
2012	122488		901	0,7	1522	1,2	53	0,0		2476	2,0
2013	115940		1187	1,0	1875	1,6	104	0,1		3166	2,7
2014	105683		729	0,7	1934	1,8	134	0,1		2797	2,6
2015	90090		464	0,5	2102	2,3	134	0,1		2700	3,0
2016	94383		660	0,7	0832	3,0	124	0,1		3616	3,8
2017	89625		769	0,9	3046	3,4	149	0,2		3964	4,4

Source: based on data [10]

The total amount of costs for the development of bioenergy by type of fuel is also calculated (Table 3). Our indicators show that the creation of local material and technical base, as a basis for the development of domestic bioenergy, it is necessary to invest for the period up to 2021 UAH 26.9 billion, in the next 5 years – UAH 33.1 billion, and from 2026 by 2030 – UAH 39.6 billion.

Thus, the formation and successful development of bioenergy in Ukraine will not only bring direct economic benefits from saving money on fossil fuels, but also provide a significant improvement of the environment as a key component of environmental security. Regarding the general indicators of economic efficiency of bioenergy entities in Ukraine until 2030, given in Table 3, they indicate that the development of bioenergy will provide significant benefits to both the state and producers. Thus, in 2020, sales revenue of 4.09 million tons is projected. fuel in the amount of UAH 33.9 billion at a cost of UAH 26.9 billion, with a level of profitability of production of 25.8% and a payback of 4.7 years.

This payback period is associated with high costs in the initial stages of formation of perennial plantations of bioenergy crops, which will begin to

yield and return from the 2nd and 3rd years of the growing season, and some even later.

Table 3

Forecast of expenditures for the development of bioenergy in Ukraine until 2030

Indicators	2020	2025	2030
Solid			
Expenditures for growing raw materials, UAH million	4390	6341	8528
Processing cost, UAH million	2098	3048	4146
Cost of construction of enterprises for solid fuel, UAH million	2216	1652	2926
Total costs for solid fuels, UAH million	8704	11041	15600
Liquid			
Costs for the production of bio raw materials, UAH million	557	1132	1975
Processing cost, UAH million	238	484	568
Total costs for liquid fuels, UAH million	795	1616	2543
Biogas			
Bioresource costs, UAH million	1338	3095	3919
The cost of construction of biogas plants, UAH million	9233	7648	5068
The cost of processing raw materials into biogas, UAH million	536	1237	1567
Total costs for biogas, UAH million	11107	11980	10554
Expenditures for reconstruction and construction of communal boilers and boiler houses, UAH million	5613	7041	8725
Costs of burning solid fuel in boilers and boiler rooms, UAH million	703	1409	2189
Total costs, UAH million /	26922	33087	39611
million USD	1024	1258	1506
Possible revenue ($ 315 per 1 ton), million USD	1288	1953	2678
Profit, million dollars USD	264	695	1172
Profitability level,%	25,8	55,2	77,8
Net income, million dollars USA	217	570	961
Payback period, years	4,7	2,2	1,6

Source [10; 11], own calculations

However, in 2025, profits will increase to UAH 51.4 billion, costs – up to UAH 33.1 billion, the level of profitability – up to 55.2%. The payback will be reduced to 2.2 years. In 2030, according to our calculations, the indicators will be as follows: revenue – 70.5 billion UAH, cost – 39.6 billion UAH, profitability – 77.8%, payback period – 1.6 years. Of course, under

the current conditions, such a prediction may not be feasible. Therefore, in the period up to 2030, the foundation of a strong material and technical base of domestic bioenergy [7, 22] should be laid. The reduction of energy intensity envisaged by the Energy Strategy of Ukraine will only bring our country closer to the current level of energy consumption of industrialized countries, but will not weaken the serious dependence of the domestic economy on energy imports. Only the development of alternative energy, including bioenergy, will provide Ukraine with its own, stable and relatively cheap source of energy, because biomass energy is a new stage in the history of domestic energy development. From the economic point of view, it has an indisputable advantage – availability, ability to quickly restore capacity and widespread biomass throughout Ukraine.

Therefore, despite the fact that in recent years there has been a significant shift in the development of the bioenergy sector, it is not necessary to stop there. It is necessary to develop the production of energy from biomass in order to achieve the indicators of the EU countries and meet the goals set by the Energy Strategy, which in general are quite realistic for the energy sector to achieve.

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ECOLOGICAL PROBLEMS RELATED TO THE USE OF TRANSGENIC PLANTS

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In the human imagination, genetically modified organisms are associated primarily with the danger to the health of the population. According to experts, the risks to the environment are much more significant. After all, the first group of risks (for human health) can be assessed accurately enough to prevent them and almost eliminate them. In the case of environmental risks, the situation is much more complicated. It is especially difficult to predict long-term consequences, various cascading effects. If GMOs are released into the environment, reproduced, and passed on their genetic information to other species, it is almost impossible to return everything to its original state in the event of any adverse effects.

The following adverse effects of GMOs on the environment are possible: 1) the destructive impact on biological systems and loss of valuable biological resources; 2) creating new parasites and increasing the damage to existing ones; 3) production of substances that may be toxic to organisms that live or feed on genetically modified organisms and are not targets of transgenic traits; 4) adverse effects on ecosystems of toxic substances derived from the incomplete destruction of hazardous chemicals [1].

The problem of the emergence of superweeds and superpests is also among the main ones when considering the environmental risks associated with GMOs. Weeds are a group of plants with a certain set of adaptive traits that help them to exist in the environment, including among crops, against

competition from other organisms, as well as constant human influence.

The use of transgenic varieties with insecticidal properties (due to the Bt gene) immediately raised the question: will these varieties negatively affect biodiversity by affecting insects that are not a "target" of the transgenic trait? These are primarily beneficial insects such as bees. But Bt-proteins are highly selective. However, the possible negative effects associated with the non-target effects of GMOs on other organisms must be carefully weighed when assessing their biosafety.

Because the effectiveness of weed control with a combination of GMOs and the appropriate herbicide is higher than in conventional chemicals, the total amount of herbicides applied to fields with genetically modified varieties is lower than usual.

To determine the risk of possible adverse effects associated with the release of GMOs into the environment, a special technique has been developed that allows for a comprehensive and comprehensive assessment of their safety. This technique is used in all countries where GMOs are grown. Its main provisions are enshrined in several international agreements. The technique has proven itself in practice. No case of the negative impact of genetically modified organisms on the environment is known due to a careful assessment of the safety of all GMOs that are released into the environment [2].

In assessing the risk of possible adverse environmental consequences of the release of GMOs into the environment, information is taken into account regarding the systematic situation, the method of reproduction and dispersal, survival in the environment.

Particular attention is paid to information on the nature of genetic engineering modification: 1) a description of the DNA fragment embedded in the genome of the recipient organism; 2) data on the structure and functional compliance of the embedded DNA fragment, the presence of known potentially dangerous sequences, the location of the insert and the stability of incorporation, the number of copies of transgenes.

Information concerning the biological features of GMOs and the nature of their interaction with the environment, namely: 1) data on new traits and characteristics that began to appear or ceased to appear in a genetically modified organism in comparison with the recipient organism, especially those that may affect survival, reproduction, and distribution in the potential environment; 2) information on the genetic stability of GMOs, the degree and level of expression of the transgene; 3) activity and properties of the protein encoded by the transgene; 4) ability to transfer genetic information; 5) the probability of a sharp increase in the population of GMOs in the potential environment; 6) information on target and non-target organisms, the expected mechanism and result of the interaction of GMOs with them [3].

Today, the number of transgenic (genetically modified) plants already includes two hundred fields, pasture, vegetable, tree, ornamental and medicinal crops. For genetic engineering, there are no barriers that limit gene transfer in a traditional selection based on sexual hybridization. The source of new genes can be any organism – animals, plants, or microbes. Moreover, genetic engineers can change the structure of these genes to make them work more productively or during a specific period of plant development.

The main efforts of scientists are focused on protecting plants from adverse (biotic and abiotic) factors, reducing storage losses, and improving the quality of crop products. Breeders are attracted by the possibility of the purposeful genetic transformation of agricultural plants. Thus, a variety that has proven itself well in most economic characteristics can be supplemented by one missing feature, such as resistance to a particular disease [4].

Also, due to genetic modification, plants can perform a previously uncharacteristic role. They become a "factory" of drugs and food supplements or a tool for "soft" administration of drugs, vaccines, and essential food supplements. These are, for example, sugar beetroots, which accumulate low-molecular-weight fructans instead of sucrose, or bananas, which are used as edible vaccines.

Opponents of genetically modified plants rightly point out that the creation, testing, and seed production of transgenic varieties are monopolized by several multinational corporations, which can limit access to information about the adverse environmental consequences of the widespread use of GMO products. It will take several years for their environmental expertise and adaptation to the conservative tastes of consumers [5].

The guarantee against possible undesirable consequences of genetic modification of plants is the legislative regulation of their distribution and the development of related methods of environmental risk assessment. Many countries have already enacted laws to prevent the unauthorized distribution of transgenic seed and to monitor transgenes in crops, as well as the labeling of food products made from or with the addition of GMO products.

Plants weakened by adverse weather conditions are more easily affected by diseases and pests. Therefore, transgenic varieties resistant to frost, salinity, and drought, to a lesser extent require chemical protection, and the cultivation of such GMOs, which will also reduce the pesticide load on the environment.

Plant diseases not only reduce yields but also degrade product quality. At the same time, some microorganisms contaminate grain and other crop products with highly toxic metabolites. That is why the cultivation of GMOs, resistant to adverse environmental factors, will improve environmental safety and quality of life. GMOs that use mineral fertilizers more effectively will be able to significantly reduce environmental pollution by nitrates and

phosphates.

The most serious objections to GMOs are related to the assumption that their spread will lead to the emergence and rapid reproduction of resistant forms of weeds. The potential threat of the horizontal transfer of modified resistance genes deserves serious attention. Crossing weeds of the same genus can lead to weeds carrying herbicide resistance genes.

Several rules must be followed to avoid the spread of acquired resistance to transgenic toxins among insect pests. Insects should receive a high dose of toxin, which ensures the destruction of most pests and reduce the number of individuals potentially resistant to the toxin. It is necessary to alternate crops of transgenic varieties so that insect populations are consistently exposed to toxins of different mechanisms of action. Finally, it is necessary to create "reserves" of ordinary (non-transgenic) plants of the same species.

Another adverse consequence could be a reduction in the genetic diversity of wild and specially cultivated plants on our planet. Reducing the number of phytophages or suppressing phytopathogens can lead to the reproduction of controlled plant species and reduce the number of entomophagous, which will change the structure of agro- and biocenoses.

The number of varieties of genetically modified plants is limited, and if they completely displace local varieties, it will reduce varietal diversity. There is a danger that under changed conditions, the transgenic variety will behave unpredictably.

Today, around $ 32 billion is spent annually on the chemical protection of plants from pests, pathogens, and weeds [6]. In this regard, attempts are being made in all possible ways, including through the media, to prevent the promotion of transgenic crops in promising agricultural world markets.

Usually, transgenic plants have a narrowly specific resistance to phytopathogens: in some cases, the inclusion of a single fragment of the virus isolated from a particular strain induces resistance of the plant to this viral strain, but not to another strain of the same virus. This reduces the practical value of transgenic plants. Therefore, the search for proteins that can induce nonspecific resistance of plants to phytopathogens. Several years ago, proteins were isolated that can induce nonspecific resistance of various plants to fungal and viral infections. Work has begun on the transfer of these genetically modified constructs into the genome of tobacco and potato cells. The results confirm the expression of target genes and the induction of a sign of resistance in transgenic plants simultaneously to several viruses.

Currently, American scientists have bred potato varieties resistant to the Colorado potato beetle, and soybean varieties resistant to glyphosate. Manufacturers are forced to carry out 4 to 8 treatments with expensive chemical insecticides to protect plantings from the Colorado potato beetle. Chemical insecticides are toxic to warm-blooded animals and humans. Also,

when using compounds of the same chemical class, pests develop resistance relatively quickly.

Monsanto has transferred to the genome of several potato varieties a gene isolated from the bacterium Bacillusthuringinsis, a species of Tenebrionidae (Bt. f). The toxic effect of the protein Bt. f is because it paralyzes the digestive system of the beetle. The content of endotoxin protein Bt. f in potato leaves varies from 5.4 to 28.3 ug/g of raw weight, and in tubers - from 0.4 to 2.0 ug/g (less than 0.01% of the total protein content in the tuber) [7].

Toxicological studies have shown that the Bt. f protein is safe for humans and non-target organisms. Safety is due to the specificity of its effect only on sensitive receptor targets, available only in certain groups of insects. In the soil, this protein degrades relatively quickly. As a result, the US Food and Drug Administration excluded Bt. f protein from the official list of potentially toxic substances.

The tops of transgenic potatoes carrying the Bt. f gene are actively eaten by the 28-spotted sun without any negative consequences for the pest, which confirms the high species-specific action of endotoxin.

For the last 30 years, bioinsecticides based on Vasilusthuringiensis (Lepidocid, Dinel, Insectin, Enterobacterin, Novodor, etc.) have been widely and successfully used in agricultural production in various countries. One of the main active components of these drugs is the protein Bt. f. The World Health Organization, as well as government regulators in many countries, have authorized the use of insecticides as a safe microbiological plant protection product for humans and the environment. Monsanto's transgenic potato varieties are approved for use as food in the United States, Canada, Japan, and other countries.

The tasks that were solved when assessing the biosafety of transgenic potato varieties presented by Monsanto were as follows: 1) check the compliance of genetically modified constructions with the claimed constructions; 2) determine the level of endotoxin accumulation in plant tissues and the stability of this level in subsequent generations; 3) to study the possible influence of transgenic plants on the species composition of rhizosphere and epiphytic microorganisms; 4) to carry out the comparative characteristic of resistance of transgenic grades to the most widespread activators of fungal, bacterial, and viral diseases, to pests of crops; 5) to carry out a comparative assessment of tuber preservation; 6) to study the possibility of resistance of the Colorado potato beetle to endotoxin Bt; 7) assess the compliance of economically useful traits due to the introduction of foreign genes into the recipient plant [8].

Currently, various methods of genetic engineering have become an integral part of modern molecular and cell biology. The main tasks of genetic engineering in biotechnology of plants include their genetic transformation,

the expression of foreign genes, and its regulation in the cells of transgenic cultures.

Three outstanding achievements in plant physiology have provided the basis for the integration of recombinant DNA technology into genetically engineered plant biotechnology: first, the discovery of phytohormones that regulate plant growth and development, secondly, the development of methods for culturing plant cells and tissues on media containing macro- and micronutrients, sugars, vitamins, and phytohormones (these methods allow growing cells, tissues, and whole plants under sterile conditions and carry out their selection on specific media).

Soon, the potential of genetically engineered plant biotechnology will increase significantly due to the development of methods for the genetic transformation of cellular organelles. Further, advances in genetically engineered plant biotechnology will depend on an understanding of the peculiarities of transgenic expression. Currently, we can talk about the emergence of nuclear engineering aimed at modifying nuclei using foreign and recombinant nuclear proteins and specific structural modification of foreign genes. The transgenic expression can be increased by attaching to foreign genes nucleotide sequences strongly associated with the nuclear matrix.

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MANAGEMENT OF QUALITY AND ECOLOGICAL SAFETY OF AGGREGATE AGRICULTURAL PRODUCT: RESOURCE SAVING, MARKETING INNOVATIONS, STATE INITIATIVES

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Perspectives for the reproduction of the domestic agricultural sector on a new basis should focus on creating a collective agrarian product of high quality and environmental safety, which correlates with modern European and world principles. Modern society puts forward new requirements for the quality of collective agricultural product at all stages of its creation and market realization. Quality is an integral indicator of characteristics of agricultural processes (both current and collective), the organization of agricultural production relations, granting of relevant services, the properties of the final agricultural products, the main lever of consumer preferences.

The process of formation of agricultural products by quality parameters and bringing the relevant properties to the consumer has a significant number of features that should be considered in a general and local reflection: in the formation of strategic agricultural policy and as projected commercial calculations at the level of individual management entities. Based on the author's analysis, we propose to the conceptual consideration and practical consideration at the level of the agricultural sector of the national economy from the standpoint of ensuring the required level of quality and environmental safety such specifications of agricultural products:

- first, the process of production and creation of an agricultural product reflects to the greatest extent (in comparison with other types of economic activity) action of natural, in particular biological factors, as external influence (climatic and weather conditions), and internal influences (we are talking about the means of production, including fodder lands, seed and breeding base, livestock, etc.), is different by seasonal, involved in agricultural cycles and the appropriate use of a significant number of natural resources;

• secondly, today agricultural products are creating in Ukraine in the conditions of intensive environmental loads, unsatisfactory condition of a in weighty part of territories, in particular agricultural purpose, on separate environmental parameters, first of all by level of pollution of air, waters, soils - chemical, physical, biological, etc., violation of agro technical and agrochemical cycles in the culture of management of agriculture, branches of plant growing, animal husbandry, etc.;

• thirdly, there is insufficient use of environmentally-oriented utilization methods, reutilization of resources, for example, the practical absence at the level of individual domestic farms of the use of modern methods of using agricultural waste as a secondary raw material, etc.;

• fourth, regulatory, methodological-organizational and technical regulation of quality and safety of agricultural raw materials and finished products in the conditions of domestic agricultural market is imperfect it is a question of essential lag behind the European level of domestic system of technical regulation of agricultural production, its metrological maintenance and qualimetric estimation;

• fifth, a small number of examples of implementation of international quality management systems (ISO series) and safety (HACCP) of production in domestic agricultural enterprises, which, in turn, reduces the competitiveness of domestic agricultural products in the world, including the European market.

Economic research of domestic agricultural production, in particular from the standpoint of conceptually quality and environmental safety agricultural products level improving, reflect the need for original solutions and relevant author's propositions. Namely, it is important to develop the methodological base of agrarian economic opinion in terms of understanding the essence of certain established terms and their proper application in the practice of maintenance of agricultural management. For this purpose, we conducted comparative research of the use of categories "quality" and "environmental quality" for agricultural products, reflected them from the standpoint of social significance and compliance with established standards for technical, technological, sanitary, environmental indicators.

It is appropriate to create an agricultural product in the following methodological ways:

1) management of quality - quality management;
2) technical regulation of the cost of quality;
3) determining the cost of quality;
4) environmental quality management;
5) quality marketing.

Each of these components will reflect in a separate perspective the economic quality (in close interaction with environmental quality) of the

processes of forming the quality of agricultural products. The use of updated methodological approaches related to the total improvement of quality on domestic agricultural enterprises will increase the quality, safety and competitiveness of agricultural products, increase production per hectare of cultivated area, which correlates with the cost of food, will allow it to enter foreign markets equally and at the same time to satisfy the raised requirements of domestic consumers.

At the same time, the importance of improving the quality of agricultural products is connected with the fact that the insufficient level of quality has negative economic, social and environmental consequences:

• economic consequences are reduced profits of enterprises, loss of material and labor resources spent on manufacturing, transportation and storage of bad agrarian products, additional costs for equipment repairs, elimination of certain disparity, etc.;

• social consequences are manifested in a decrease in the growth rate of kindness of the population, decrease in the culture of agricultural production and consumption, a decline in the prestige of domestic producers and their products, some other aspects;

• environmental consequences - prevention of damage to the environment in conditions of increased environmental risks of agricultural activities, as these are additional costs of the enterprise for the restoration of soils involved in agriculture management, wastewater treatment and more.

In this context, it is important to apply modern, diverse approaches to the development of the quality economy at the level of individual domestic agricultural entities. It is necessary to identify economic and commercial initiatives by managers of agricultural enterprises, use alternative ways to attract sources of funding, investment, implementation of effective leasing technical schemes, internal incentives for agricultural production of high quality and environmental safety at a particular agricultural enterprise [2; 5; 8; 9]. One of the ways to practically improve the development of agricultural management is the production of agricultural products of high quality and environmental safety, which in Ukraine has received the official name "organic products".

In the considered regularity of management of processes of production of organic agricultural products in Ukraine the leading place belongs to the system of governmental management as the most influential, effective and constructive on the basis of performance by it of such functions as regulating, controlling, estimating, supporting and some others. The regulatory function of governmental management in the field of domestic production of agricultural products of organic origin is reflected by the development of a sufficiently effective agrarian policy aimed on the developing the market of organic products. In particular, we are talking

about such manifestations of the effectiveness of agricultural policy in considered direction as legal regulation based on the adoption of relevant laws, regulations, technical regulations governing relations as to organic production procedures in Ukraine and requirements for quality indicators of organic products according to the principles of relevant European legislation. Ukraine's cooperation with international technical institutions is important, in particular those that form the basic standardized requirements for organic production - IFOAM, FAO, Codex Alimentarius, WHO, etc. At the same time, it is a question of technical regulation of adapted requirements for quality and conformity of organic food products based on intergovernmental framework standards, basic standards or directives, international private standards and some other regulatory and technical documents in Ukraine. The regulatory function of governmental management is closely related to the control function, which should be developed through an effective system of monitoring the compliance of food products with organic status. For example, it is a mandatory certification confirmation of the "organic" activity of domestic agrarian producers, preserving the properties of organic food products not only at level of its creation, but also at the level of continuation of logistics flows - processing enterprises, wholesale and retail bases, trade establishments, individual traders etc.

A separate component in the system of governmental regulation is the labeling of organic products, which in an informationally concise, in particular graphic and pictorial form confirms its origin and compliance. A significant number of leading countries in the production or consumption of organic products have their own, legally approved labels, which are well known to domestic consumers, whose products are presented on the market. These are the labels of organic products, eco-products or bio-products, the name of which differs in different countries. For the domestic market of organic products, it is important not only to label as such, but also to bring its information content and other labeling information to the consumer. It is about the importance of increasing general level of culture of both production and consumption in Ukraine [3; 4; 6].

Important in terms of perspective for the development of the domestic market of organic products is the supporting function of governmental regulation, which is implemented through certain aspects of stimulating producers of organic agricultural products (and not only), in particular in various forms. As example for Ukraine might be experience of a large number of countries, including Switzerland, Denmark, Germany, Austria, the United States and others, which are leaders in terms of world market share of organic products. In the context of the above, marketing approaches to the perspective of organic products production in Ukraine should be updated, taking into potential consumers. We conducted a sociological

research on the perspective for the development of the market of organic products in the city of Chernivtsi.

We found the opinion of consumers based on a survey to learn the population's demand for relevant products. It is worth noting that today in Ukraine a lot of work is being done by various governmental institutions to support organic agriculture as a technological base for the production of organic food at level of organic. In particular, it concerns the development of the system of legal regulation, which is reflected in the Law of Ukraine "About production and circulation of organic agricultural products and raw materials", where there are separate articles that providing state support as management entities engaged in production and circulation of organic products (raw materials) [1; 7; 10].

In addition, the direction of scientific support of production and circulation of organic products (raw materials), which is entrusted to the National Academy of Agrarian Sciences of Ukraine, science-research and other institutions, educational institutions is important. Other forms of state support for organic agriculture in Ukraine should also be noted , for example, direction of state policy in the way of greening agricultural production, compliance with the state target program of Ukrainian rural development on the basis of organic production, creating economic conditions for development, investment and innovation model. Based on the conducted research, we should make a conclusion about the significant perspective for quality management and environmental safety of aggregate agricultural product, which is determined by socio-economic prerequisites of improvement, the availability of necessary agricultural resources, restructuring relations between economic entities in the domestic agricultural sector.

There are important opportunities to improve the quality of domestic agricultural products in terms of regulated technical compliance and development of appropriate control and evaluation systems; in terms of environmental quality, which reflects the degree of environmental safety of production and consumption of agricultural products; in terms of economic quality in the activities of the agricultural enterprise, which includes the management of processes for determining the value of product quality, environmental quality management and economic evaluation of relevant processes. A separate important aspect in Ukraine is the management of organic production processes, the creation of agricultural products of "new generation of quality and environmental safety", the prospects of which are reflected in state policy of Ukraine and other areas of state regulation and in the perspective of potential consumer preferences. Because of the latter, the target market segments of domestic consumers, ready to buy organic food and include it in the daily diet, are expanding. Indicated in general will

be the perspectives for environmental and economic development of the agricultural sector of the national economy.

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ANALYSIS OF FOOD SECURITY AT THE NATIONAL LEVEL

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Food security is an important component of the national security, which guarantees social, economic and political stability in the society, sustainable economic development of the state as a whole. Ensuring food security is of strategic importance to each country at both national and global levels and is possible only by combining the efforts of every country through the use of scientific recommendations and practical experience for solving food problem in the world.

The complexity of the situation consists in the fact that in the field of ensuring food security the key problems are connected as to pursuing agro-food, social, economic policy, the real trends in food production development, national food market, identifying the nature of its dependence on the world food market, actual demand and social status of the population, opportunities for consuming valuable, high-quality food products harmless to human health [1].

Our country has the potential to significantly increase its position as a manufacturer of farm and food products, provided attracting investment to increase the competitiveness of products, development of the necessary agro-industrial infrastructure, ensuring the standardization of food products in accordance with international standards and thus become one of the world's major food product suppliers. Creating conditions for stable food security of the population is a priority task of the state policy in modern conditions, irrespective of the territorial level [2].

According to the methodology of the Food and Agriculture Organization of the United Nations (FAO), the criterion of food security is the production of grain per capita as the main food crop. Calculations maintain that the world's population satisfies 56% of food needs by grain. The condition of the state food security is assessed by the UN FAO according to two indicators: the volume of transitional grain stocks stored till the next harvest and the level of world grain production per capita. The value of transitional grain stocks is calculated as a percentage of annual world grain consumption, or in days of its global consumption. A 60-day transitional stock, i.e. 17-20% of all grain

consumed in the country, is considered safe. This indicator characterizes the stability of food situation in the world as well as the stability of the world food market concerning possible impact of such destabilizing factors as poor yields, natural disasters, financial crises, etc. [3].

The indicator of the average per capita grain production is used to assess the state of food security of separate countries or the economic community of countries, and also to analyze trends of the world food market development for a definite period of time. It gives the idea of whether all strata of the population, irrespective of the social status, have the opportunity to receive the required amount of food products. The world practice has shown that a stable food situation is achieved by producing 800 kg grain per capita for a calendar or agricultural year, which meets both the requirements of the population in food products and the demands of livestock farming for feeds [4].

Using the methodology of the World Food and Agriculture Organization (FAO), according to which the volume of grain production per capita is used to assess the state of food security, we determined the dynamics of food security in Ukraine (Fig. 1).

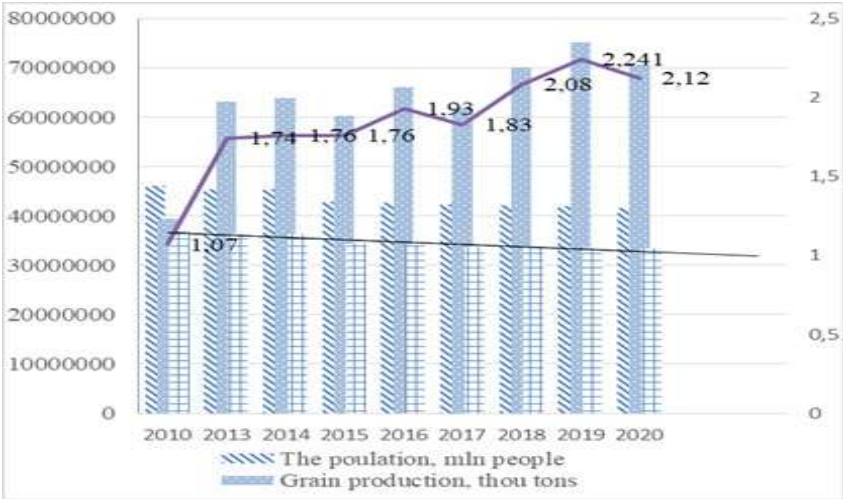

Fig.1. The dynamics of food security coefficient of Ukraine for 2010-2020 [made up by the authors based on 5]

The food security coefficient for the study period increased from 1.07 p.p. in 2010 to 2.12 p. p. in 2020, however, in comparison with 2019, the level of food security decreased by 0.12 percentage points. The increase in food security coefficient is primarily stipulated by the decline of the population in the country, and as evidenced by the forecast line of the

population trend – there is a tendency to its decrease.

Thus, Ukraine, having in fact absolute security in supplying grain to the population, must work hard to increase livestock farming products manufacturing and improve the population well-being in order to reduce the share of food costs to the level of European countries.

The most important feature of food security is the degree of provision with domestic food products. For objective reasons, depending on the natural and climatic conditions, various states occupy different positions concerning the provision of the population with food products. Therefore, the state can provide some products itself, others – partially, when the opportunities of attracting other countries are used, and in the third case, food products are provided from only the sources of other countries [6].

In the international statistics, food security is measured primarily by the dietary calories of the daily food ration of the population. In the process of monitoring the condition of food security, the energy criterion is used (daily dietary calories of a person). The critical limit (according to FAO) is 50% of the average statistical human physiological norm (3000 kcal /day). Dietary calories, which are lower than the physiological human requirements, make proper nutrition impossible (Table 1).

Table 1

Energy value of the average daily diet of Ukraine's population in 2014-2018, kcal. [made up by the authors based on 7] (per person)

Indicator	2014	2015	2016	2017	2018	2019	2019 +, - till 2018.
Calorie content. kcal	2,939	2,799	2,742	2,707	2,706	2,691	-15
Change to the threshold level, %	117.6	112.0	109.7	108.3	108.2	107.6	-1.5
products of plant origin	2,090	2,008	1,952	1,926	1,919	1,891	-28
in % to total energy %	71.1	71.7	71.2	71.1	70.9	70.3	-0.6
products of animal origin	849	791	790	781	787	800	+13
% to total energy %	28.9	28.3	28.8	28.9	29.1	29.7	+0.6

In this connection, the catastrophic demographic situation in Ukraine has developed. As a result of malnutrition, systematic deterioration of public health, morbidity and mortality are increasing. Thus, the problem of food security of the population, increasing its living standards is of paramount importance.

According to the Food Organization of the United Nations, the average daily dietary intake in the EU varies within 3,400-3,500 kcal, and in the US - 3,900 kcal.

During the period of 2014-2019, the dietary intake pattern of the population was higher than the threshold level, the maximum decrease occurred in 2019 (by 7.6% of the threshold indicator), and the highest index was in 2014. In 2019, the dietary calories of the country's population made 2,691 kcal.

The share of consuming products of animal origin is by 55% lower than the established standard of the daily food intake and ranged from 849 to 800 kcal. However, a positive trend is the increase in livestock farming food products in the people's diet.

The other side of the country's food security consists of every person's food security, first of all, economic affordability of the food basket, a person's ability to buy the food products he (she) needs. The main indicator of this is the level of food costs, which in the world market is calculated as a percentage of the purchasing power parity. The issue of food products' accessibility, as an important element of food security directly depends on the level of incomes, purchasing power of the population and the availability of food at reasonable prices. The increasing share of food expenses in the budgets of Ukrainian families shows a low living standard. Subsistence rate is also an important indicator [8].

According to the Ministry of Social Policy of Ukraine, the monitoring of the actual size of the subsistence rate indicates the existing problem of the ratio between the approved sum of the subsistence rate and its actual sum. In particular, for different social and demographic groups, this ratio made 41.9% -48.5%, which causes a significant decrease in the purchasing power of the population, especially low-income population [9].

Taking into account the strong agro-food potential and ability to maximally satisfy consumer demand for food products, the main negative trends in food security are:

- nutrition imbalance;
- reduction of own production volumes of separate products;
- consumption of many food products is below rational dietary intake levels, and the quality of nutrition is deteriorating;
- economic inaccessibility of food products because of general low level of the population's incomes;
- high differentiation of the population's living standards by social groups;
- imports increase in almost all food groups, which holds back the development of the national production [9].

COVID-19 is expected to worsen the general prospects for food security and nutrition. Food insecurity can occur in countries and population groups, which have not traditionally been affected. Preliminary estimates suggest that from 83 to 132 million people may be added to the total number of

malnourished people in the world in 2020, depending on the economic growth scenario (losses from 4.9 to 10 percentage points in the world GDP growth). The expected recovery in 2021 will result in reducing the number of malnourished, but still it will be higher than has been predicted from the pandemic scenario [9].

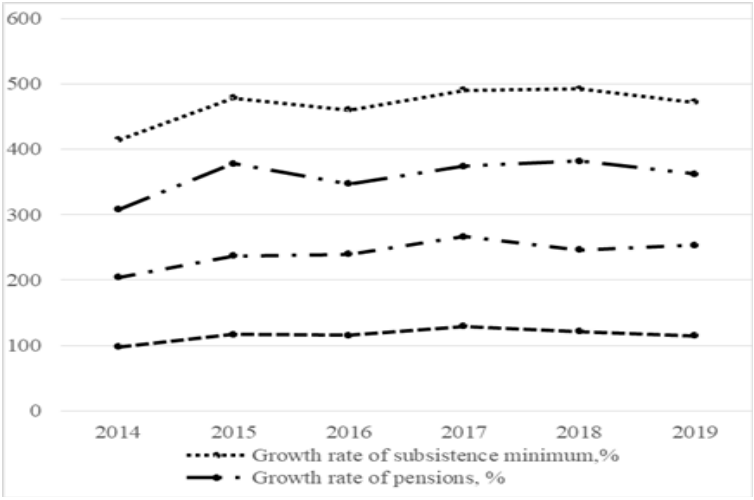

Fig.2. The growth rate of the population's real incomes in Ukraine for a period of 2010-2019 [made up by the authors based on 5]

In order to hold up the increasing threat to food security, the state has to take the following measures:

• to approve the national consumption standards for all the necessary nomenclature of food products on the average per capita, as well as for certain sex and age groups;

• in order to reduce poverty of the population, the main priorities are: pursuing the policy aimed at leveling the development of regions, ensuring further economic growth of economic sectors, including the agrarian sector, creating conditions by the state for the development of labor potential of the impoverished population (especially in rural areas), strengthening the targeting of social assistance to socially vulnerable groups;

• regional authorities have to monitor the minimum commodity bundle, calculated on the basis of the national consumption standards;

• to develop food products' quality control system close to the international standards;

• to monitor food security provision;

• to optimize the system of formation, storage and use of state food stocks [10].

Thus, the condition of food security of the country is determined by a wide range of indicators, which complement each other and require further improvement. We consider it expedient to apply a single system of food security indicators in Ukraine, which will allow assess realistically the condition of the state's food security and timely take appropriate measures to improve it.

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IMPROVEMENT OF PROMOTION TOOLS FOR AGRICULTURAL PRODUCTS SALES IN THE FOOD SECURITY SYSTEM

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Market transformations in Ukraine have provided enterprises with opportunities for independent planning of their activities and at the same time caused challenges. One of such challenges is the lack of working capital and the lack of resources for quality product promotion. Combined research conducted in the field of operations management and marketing aimed at making time to see negative trends in terms of sales and respond to them by choosing the appropriate tools management.

In the food security system, sales promotion plays a special role for each group of countries, depending on their level of development. For high-income countries that are highly productive and produce more than they consume, stimulating efficient sales means reducing the cost of disposing of products that have not been consumed. For countries seeking to take a leading position in the world food market, including Ukraine, effective sales are part of the competitive strategy. In the world as a whole, according to FAO estimates, about 14% of food is lost in the stage after its production (post-harvest) before entering the retail system (FAO, 2019).

The system of stimulating sales of agricultural products has several dimensions: global, integration, national, regional, and micro-level. Each of them has its own tools and mechanisms that provide analytical, informational, marketing, and regulatory functions. We will focus our research on micro-level tools.

Advertising activity, which was actively developed for trade enterprises and other spheres of services, actively moved to the industry. Farmers, who are quite conservative about innovations in management, understand the need to attract and keep the interest of consumers and partners. Popular advertising and promotion tools are articles in specialized publications, exhibitions, television programs, and social networks.

The product life cycle mainly determines the choice of tools for its promotion. The level of competition, regulation of advertising at the state level, specification of product type, features of the target audience, etc. also have a strong influence.

For Olympus Agrotrade LLC, agricultural producer, we proposed to conduct an advertising campaign in a sequence of seven steps. Consider each of them.

Step 1. Identification of the target market.

Step 2. Defining the goals of advertising.

Stage 3. Formation of the advertising budget (Table 1).

Table 1

Advertising budget

Cost components	Amount per year, thousand UAH
Advertising souvenirs	7.5
Participation in specialized exhibitions	17.9
Other costs associated with marketing activities	20.5
Advertising spending budget	45.9

Step 4. Development of advertising messege.

Step 5. Selection of advertising media. Developing an advertising appeal is important, but not key. The message begins to "work" only when it reaches the recipient.

To choose the media we need to understand the target audience, their preferences in communications. It can seem old-fashioned, but the local community prefers newspapers. So, to publish an advertisement in the local newspaper "Stepova Zorya" the company will need a very modest budget, less then 2000 UAH (Table 2). The newspaper is published once a week.

Table 2

Advertising budget in the newspaper "Stepova Zorya"

Type of advertising	Square, per sm2	Publications per month	Price, UAH per sm2	For 6 months, UAH
On the first page	5,4	4	7,72	1042,20
Inside the newspaper	5,4	4	6,27	846,45
Total	-	5	-	1888,65

Radio can be also useful for advertising during local and national fairs. Present outdoor advertising in the form of billboards can be considered as well. The main element of such advertising will be the positive emotional impact of text and illustrations, usually simple and easy to remember, which creates an attractive "image" of the product.

Step 6. Scheduling the advertising.

Step 7. Evaluating the effectiveness of advertising.

The importance of a system approach in promotion activities is often underestimated, and the marketing department has to be part of the management of any agricultural company. Consider the project of marketing department establishment. The purpose of the project is to increase the company's profit by streamlining the structure of sales channels, as well as streamlining the structure of marketable products.

It is planned to complete this project in 1,5 months: 18.02.2021 - 03.04.2021. The project budget is 1,5% of sales in 2020 (20,5 million UAH). The project cost-sheet is available in table 3.

Table 3

Cost-sheet for the marketing department

Expenses, UAH per year	UAH
Office reconstruction	8700
Additional furniture	10800
Devices	35000
Capital expenditures	54500
Salary	120000
Salary taxation	26400
Stationery	2000
Electricity and other services	2000
Telephone conversations	3000
Travel expenses (including travel and accommodation expenses)	33264
Advertising	45900
Total operating costs	232564
Total costs	287064

The main project participants are:

- Customer - Olympus Agrotrade LLC;
- Investor - Olympus Agrotrade LLC;
- Project manager – Director of the company.
- The project life cycle includes:

Pre-investment stage (18.02.21 - 19.02.21); Investment stage (20.02.21–28.02.21); Operational stage (01.03.21 - 03.04.21).

Basic indicators for the project presented in Table 4. We assumed that marketing department will increase the total sales up to 5% per year.

Table 4

Calculation of the project efficiency

Indicator	2021
Investments, thousand UAH	54,5
Additional sales, generated by the marketing department, thousand UAH	1025
Project operating costs, thousand UAH	232,6
Depreciation, thousand UAH	10,9
The highest deposit rate for companies (for UAH), %	11
Cash flows, thousand UAH	803,3
Discount rate	0.9009
Discounted cash flows, thousand UAH	723,7
Discounted benefits, thousand UAH	933,2
Discounted costs, thousand UAH	209,5
NPV, thousand UAH	748,8
Return on investment ratio	13,7
Benefits-cost ratio (BCR)	4,45
Payback period of the project, years	Less than 1 year

1) Present Value of the project (PV) - the amount of discounted cash flows: 723,7 thousand UAH;

2) Net Present Value of the project (NPV) - the difference between the present value and the investments: 748,8 thousand UAH;

3) return on investment (ROI) - the ratio of NPV to the investment: 13.7 – very high;

4) benefit-cost ratio - the ratio of the amount of discounted benefits to the amount of discounted costs: 4,45:

5) payback period - less then 1 month.

Thus, the marketing department can be estimated as a high profitable reinvestment which can earn 3.35 UAH on each 1 UAH of current cost if the department will able to increase the sales by 5%.

Time planning instruments can be implemented for our project development (Table 5). The task of calendar planning has an important place in project planning. Calendar planning is the process of compiling and adjusting the schedule, where the work carried out by different organizations are interconnected by time parameters and with the prospect of providing them with other types of all types of resources.

Let's build a network graph, which is built from left to right, graphically, with a logical connection between them.

Table 5

Output data

Work code	Work	Previous work	Duration, days
A	Recruiting	-	10
B	Office reconstruction	-	7
C	Office preparation	B	1
D	Instruction for the team	A;B;C	1
E	Operation-process mapping and training	D	1
F	Data base	E	2
G	First working day	F	1

Draw a graph of the precedence, where the works are presented in the form of rectangles, and the arrows show the logical connections (Fig. 1).

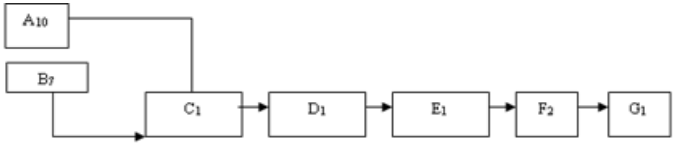

Fig. 1 . Precedence schedule

The calendar planning measurements in the simplest case indicate the start and end dates of each type of work, their duration and the required stocks. The critical path for this project is determined, it is the path in the network model, the duration of which is equal to the critical one and lasts 15 days (Table 6).

Table 6

PERT analysis for early start and finish

Work code	Early start	Early finish
A	Beginning of the 1st day	End of the 10th days
B	Beginning of the 1st day	End of the 7th days
C	Beginning of the 8th day	End of the 8th days
D	Beginning of the 11th day	End of the 11th day
E	Beginning of the 12th day	End of the 12th days
F	Beginning of the 13th day	End of 14th days
G	Beginning of the 15th day	End of 15th days

The early start date represents the earliest date when work began. If the duration of work is added, then we get the date of its earliest completion.

Due to the fact that the work performed depends on its completion and some of its elements, then there is the last date when the work must be completed without interruption of the project.

The specified date is calculated by the sum of the dates of late start and duration of work (Table 7).

Table 7

PERT analysis for late start and finish

Work code	Late start	Late finish
A	Beginning of 1st day	End of 10th days
B	Beginning of 3rd days	End of 9th days
C	Beginning of the 10th day	End of 10th days
D	Beginning of the 11th day	End of the 11th day
E	Beginning of the 12th day	End of 12th days
F	Beginning of the 13th day	End of 14th days
G	Beginning of the 15th day	End of 15th days

If the terms of the different beginning diverge, then the break when the work is to be started is called the possibility of time and is marked as the difference between the number of late start and the number of early starts. If the duration of work does not differ, then the difference between early and late beginnings and its early and late end coincides. Work with zero time is called critical, its duration is determined by the duration of the project as a whole. Critical duration is the shortest duration during which the whole complex of project works must be performed (Table 8).

Based on the network schedule, we build a calendar plan to which can be linked with resources and the matrix of responsibilities.

Documentation on the calendar plan package includes:

- comprehensive calendar plan;
- detailed calendar plans for performers;
- detailed calendar plans for work packages;
- information on resource needs;
- delivery schedules;
- plan for concluding contracts;
- organizational and technological measures to implement the plan;
- plan of control over the performance of works.

In order to stimulate the sale of agricultural products through more profitable channels, we offer advertising activities at the enterprise. Creating a marketing service at the company has long been the number one task. But Olymp Agrotrade LLC had doubts about the expediency of such organizational measures. We analyzed the effectiveness of the project

to create a marketing service and proved that such investments will be effective, as the payback period is less than a years, benefits-cost ratio – 4.45, and return on investment – 13.7.

Table 8

Determination of reserves

Work code	Reserve, days
A	0
B	2
C	2
D	0
E	0
F	0
G	0

We offer to use network modeling when creating a marketing service. This will allow more efficient management of material, financial and labor resources. Thus, the implementation of the above proposals will significantly increase the efficiency of production and sale of agricultural products.

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TECHNOLOGY MANAGEMENT IN THE CONTEXT OF IMPROVING GOODS QUALITY AND SAFETY

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Currently, when Ukraine is integrating into the markets of the European Union, the enterprises face a high level of competitiveness and specific barriers in this way. These processes motivate the Ukrainian enterprises to improve

the food production standards to raise their competitiveness compared to the foreign counterparts [5]. Nonetheless, Ukraine underestimates the role of technology, technology markets, and technology competition. Most of the technologies, regarded as high-class, sophisticated, new, unique, and progressive in our country, are not sold in either internal or foreign markets [4].

The introduction of technology management at agri-food enterprises may become one of the options for upgrading this situation. In its turn, it will create new advanced opportunities to improve the quality and competitiveness of products not only in the domestic market but also abroad.

Lihonenko L. states that the purpose of technology management is to ensure the technological development of the business organization (enterprise). In other words, it is the purposeful and continuous (constantly-organized) process of irrevocable changes in technologies of the enterprise economic activity. These changes determine the proper development of fixed assets that provoke them, the personnel who implement and use them, and intangible assets that promote their creation and use. Altogether, they allow ensuring the technological competitiveness of individual entities and the development of the technology market as a whole (due to modeling both demand and supply of technological ideas and their developments) [8].

Actually, the quality of products depends greatly on the level of their production, and thus, one of the possible ways to ensure the certified quality of the goods is to improve the technological support for their production. Food-producing companies, in turn, must be able to obtain quality technologies and machinery that have passed the necessary tests and trials, qualified personnel, including organizational and methodological assistance in creating quality management systems [7].

Product quality, being the most important criteria for the operation of the enterprise in conditions of market over-saturation and non-price competition, stimulates improvement of the technical level of production, which influences the scientific and technological progress rate and production efficiency, in general. All these factors cause a significant impact on the intensification of the economy and increase the competitiveness of domestic goods and living standards of the population [1].

According to Ilchenko N., food safety constantly concerns consumers. Many food safety standards have been published in recent years to improve food safety. However, there still exists some divergence in approaches to the solution of the issues highlighted by manufacturers, suppliers, sellers, and consumers. National legislation, standards, regulations, and requirements for food producers must comply with international documents so that Ukrainian producers could have opportunities to enter new and promising markets. The creation of appropriate economic and legal conditions for the

production of high-quality and safe food would allow providing people with such foodstuff and could strengthen Ukraine's presence in the world market of agricultural products [5].

In the conditions of constant transformational changes, the production of high-quality and safe products at agro-food enterprises requires immediate effective solutions, which consequently will provide a basis for improving the technology of production, processing, storage, transportation, and sale of products.

Zhavoronkov G. states that improving the quality of products and services certainly positively affects any enterprise's activities. Current economic conditions force every company to implement and support a modernized management mechanism of the appropriate (exemplary) quality. The defining elements of this particular management that most significantly impact the production and supply of competitive products on the market are: standardization and certification of products; standardization and certification of the internal systems of quality; state control over the observance of standards, norms, and regulations, including the responsibility for their violation; in-house technical quality control [2].

One of the most important issues in the field of food quality and safety is storage, processing, transportation, and sale of agricultural products. Currently, in Ukraine, the quality indicators low rates here are due to the products' non-compliance with technological norms, lack of proper refrigerant tanks, low sanitation, poor quality packaging, presence of food additives, processing raw materials by adding various food colorings, acids, alkalis, enzymes, etc. [7].

To avoid, or at least, minimize such breaches, it is necessary that the management system of the agri-food enterprise determined comprehensively the priorities for the development of their technical and technological capabilities. Key components of the technical and technological development of the agri-business sphere are shown in Fig. 1.

It is advisable to start the process of improving the technological management of agricultural production with the in-depth study of the technology structural elements and do it in terms of the basic production resources consumption. The dynamics and correlation of the main inputs in production in the technological processes affect the volume of production costs and the product's competitiveness rate. Under the current conditions of socio-economic development of the state, lowering energy-use in crop and livestock products production is the most important goal for developing an effective management system of production processes to ensure energy independence of the enterprise [3].

The agri-food enterprise managers must take the following measures to ensure technical and technological development in the context of technology

management [6]:

• free the enterprise from the excessive equipment, machines, and other fixed assets or rent them;

• provide timely and high-quality planned preventive and capital repairs;

• care about timely renewal of a particularly active part of the fixed assets to prevent their excessive moral and physical wear and tear;

• implement new equipment and advanced technologies, namely low-waste, non-waste, energy, and fuel-saving ones;

• improve the production and labor organization to reduce the loss of working time and downtime of machinery and equipment;

• improve the quality level of preparing raw materials for the production process;

• increase the level of concentration, specialization, and integration of production;

• raise the qualification level of service personnel;

• purchase high-quality fixed assets.

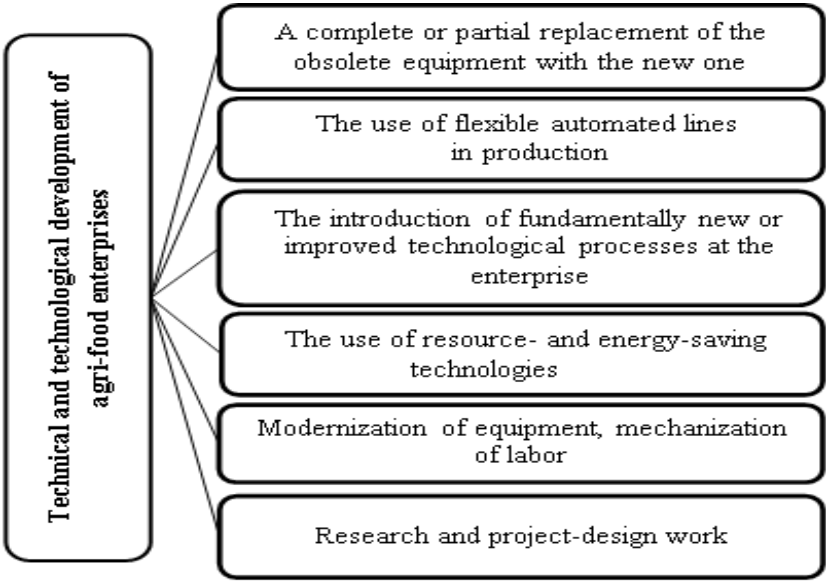

Fig.1. Basic components of technical and technological development of agri-food enterprises

Source: developed by the authors on the basis of [1]

In the context of ensuring high-quality and competitive product production, the implementation of effective technology management requires taking into account the innovative potential of the agri-food enterprise.

Loshchyna L. and Milashenko V. argue that we should include the following indicators of different components of management system to determine the innovative potential of the enterprise [10]:

1) the financial component (the rate of new technology acquisition costs in the total internal cost of production; knowledge intensity of the manufactured products; the rate of intellectual property; the rate of intangible assets costs in total research and development costs; the rate of the costs of the personnel's training in the total amount of expenditure on research and development);

2) HR (personnel) component (the proportion of workers employed in research and development to the total number of employees, the availability of highly- qualified personnel, salaries of scientific and technical workers);

3) the logistical component (progressive equipment, upgrading equipment index, the coefficient of introduction of new technology);

4) information component (costs of information activities, the ratio of personnel engaged in information activities);

5) market component (indicators of new product development; the part of innovative products in total industrial production; profitability of innovative products; the competitiveness indicator of the new products).

Further research is needed to characterize the forms of technological development of the enterprise of the agro-food sphere. Thus, L. Lihonenko identifies the following forms of enterprise technological development:

1) research-based – development of innovative technological solutions via financing internal and/or external research;

2) legal – the acquisition of property rights to the created objects of intellectual property (patents, licenses for the use of inventions, industrial designs, utility models); concluding sales/purchase agreements of technologies and know-how, etc .;

3) import-based – acquisition from other subjects of innovative activity the rights to use objects of intellectual property in their economic activity;

4) material – modernization and renewal of fixed assets through the purchase or leasing of equipment, machinery, accessories, etc .;

5) HR (personnel) – specialized training of the enterprise employees and/or involvement of external specialists if necessary for the technology effective implementation;

6) product-based – the development of new products (goods and services) based on new technologies;

7) export-based – transfer to foreign commercial or non-commercial companies the right to use new technologies developed at the enterprise [9].

Thus, to improve the quality and safety of goods, the managers of agri-food enterprises need to make balanced management decisions, taking into account the peculiarities of technology management and the abovementioned

scientifically-grounded conclusions. Qualitatively formed and implemented technological management of the enterprise will strengthen and form new extended opportunities in terms of quality, safety, the competitiveness of goods and ensure food security of the country.

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EFFICIENCY EVALUATION OF ELECTRICITY PRODUCERS USING DEA METHOD

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Economic changes affect the state and further development of enterprises of energy sphere. Influenced by external and internal factors, these enterprises have to adapt to the new situation, create new relations with partners, forming the energy supply chains (ESC).

In energy supply chain management the evaluation of the energy producers' efficiency plays crucial role. In terms of energy markets if we consider the functions of participants of ESC, it is obvious that the suppliers in ESC do not produce energy but only sell it to the consumers. This means that they are just intermediaries between producers and consumers. That is why it is essential to estimate not the efficiency of suppliers but efficiency of producers of energy services.

However only a few researchers pay attention to this problem. In addition, evaluating the efficiency they often ignore the influence of these enterprises on the environment, which is extremely important in terms of sustainable development and energy security.

Today there is no common methodology to evaluate the efficiency of energy producers, which would take into account their environmental influence. That is why given research aimed to form the methodological toolkit, which would allow decision makers to identify non-efficient participants of ESC and would create a basis to further benchmarking, development of ways to improve efficiency and, if it would be necessary, to change the structure of ESC.

The evaluation of enterprises should be conducted based on objective and sufficient for analysis data. These data can be obtained from financial records, which reflect the results of enterprises' work during some period of time. Moreover, data on emission of harmful substances can be calculated based on the unit emissions of consumed resources.

For the further analysis, we will consider energy systems of energy

producers as systems, which transform some “inputs” into “outputs”. In this case input is an indicator related to certain cost, and output is an indicator related to the results of enterprise activity.

It is worth mentioning that the efficiency of enterprises in energy sphere is determined by the ratio of outputs to inputs. This means that it is necessary to construct the model with multiple inputs and multiple outputs.

It is to be noted that before the application of methods of efficiency evaluation, it is necessary to normalize the data (on the stage of preliminary data preparation). In order to do this in this research we use minimax normalization, which leads to the limitation of factors to the range of [0,1].

Minimax normalization is one of the most wide spreaded methods of data normalization [1, p. 137]:

$$XN(i,j) = \frac{X(i,j) - X_{min}(i)}{X_{max}(i) - X_{min}(i)}, \quad (1)$$

where $XN(i,j)$ – normalized value of j element in i line;

$X(i,j)$ – reference value of j element in i line;

$X_{min}(i)$ – minimum value in i line;

$X_{max}(i)$ – maximum value in i line.

The formula (1) can be used for the normalization of the so-called factors-stimulators that are the factors, which increase leads to the increase in the total evaluation of the unit’s work. In the same time, studied units (enterprises) can be characterized by factors-destimulators, which have opposite attributes that is the reduction of them leads to the increase in the evaluation of unit’s work. For normalization of such factors the following formula should be used:

$$XN(i,j) = \frac{X_{max}(i) - X(i,j)}{X_{max}(i) - X_{min}(i)}. \quad (2)$$

The basis of separation of inputs and outputs into stimulators and destimulators might be the direction of their influence on the results of the studied process [2].

Data normalization on the preparation stage of analysis will allow models, which are used, to work with data more correctly not changing the results.

After data normalization it is advisable to proceed directly the efficiency evaluation of the energy producers’ work.

We propose to use DEA methodology (Data Envelopment Analysis). in order to evaluate in a comprehensive manner the efficiency of work of

enterprises in energy sector, which are the homogenous economic units (decision making units – DMU). Given methodology will allow to obtain the estimation of their comparable efficiency calculated on the basis of set of inputs and outputs.

The application of this method provides for the existence of two groups of factors that are correspond n DMU. In our case such factors are the inputs and outputs of enterprise energy systems. It cannot be denied that these groups of factors are related to each other as the outputs are the direct consequence of the inputs transformation in the system.

Thus, two groups of interrelated factors exist Y1, Y2, …, Ys and X1, X2, …, Xm.

DEA is the method of non-parametrical linear programming. It is used for the estimation of DMUs, which have multiple inputs and outputs. The method identifies the most efficient units and determine the efficiency of other units based on the estimation of their deviation from the efficient. Procedures used in this method allows after some amount of iterations to obtain so-called indicator "efficiency score", as well as to rank and to compare every DMU, which is characterized by some set of inputs and outputs.

W. W. Cooper, L. M. Seiford, K.Tone say that the selection of inputs and outputs in models should be stated on the following conditions:

1. Numerical data are available for each input and output, with the data assumed to be positive for all DMUs.

2. The items (inputs, outputs and choice of DMUs) should reflect an analyst's or a manager's interest in the components that will enter into the relative efficiency evaluations of the DMUs.

3. In principle, smaller input amounts are preferable and larger output amounts are preferable so the efficiency scores should reflect these principles.

4. The measurement units of the different inputs and outputs need not be congruent. Some may involve number of persons, or areas of floor space, money expended, etc. [3, p. 22].

In economic practice, the first condition not always can be fulfilled. For instance, the value of profit as a result of enterprise activity can be negative (loss). That is the reason why the preliminary date preparation should include their normalization.

The selection of inputs and outputs for DMUs (enterprises) in this research should be based on the importance of resources (inputs) and enterprises objectives to increase the amount of energy produced (electricity and in some cases heating) for consumers. Since the main goal of DEA is the evaluation of enterprises efficiency and since this efficiency is determined based on the value of inputs and outputs, the selection of relevant inputs and outputs is crucial for the analysis. Let us characterize briefly the set of inputs

and outputs, which were defined in given research.

The main goal of ESC is to produce energy services from defined set of resources and to provide them to final consumer.

In the first stage of efficiency evaluation of energy producers using the DEA methodology the following inputs were defined:

- Material costs;
- Average annual value of fixed assets;
- Labor costs.

These inputs reflect the cost of resources, which are necessary for the functioning of studied enterprises and for production of the main goods and services.

The following outputs were defined:

- Total emission of CO2;
- Amount of electricity sold;
- Amount of heating energy sold.

These outputs reflect the main results of enterprises work. Moreover, some of them are stimulators (volumes of sold energy), and others – destimulators (emission. The last are undesirable results of enterprises activity.

The model constructed with these factors will allow to estimate the efficiency of enterprises regarding their productivity in accordance with their influence on the environment.

While we have data on resources used and the results of enterprises work in terms of additional factors, the set of inputs and outputs can be complemented or changed.

In our opinion, the proposed methodological approach will allow to estimate the efficiency of enterprises, which are participants of ESC, and will give an opportunity to use the results of analysis in decision-making process.

Thus, after the conduction of preliminary data preparation it is worth to proceed the efficiency of economic entities. In order to do this we propose to use DEA methodology.

Therefore, in this research we propose methodological approach, the use of which aimed at:

1) Calculation of efficiency indicator of enterprises, which are participants of ESC, using DEA method that can be used further for benchmarking while designing more efficient ESC based on the indicator of enterprises productivity;

2) As DEA provide an opportunity to identify the enterprise relative efficiency, results of calculations for the most efficient enterprises can be considered as objectives for non-efficient enterprises;

3) Connection between the results obtained using different inputs and outputs will give an opportunity to interpret more properly the obtained

results;

4) The results of analysis for enterprises, which use different technologies of energy production will make possible to claim the priority of ESC formation from those enterprises, which are the most efficient.

Let us describe briefly the main characteristics of DEA for the efficiency evaluation of energy producers in this research.

At the enterprises, which produce electricity, the decision makers can not influence the amounts of sold electricity and heating energy, as they are mostly defined by the demand. In the same time combining the resources (inputs) rationally they can reduce their costs during the production process. For this reason in this case, in our opinion, the input-oriented DEA approach should be used. Moreover, it is necessary to chose the model with constant returns-to-scale. Thus, for every analysed enterprise in chosen DEA model the weights of factors will be set to maximize the efficiency in terms of established restrictions.

Thus, the selected model type in this research is – CCR, which was offered by запропонована A. Charnes, W. W. Cooper, E. Rhodes [4]. This is the simplest type of DEA model, which can be easy calculated and interpreted. Let us formulate the linear programming problem for this model.

There are data for M inputs and K outputs for every of N studied enterprises. For every enterprise n they are represented with column vectors xj and yi respectively. Then the matrix X with dimensionality m×N is the matrix of input parameters for N enterprises, and matrix Y with dimensionality k×N is the matrix of output parameters for N enterprises. Then the linear programming problem can be formulated as follows:

$$\begin{gathered} \min\theta,\lambda(\theta), \\ -\,yi + Y\lambda \geq 0, \\ \theta\, xi - X\lambda \geq 0, \\ \lambda \geq 0, \end{gathered} \qquad (3)$$

where θ – scalar, λ – constant vector with dimensionality N×1. The value θ, obtained while solving this problem is a measure of efficiency enterprise n. The efficiency in this case does not exceed 1. The same problem is solved for every enterprises, that is N times. The enterprises, which efficiency score is 1, are situated on the efficiency frontier, and those, which efficiency score is below 1, are not efficient [5].

Considering undesirable factors in the efficiency evaluation using DEA methodology, researcher propose several approaches of their introduction into the model.

L. M. Seiford and J. Zhu describe these approaches as following:

1) just simply to ignore the undesirable outputs;

2) to treat the undesirable outputs in the non-linear DEA model;

3) to treat the undesirable ones as outputs and to adjust the distance measurement in order to restrict the expansion of the undesirable outputs;

4) to treat the undesirable outputs as inputs (however, this does not reflect the true production process);

5) to apply a monotone decreasing transformation to the undesirable outputs and then to use the adapted variables as outputs [6, p. 19].

The third and fifth approaches require particular attention. The supporters of the third one, R. Färe and S. Grosskopf propose to introduce the additional vector of undesirable factors into the model through the use of the function of direct distance, which can be estimated by application of linear programming technics [7]. However, this approach, in our opinion, is rather time consuming and makes the interpretation of the results more complex. At the same time, L. M. Seiford and J. Zhu use fifth approach, as the linear transformation does not distort the interrelations between variables and is the right choice for DEA model application [6, p. 19]. In this research, we also use fifth approach, the procedure of which is conducted along with the data normalization. The undesirable results of enterprise activity are factors-destimulators and the formula (2) is used for their normalization. This approach is exactly the one that reflects the interrelations between inputs and outputs, not changing the target function of maximization of their ratio.

The selection of inputs and outputs in DEA model is the first step of the research. Moreover, the selection of the factors in the model depends on the data availability and the number of analyzed DMUs. The number of DMUs should be at least twice as many as the sum of inputs and outputs numbers.

After model selection and determination of inputs and outputs, the calculation of the efficiency scores using DEA method is conducted.

The efficiency scores are within the interval from 0 (the lowest efficiency score) to 1 (the highest efficiency score). The approbation of proposed methodological approach to the efficiency evaluation of enterprises in ESCs is conducted using the example of electricity producers.

In given research 21 enterprises, electricity producers, in 2017 were analyzed. The task was to estimate the efficiency of every enterprise. For practical implementation of the proposed methodological approach the software STATISTICA and MaxDEA was used.

The results of input-oriented DEA model are presented in Table 1. This model include 6 (X1, X2, X3, Y1, Y2, Y3), that means that the enterprises efficiency as their productivity was estimated taking into account the factor of influence of the environment.

It should be mentioned that the studied enterprises use different technologies for energy production. The enterprises with numbers 1, 2, 3, 4, 5, 7, 9, 12, 16, 18, 19, 20, 21 are thermal power plants, which use gas,

coal and fuel oil; enterprise 6 is the object of nuclear energy; 8, 14, 17 are hydroelectric power plants; 10, 13, 15 – solar power plants; 11 – wind power plant. It is also worth mentioning that the thermal power plants produce heating energy along with electricity.

Evaluating the efficiency of enterprises – electricity producers, we come to conclusion that the group of the most efficient enterprises (even taking into account ecological influence) includes the enterprises regardless the technologies they use. For example: thermal power plants (3, 21) and solar power plants (15). In our opinion, this means that designing ESCs final consumers can involve enterprises, which are produce energy using traditional energy resources, as well as renewables.

Table 1

Efficiency evaluation of electricity producers (results of DEA application) in 2017

№	Enterprise	2017	
		Efficiency	Rank
1	DTEK DNIPROENERHO	0,0520	15
2	DTEK ZAKHIDENERHO	0,0036	19
3	ODESKA TETS	1	1
4	KHERSONSKA TEPLOELEKTROTSENTRAL	0,5277	11
5	KALUSKA TETS-NOVA	0,5037	13
6	NATSIONALNA ATOMNA ENERHOHENERUIUCHA KOMPANIIA "ENERHOATOM"	0,0021	20
7	SIEVIERODONETSKA TEPLOELEKTROTSENTRAL	0,5791	10
8	ALTEN	1	1
9	BILOTSERKIVSKA TEPLOELEKTROTSENTRAL	0,5155	12
10	BOLHRAD SOLAR	0,6440	9
11	VITRIANYI PARK OCHAKIVSKYI	0,3872	14
12	MYKOLAIVSKA TEPLOELEKTROTSENTRAL	1	1
13	NEPTUN SOLAR	0,7129	8
14	NYZHNODNISTROVSKA HES	0,0198	17
15	PRYOZERNE 2	1	1
16	TEPLOHENERATSIIA	0,7390	6
17	UKRHIDROENERHO	0,0008	21
18	KHARKIVSKA TETS-5	0,7174	7
19	DONBASENERHO	0,0207	18
20	TSENTRENERHO	0,0322	16
21	DNIPROVSKA TEPLOELEKTROTSENTRAL	1	1

The efficiency evaluation of energy producers on the separate aspects of the efficiency as well as on the whole is the basis for the further benchmarking, which is based on the comparison obtained results of analysis with the best economic practice.

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SUPPLY AND SALES MANAGEMENT IN THE CONTEXT OF DIGITAL SECURITY

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In today's business environment, given the state of the macro environment, most businesses, regardless of industry, are forced to use a variety of tools that allow them to maintain a market position. This necessitates the focus on meeting customer requirements, ensuring the quality of trade services at all levels of the relationship with the consumer. The main trend of the modern economic system, which determines the transformation of relationships in the

provision of services by trade organizations, is the possibility of interaction of all participants in economic relations in the digital environment. The use of digital and IT technologies, their active introduction into the practice of economic entities of trade has led to the emergence of a specific term "digitalization" [14].

We can agree with the conclusions of analysts and experts of the Eurasian Economic Commission that the business structures of countries that are not involved in the digitalization process were beginning to lose competitiveness. According to the EAEU Report on the Development of Digital (Internet) Trade (2019), "… in the conditions of intensified competition and growth of cross-border trade, countries that have not been able to create a modern model of supply and service provision do not receive competitive advantages. A product delivery cost is higher, and the quality of services is lower than that of competitors who have mastered digital channels of promotion, sales, marketing, etc.… » [3; 13].

In recent years, there has been a trend of outflow of consumers from traditional shopping centers to online, as well as specialized online and offline stores that are integrated with mobile applications. For example, most large retailers operating in the traditional format, including (Carrefour, Casino, Wal-Mart, etc.) in 2020 began to reduce retail space. In the United States, which is one of the leaders in digital commerce, Amazon Alexa in 2019 made about 3 % of purchases (according to forecasts, by 2025, online sales of products in the country will reach 20 %) [2; 13].

The development of online trade has become especially relevant against the background of the spread of coronavirus. In China, for example, the Ministry of Commerce and the country's National Health Commission have published a "Guide to retailers and catering companies to prevent new coronavirus spread". As a result, all large and medium-sized online firms began to implement standards for "contactless delivery" of goods. This has led to a significant increase in online sales. For example, the popular Miss Fresh product delivery service has quadrupled the number of online product orders compared to the same period last year [12]; 40 million food products were sold. There was also an increase in online sales of the leader of Chinese e-commerce JD service Dada, whose product sales increased 3.1 times in 10 days. Supermarkets and hypermarkets have found their niche in the new conditions. The country's largest retail operator Sun Art Retail Group, which includes 486 hypermarkets across the country, closed in the midst of the epidemic 80 % of its outlets, but company's profits didn't decline due to its own online order delivery service, which worked through a mobile application and social network "WeChat". Certainly, there were some difficulties faced by online commerce during this period –

the lack of couriers, as some of them remained in quarantine, while

others demanded higher payment for increased risks [2; 12; 13].

Considering the world market of e-Commerce, we should distinguish two areas of its development: websites and online stores. Analyzing the dynamics, it can be noted that in 2020 the global e-commerce market showed an increase of 19.36 % ($ 4.13 trillion) compared to the previous year (Fig. 1) [9].

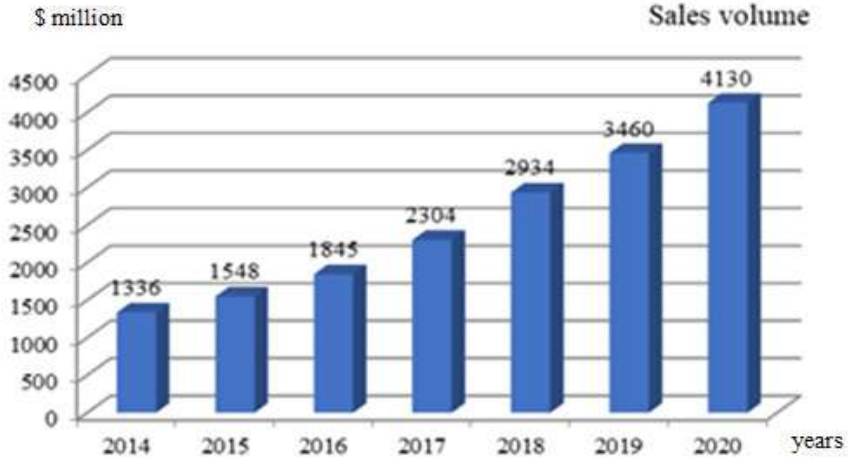

Fig. 1. Dynamics of the global e-commerce market, 2014-2020, $ million [2; 9; 13]

If the world's e-commerce turnover for this year is estimated at close to 4 $ trillion, in Ukraine it is projected at

4 $ billion. The average growth rate of this market in the world is 12-14 %, in Ukraine – about 17 % in 2020. The average customer who uses online commerce services spent $ 500 a year, according to experts. EVO Group of Companies has announced the results of 2020 in the e-commerce market in Ukraine. Thus, the total amount of physical goods and services purchased by Ukrainians on the Internet in 2020 reached 107 UAH billion. This is 41 % more than last year. The number of online payments has also increased – by at least 50 %. Now almost 9 % of all purchases in Ukraine are made online – on marketplaces, in online stores and social networks. For comparison, in 2019 the share of e-commerce in retail in Ukraine was estimated at 7 %, and the market grew by 17 % per year. During the year, the number of orders on EVO marketplaces – Prom.ua, Bigl.ua, Crafta.ua, Shafa.ua, IZI.ua and Prom.ua websites increased by 42 %. The average check fell by 10 %. This may be due to the fact that people began to buy online much more often and cheaper goods – clothing, consumer goods, food, masks [7; 8].

Creation of high-tech production and modernization of industry with

the use of new information and communication and digital technologies, the scale and pace of digital transformations were becoming a priority of foreign economic development of most countries. At the same time, a comprehensive and systematic approach to the large-scale implementation of digital technologies is needed. Only in this case they can significantly accelerate the development of an open information society as a major factor in productivity growth, economic growth and quality of life. Thus, the digital development of the economy in general, and businesses in particular, involves solving a set of tasks designed to have a positive impact on the economy, business, society and life of the country (Fig. 2) [5; 13].

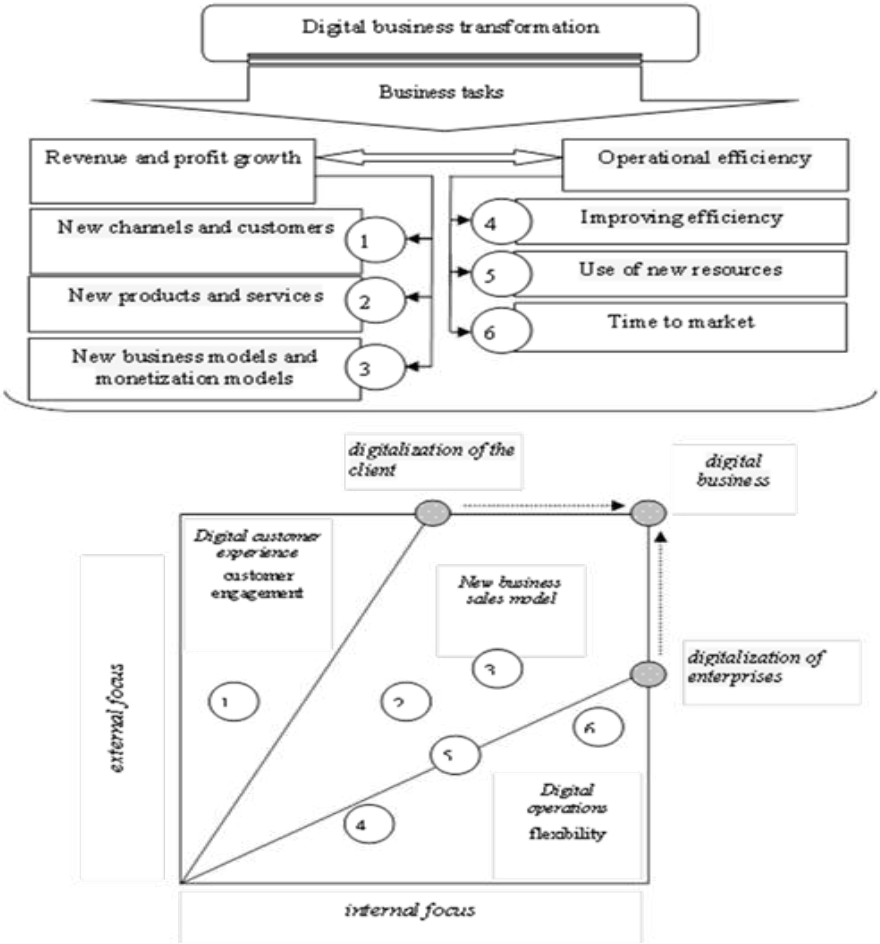

Fig. 2. Model of digital business transformation of the enterprise in the conditions of digitalization [developed by the authors]

The traditional "pre-digital" global market was controlled mainly by multinational corporations. The changes brought about by the digital revolution made it possible to create multinational companies. The key advantages of such a business model are:

the most efficient use of labor and intellectual resources that have specific skills and competencies. Individual specialists can work in one team, in one company, regardless of the physical location of individual employees;

access to global markets: digital products, software solutions, media content and other components of the digital market are not limited by logistics capabilities, and therefore can be delivered to any part of the globe without any problems;

global capital market: the globalization of the world economy has made it possible to access global financing (business angels, venture funds, accelerators) for companies from of any country [6].

Business in the digital economy is based on the opportunities created by global providers of digital solutions in the field of software and hardware, telecommunications. Mixed technologies, in which digital solutions complement and expand the capabilities of traditional technologies – the widest area of activity of companies, as it allows using the wide potential of the market: media, advertising companies, e-commerce and etc.

Thus, ensuring the functioning and development of business entities in the new business environment involves constant adaptation to the digital environment, which actualizes the definition of key elements of their production and marketing activities (Fig. 3).

Fig. 3. The main elements of production, marketing, sales activities of business entities in the context of digitalization [developed by the authors]

Thus, the key advantage of digitalization business is, first of all, qualitative acceleration of information exchange: data on customer needs, prices, and dynamics of production processes come almost instantly and can be used to

make relevant, and therefore, very effective management decisions [5]. It is important to keep in mind that the development of cloud technologies, the introduction of the concept of "anything as a service" leads to a significant increase in quality requirements for supply chain management.

The boundary between material and digital information flows was gradually disappearing: the delivery of goods can be in the format of digital files for machining centers or 3-D printers [6]. It is important that this gives the client the opportunity to offer a new quality of services, to respond as quickly as possible to changes in market demand, to control the quality of subcontractors. However, the requirements for the quality of supply or service management are also significantly increasing. Coordination requires many parallel processes that were previously performed slowly and sequentially. Accordingly, there are seven main "intersections" of digital and real flows in the management of supply and sales to the business entity:

• integration is necessary to unite in a single supply chain both inventory and information flows. This provides an opportunity to maximize the potential of digitalization to reduce risks in the supply, sale of products, accelerate operating activities, and reduce costs;

• artificial intelligence opens wide opportunities for optimizing sales and supply of products, especially in terms of routine operations, which allows you to efficiently process large data sets of operations within the company, typical of industry 5.0 and the industrial Internet;

• optimization, i.e. the transition to high-speed exchange of digital information forms new areas for optimizing the enterprise;

• the company can effectively manage a significant number of suppliers and contractors, controlling the quality of their work (for example, receiving data directly from their production, warehousing, sales equipment included in the industrial Internet of Things);

• formation of a trusted digital environment, based on distributed registry technologies (blockchain) and smart contracts. The use of such an environment will significantly accelerate financial flows and the pace of decision-making;

• autonomy, i.e. part of the standard business processes can be performed autonomously, without requiring human intervention;

• increasing synchronization, which opens a new stage in the development of the concept of "just-in-time" for the whole complex of incoming and outgoing inventory and information flows of the enterprise [4; 8; 9].

It is important that the integration of digital and real flows in the management of production and marketing activities is at an early stage of development now [1; 11], which opens wide opportunities for innovative companies, developers of new software solutions, subcontractors working for big business.

It showed that digital technologies can create unprecedented value as companies transform their businesses. As a result of the integration of the Internet into the company's business model, they achieve improved operational efficiency, significant cost savings and increased customer engagement, strengthen competitive advantages and more. The introduction of digitalization of production, sales, marketing, delivery eliminates many problems such as the use of working time, loading equipment, movement of raw materials, labor costs, but puts forward a number of new requirements for the operation and management of modern businesses.

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MANAGEMENT OF COMPETITIVENESS IN CONDITIONS OF SUSTAINABLE DEVELOPMENT AND ENSURING ECONOMIC SECURITY

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Theoretical and methodological foundations of competitiveness management in terms of sustainable development are based on the fundamental task of managing the economic system to ensure economic security. Scientific and practical experience in managing the competitive development of economic systems today is based on systemic, process and situational approaches [1-7]. Each of them represents a different system of views on the nature of the essence of management and uses the appropriate methodological foundations. Since management is a continuous process that requires decision-making at every stage, the use of modern economic and mathematical methods and models allows to reduce the level of uncertainty and risk, which determines the relevance of this area.

In view of this, the task of the research is to analyze the tools of competitiveness management in order to make effective management decisions in ensuring sustainable development and economic security. Let's consider their composition in more detail.

The spread of the use of a systematic approach in the management of economic objects, the founders of which were C. Barnard and P. Drucker,

occurred during the 50-60s of the 20th century [8]. Based on their work, the American researcher D. Forrester developed a model of the organizational system of an industrial enterprise based on the interaction of flows of raw materials, orders, cash, equipment, labor and information. Analysis of this model allowed the author to conclude that the complexity of managing a complex system in the long run is that in most cases, preference is given to short-term goals, which inevitably leads to deterioration of the system functioning in the future.

The modern view of management on the systems approach is based on a cybernetic definition of the concept of system. In the further research we will be basing on the following generalized interpretation as a purposeful complex of interconnected elements, which creates a single unit of different quality and is characterized by the properties of integrity, hierarchy, emergence and functionality:

- integrity is in that the change in the state or mode of operation of any component has an impact on all other components and the system in whole and vice versa;
- hierarchy implies that the system itself is considered as an element of a higher level system, and each of its elements can act as a lower level system;
- emergence means that the sum of the properties of the elements may not be equal to the properties of the system itself;
- the functionality of the system means that each of its elements has its own personal functional purpose, however, despite this, they all interact with each other.

Then, the place of statistical and economical methods and models in the system approach is determined by its essence:

first, it is the replacement of the object of the research, presented in the form of a system, with the appropriate model;

the second is the study of the object of the research by experimenting with its model.

thirdly - based on conducted modeling the decision is making concerning the best possible management of the object of the research.

The methodological basis of the system approach in the management of economic objects is widely covered in the works of foreign scientists: V. Volkova, A. Yemelyanova, A. Kukushkina, S. Pavlova and others [9]. Generally accepted classification includes three areas: expert assessment methods, methods of gradual formalization of tasks and formalized presentation of systems, fig. 1.

As we can see, the above classification is based on the degree of uncertainty of the input information, which depends on the possibility of its formalization and decision-making based on quantitative estimates. On the other hand, such classification of methods and models of a systems approach

does not give us an idea of their belonging to a particular area of research, which in our opinion is a disadvantage. This does not make it possible to determine which of the existing scientific developments is sufficient to solve the problems of a systems approach in economics, and which needs further improvement.

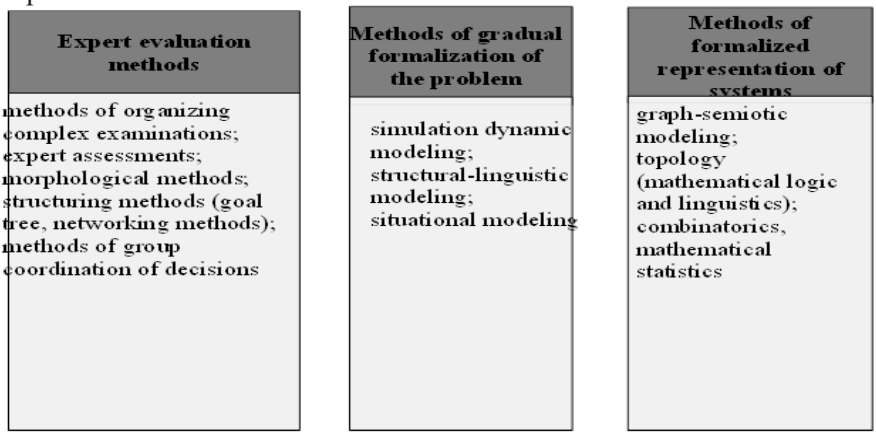

Fig. 1. Tools of the system approach

The scope of application of the system approach in competitiveness management are economic systems of different levels of aggregation: enterprises, industries, sectoral associations, the system of public administration in general.

The introduction of the proposed tools in the practice of individual businesses has led to the replacement of management emphasis. Now, within the frames of the system approach, enterprises are considered in such a way that in order to fulfill their own development goals, they must ensure the successful implementation of the set of corresponding business processes.

Thus, the process approach is reflected in the practical management of business processes [1], which extends the scope of its influence on the microeconomic level of management. Foreign and domestic researchers note two main points of view on the essence of the process approach in competitiveness management:

• the activity of enterprises is considered as a sequence of end-to-end processes, i.e. those in the implementation of which employees of different functional units are involved. Such process chain permeates the enterprise from its entrance to the exit and formalizes in the form of appropriate graphic tools. The main task of management is to increase the efficiency of each business process implementation, as part of the competitiveness of the enterprise as a whole;

• the activity of enterprises is also considered as a sequence of end-to-end processes, however, the main task of management, in this case, is to optimize the organizational structure by reorganizing the management system of enterprises, which is also called business process reengineering.

Summarizing current experience and works of local scientists we can conclude that the introduction of the process approach in management of organizations involves the following sequence of stages, fig. 2.

Practical aspects of using the process approach in the activities of economic entities are regulated by the following standards:

• ISO 9000: 2000 (International Organization for Standardization) - quality management system;

• TQM (Total Quality System) - a system of total quality management, which provides that product quality can be achieved in case of the quality of the organizational structure of the enterprise and the quality of all operations;

• PIQS (Process Integrated Quality System) - a quality management system that is integrated with business processes in the enterprise;

• WFMS (Work Flow Management System) - a system that allows to manage the workflows;

• ERP (Enterprise Resource Planning) - a system of planning and managing the flow of resources in the enterprise in the frame of its business processes. The focus of ERP systems is not only production activities, but also general business management, which additionally includes marketing and sales activities, accounting and financial management.

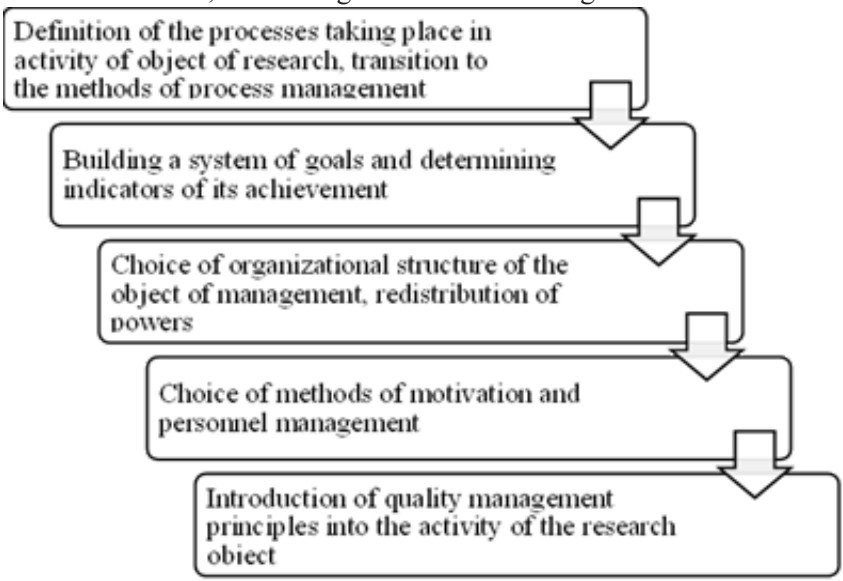

Fig. 2. Stages of implementation of the process approach

Another feature of the process approach, as a theoretical basis of competitiveness management, is the focus on management functions, which includes: planning, organization, coordination, motivation and control [8]. Thanks to the listed functions performs the transformation of the resources, which are given on an input of business processes in the form of the goods, or services which have value for the final consumer. So, the process approach considers providing of sustainable development as a series of interrelated management functions.

Let's schematically represent the elements of the system in the form of vertices, each of which has its own functional purpose. Accordingly, the direct and inverse relationships between them are indicated by arrows. In terms of graph theory, we will have an oriented graph. Then, a comparison of the essence of system and process approaches to the management of economic systems is conveniently presented in the form of fig.3.

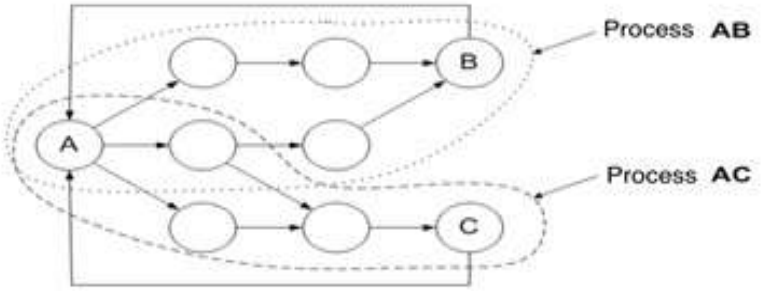

Fig. 3. Comparison of system and process approach in competitiveness management

Thus, in terms of a systems approach, we have a set of elements that, despite their own personal functional purpose, interact with each other and which are characterized by integrity, hierarchy and emergence. Let's associate a set of direct connections with the movement of resources of any nature, and the reverse - with the recording of changes in the state of the system. Competitiveness management in this case will be in following:

1. If the economic system is represented by an economic entity, the primary task is to create its organizational structure, with the definition of a set of elements, relationships between them and functional purpose. In the short term, the organizational structure may not change significantly, or be static at all. However, the experience of successful companies shows that organizational changes are a necessary condition for the adaptation of the economic object to the external environment. Economic and mathematical representation of such a system in terms of a systems approach is a purely

technical task.

2. If the economic system is represented at the macro level, then its organizational changes may either not depend on us, or occur over a sufficiently long period of time.

In this case, the presentation of such an object of research as an appropriate model is intended to ensure an appropriate level of adequacy. It is usually achieved by taking a closer look at the considering of the relationships between the elements of such a system.

3. The study of the features of the functioning of the object of the research is done by conducting experiments with its model, including simulation modeling. Despite the fact that each element of the system has its own functional purpose, the overall dynamics of development must be subordinated to strategic goals. This, in turn, is the basis for choosing the best solution for the management of the object of the research.

On the other hand, from the point of view of the process approach to competitiveness management, the emphasis is on certain chains of vertices and connections between them - processes. The integration of system elements into the processes is based on the set goals: the set of goals that need to be met, forms a corresponding set of processes.

The situational approach in competitiveness management in the conditions of sustainable development significantly expands the possibilities of practical application of the previous approaches. Its most important feature is the focus on the situation - a set of internal and external variables that decisively affect the performance of enterprises, industries, sectors of the economy, or the state at any given time. The fundamentality of this area of scientific thought is confirmed by the fact that the situational approach is the basis of the teaching methodology of Harvard Business School, which has accumulated a significant number of typical cases on various aspects of management in a market economics.

1. Leading world scientists who have studied the principles of situational approach are: I. Ansoff, G. Kunz, M. Mescon, M. Parker, T. Peters, M. Porter, F. Hedoury and others [10]. Ukrainian scientists have studied this issue less actively - some aspects of the situational approach are reflected in the works of V. Besedin, V. Gerasymchuk, V. Krutko, E. Panchenko, F. Khmil and a few others. Situational management should be used in cases where a complex economic system is characterized by the following properties:

2. Uniqueness. Each economic system is unique in its composition, properties and connections. Therefore, standard typical management methods are unacceptable.

3. Lack of a formal purpose for the existence of the socio-economic system (target function), which leads to the impossibility of its optimization.

4. Dynamics. Over time, the structure of the relationships between the

elements of the economic system may change.

5. Incomplete description of the economic system due to the uncertainty of internal or external factors.

6. A complex economic system is characterized by a large dimension of input data and control parameters, which does not allow the use of standard methods of simulation modeling for a reasonable period of time.

Accordingly, each stage of situational management can be represented in the following way:

$$S_i : \quad Q_i \underset{U_k}{\Rightarrow} Q_j \quad , \tag{1}$$

Where - complete situation, which consists of the current state of the economic object, knowledge about it and methods of managing it; and - respectively, the current and future state arising in the system; - possible managerial influence on it.

Given all the above, the tools of the situational approach can be presented as follows, fig. 4.

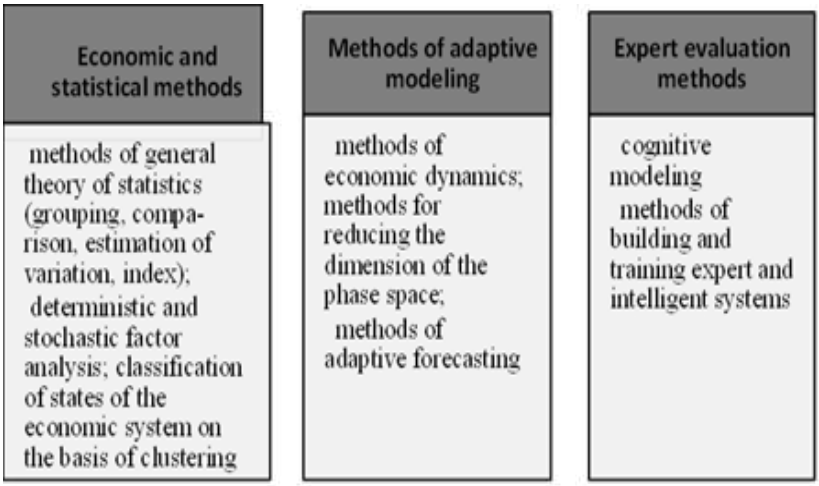

Fig. 4. Tools of the situational approach

Thus, the analysis of modern scientific directions of foreign and domestic scientists conducted within the frames of this research showed that system, process and situational approaches can be the basis for managing the competitiveness of a particular object of management.

However, the possibilities of applying any single approach, without interrelationships with others, are limited, as they cannot provide a comprehensive picture of the current state, modes of operation, internal

structure and use of experience with existing tools. Almost all basic research is based on the synthesis of these approaches in a management.

The scientific novelty of the study is the analysis of competitiveness management tools used in systemic, process and situational approaches to make effective management decisions and ensure sustainable development and, unlike existing ones, based on modern experience of using economic and statistical methods and models.

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PART 4. INNOVATION ASPECTS OF FORMING SOCIAL, EDUCATIONAL, AND INFORMATION SECURITY

ORGANISATIONAL CULTURE IN HIGHER EDUCATION INSTITUTIONS

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Organisation culture is the driving force of the organisation, what makes higher education institution (HEI) different from others, by it's values, basic assumptions and norms, beliefs, symbols, leaders, language and different other concepts of internal culture of the organisation. It is important to understand that culture can no be defined as good or bad, it should be analysed as effective or not in terms of goals of the organisation and in relationship with its effectiveness in context of the development of the organisation. and In this study definitions of the organisation culture are analysed as well as different classifications of organisation culture are provided. Aim of this study is to analyse importance of organisation culture in higher education institutions (HEI) and to highlight main concepts of the development of organisation culture and it directions.

Defining organisation culture.

Since the 19th Century connection between the concepts of the organisation and culture are being studied. Social dimensions of work were recognised as important elements of effectiveness at 1920s through the Hawthorne studies. (Listead, 2001)

The concept of organisation culture is commonly understood as beliefs, values and behaviour patterns of the certain organisation, which are shared by members of an organisation. Organisational symbols, myths, stories are the concepts what can be used to socialise people within the organisation, in order to provide certain, common direction of the culture in the organisation. Concept of organisational culture is usually distinguished from corporate culture, as it is less controlled my the managers of organisation and is occurring more naturally. (Schein, 2004)

An organisational's culture is reflected in what is done, how it is done, and who is involved doing this. In concerns decisions, actions and communication on instrumental and symbolic level. (Tierney, 1998)

Authors of the Harvard Business Review state that organisational culture, together with the strategy of the organisation are among the primary levers at top leader's disposal in their way to maintain organisations viability and effectiveness. Organisational culture expresses goals of the company through its values and beliefs, as well as guides activity through shares assumptions and group norms (Groysbeg, 2018). Schein (1990) states importance of understanding culture - better understanding of it can lead employees to understand the forces acting within them that define who they are, that reflect the groups with which they identify themselves.

Organisational culture can be defined in many ways, but one of the most popular definitions are stated by E.Schein as culture of a group can be defined as a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration, what has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.

Michael Morcos defines an organisational culture as characteristics, what is originated inside every organisation, what affects morale and engagement of the employees. It is also stated that organisational culture differentiate extraordinary companies from the rest, as it governs revenue rates and influences company performance and profitability (Morcos, 2018).

Organisational culture can be defined in many ways, but one of the most popular definitions are stated by E.Schein as culture of a group can be defined as a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration, what has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems. By E. Schein organisational culture consists of several critical elements, except of well known such as norms, behaviour patterns, rituals ant traditions (Schein, 2004).

Organisation culture implies structural stability in the group. Any "cultural" element of the group is understood as not only shared, but also stable, as it belong to the whole group. The third characteristic of the organisational culture is Depth. As often unconscious par of a group, organisational culture is less tangible and less visible as other parts. Also it should be noted - the more deeply something is embedded, more stable it gets. Breadth of the organisation culture can be stated as - once it has developed, it influences all aspects of the organisation's functions, it's environment, internal operations. The fourth characteristic that Schein

implies by the concept of organisational culture what leads to the stability of the concept - forming of the patterns and integration of the elements to the wider paradigm or "gestalt". Patterning or integration itself comes from the human needs to make an environment as orderly as it is possible, as disorder makes people anxious, as a result they try to develop system for processes to happen in certain order and in a predictable view. (Schein, 2004)

Classification of Organisation Culture.

Organisational culture can be classified in various ways. Geert Hofstede classifies it by national types of the culture, Edgar Schein provides three cognitive levels of organisational culture.

Geert Hofstede, one of the most important key figures in the organisational culture, developed concept what shows how cultural and local groups affects cultural behaviour.

According to the Geert Hofstede, there are majorly six six cultural dimensions:

Power distance is mentioned as first factor and is defined as acceptance of the less powerful members that power in the organisation is distributed unequally. Factor represents inequality and power in the organisation, what also can be considered as extremely fundamental facts of any society, as all societies are unequal. There are ten differences between the small and large power distance societies. In the small power societies use of power is legitimate, parent treat children as equal, older people are neither respected or feared, education is based on the student-centred approach, etc. In large power distance societies power is a basic fact of society, parent do teach their children obedience, older people are both respected and feared, education is teacher centred.

Uncertainty avoidance deals with a society's tolerance for ambiguity. Uncertainty avoidance indicates if members feel uncomfortable of comfortable in unstructured situations. Uncertainty avoiding cultures try to minimise the occurring of the unstructured, surprising and different from usual situations by strict behavioural codes, laws and rules, where the is only one absolute truth.

Individualism is the opposite of collectivism with strong individual characteristics of organisation, where everyone in the organisation is supposed to take care of himself, have strong right of privacy, personal opinion is expected and tasks prevails over relationships.

Masculinity versus its opposite, femininity, refers to the distribution of values between the genders which is fundamental issue for society. This factor refers to the differences in male and female values on the culture of the organisation.

Long- term vs. Short-Term orientation has a strong correlation with economic growth. Some organisations do focus on short or long term

relationship with employees. This dimension relates to the significance attached to the future versus the past and present. In short-oriented societies individual value traditions, nepotism and donations, while in long-term orientation societies individual value savings and determination.

Indulgence versus restraint is a sixth dimension, added by Hofstede in 2010. Indulgence strands for the free gratification of the human basic needs and natural desires, while enjoying life and having fun. But the opposite - restraint, what usually stands for society that controls gratification and regulate the life of the people by strict rules and social norms.

During the further years, Hofstede dimensions have been criticised, as his model do not cover diversity within the national cultures, as well as he proposes less of a role for people in developing cultures (Hofstede, 2011).

Edgar Schein in his research provides three levels of culture which are connected between each other and are shown on the following Fig. 1.

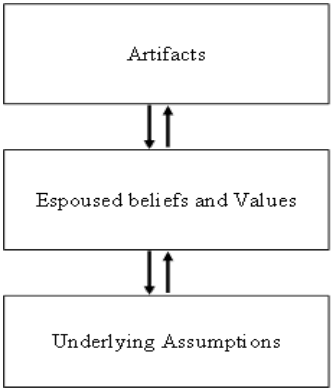

Fig. 1. Levels of Organisational Culture (Schein,2004)

Levels of the organisational structure by Schein can be explained by following concepts:

• Artifacts are visible organisational structures and processes, which lays on the surface of the organisation. Artifacts include visible products of the group like architecture of its physical environment, language of the group, technology and products, style, artistic creations, as well as it is impersonated in the clothing, manners and emotional displays. Climate of the group is an artifact of the deeper level, as visible behaviour of its members. Artifacts also include organisational processes how specific behaviour is becoming and routine, as well as structural elements like organisational charts and formal descriptions how does organisation works.

• Espoused beliefs and values are the strategies and goals of organisation, it's philosophies. When group is newly created, it reflects someones original beliefs and values, as proposed solutions to complete the task what it faces.

Individuals, who can influence the group to adopt their certain approach of problem solving mechanisms, will later be identified as leaders of the group. If the espoused beliefs and values correspond to the underlying assumptions, articulation of those values will be helpful in finding identity and mission of the group. While analysing beliefs and values it is necessary to distinguish those that match with underlying assumptions and those that are rationalisations or aspirations for the future. It is very common situation, when such beliefs and values are so abstract, that they can be even mutually contradictory. Espoused beliefs and values of the organisation often cover not all the areas of the behaviour of the organisation and many areas can be left unexplained, leaving the feeling that not whole culture is explained and covered. In order to get a deeper level of understanding and predict future behaviour correctly, category of basic underlying assumptions should be discovered and researched.

• Underlying Assumptions are unconscious, take-for-granted beliefs, perceptions and feelings. Basic assumptions have become so taken for granted that there are not huge variations within a social unit. Theories-in-use are usually non non confrontable and non debatable, as a result those are extremely difficult to change. Culture as a set of basic assumptions defines for us what to pay attention to, what does certain things means, how should we react on certain situations, and what actions should we take in various situations. (Schein, 2004)

Organisation Culture in Higher Education Institutions.

External demographic, economic and political factors are influencing higher education institutions. Cultural influences occur at many level, within the any department of the institution, as well as even at the state level (Tierney, 1998). Higher education institutions, just like other organisations what is working in the dynamic environments, have to respond as quick as possible on the changing environment.

Organisational culture can be considered as a tool what should be used by HEI in order to improve the quality of services provided to the students and general cultural policies for the achievement of the goals of the organisation (Ortiz-Colon, 2017). Higher education institutions has a role of the organisational actor and chooses its own strategies in the context of the challenges they have, like socio-economic challenges of the society and economics in modern world. HEI are building infrastructure of knowledge, as well as expanding their values and beliefs within the students (Serdenciuc, 2016).

Organisational culture in higher education institutions and business organisations differs in therms of mission, external environment, image of the organisation, leadership processes, interpersonal relationships and management processes. It is necessary to discover strategies, and values that

may contribute to building and organisation culture in the higher education institution based on creativity and innovations, what will help to to shape the identity of the higher education institution. It is needed to answer the questions why does this HEI exists, how does it reach it mission and goals and what doest it offers in terms of teaching and research. The answer on the question "why do HEI exists?" is the part of the organisational culture. Answering this question would inspire students and help the HEI to hold the organisation together.

It is necessary to understand the determination to serve students, to educate them by giving all the necessary tools in order to help them find their way in life. Better structures of governance and flexible communication systems should be designed. Structures and systems based on the autonomy and freedom, what is related to the teaching and research, personnel hiring, and easier access to the HEI research grants should be implemented, together with transparency in decision making processed, access to information and flexible administrative structures. Teaching and research should have strong mechanisms of support. New fields of teaching, national and international grants, new teaching and learning systems should be implemented to reach the goal of strong and understandable organisational culture (Coman, 2016).

Organisational culture is being studied since the 19th Century and is considered as very important element of the organisations effectiveness in terms of reaching its overall goals and development directions. The concept of organisation culture is commonly understood as beliefs, values and behaviour patterns of the certain organisation, which are shared by members of an organisation. Organisational symbols, myths, stories are the concepts what can be used to socialise people within the organisation, in order to provide certain, common direction of the culture in the organisation. Organisational culture can be classified in various ways. Geert Hofstede classifies it by national types of the culture, Edgar Schein provides three cognitive levels of organisational culture. Organisation culture in the HEI can be considered as a tool what should be used by HEI in order to improve the quality of services provided to the students and general cultural policies for the achievement of the goals of the organisation. By building open relationships between students and HEI, transparent management system and support of research, HEI can develop their organisational culture to the new lever, which would attract students and develop competitiveness of the institution.

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APPROACH TO MANAGEMENT OF PERSONNEL AS A WAY TO ENSURE ITS SAFETY AND EFFECTIVENESS IN THE CONTEXT OF THE COVID-19 PANDEMIC

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The modern world is changing, and new technologies are constantly emerging that are changing people's lives. Inventions of recent years are amazing: a robot vacuum cleaner, an electric car, and instant messengers with the ability to exchange information instantly. Today, we cannot ignore these changes, we must anticipate them, be constantly in the trend [10]. Managing people is also a lively, flexible process that is constantly being improved.

If earlier it was possible to frighten the employee, force him to work by force, but today such methods do not work. Only the right motivation of the staff can give results for the company. The emergence of a remote form of work is also an interesting innovation, which presents certain difficulties for the HR management process. The coronavirus pandemic that occurred on our planet in 2019-2020 has made adjustments to many processes, and it has shown that we need to be prepared for a variety of environmental challenges. Remote work may well become an extremely convenient form of workplace organization. A person at home feels home comfort, in this cozy atmosphere, and she may well have the most interesting projects. Creative thinking is unique, the birth of creative ideas is not subject to strict laws and regulations, in a cold and business office, a person's thinking experiences a certain pressure from the working environment. You can't give a task to complete two or three creative projects a year, creative ideas are not born like cars on an assembly line. But certain conditions for the emergence of creative ideas are extremely important. American social psychologist Kurt Levin identifies three main styles of management - authoritarian, democratic and liberal; this approach has been considered the main one for many years. It is often emphasized that all of three styles of management are important and a great manager should master all three. Such a versatile manager was undoubtedly appreciated in any enterprise, but how will he manage in the current situation? The need to generate creative ideas puts the modern Manager in a new situation, a situation where a new management style is needed. A management style that will ensure effective management of its employees in a remote work environment, and will also be aimed at creating creative projects [3]. After all, only creative projects provide organizations with competitiveness in a situation where consumers constantly want something new and advanced. American Manager-innovator Elon Musk – one of the first managers who tries to apply such a new style, his company Tesla Motors is an example of a modern high-tech company, it produces innovative products, it uses the labor of robots, innovative practices of managing people are applied. Similar management practices are used in other companies – Alphabet, Amazon, Microsoft, Yandex, Kaspersky Lab. This article is devoted to these challenges of modern management. The authors will try to formulate the components of a new management style – creative style.

Within the framework of innovation management, companies traditionally use three main management styles – authoritarian management style, democratic and liberal. The main difference between these styles is that they allow freedom in work activities and exercise control. At the same time, the liberal style was considered the most suitable for various creative companies, since it allows for the maximum possible delegation of authority

and soft control. However, with this style of work, employees still had to be at the workplace, while performing their duties according to the work schedule. A certain revolution in the emergence of a new management style was carried out by Hewlett-Packard, which was the first to enter the territory of Silicon valley. This company began to use a new organizational structure – edhocratic, which was focused on creating comfortable conditions for employees who think creatively [2, 4]. Subsequently, various management practices emerged in various companies in Silicon Valley that were designed to encourage original thinking. Especially successful was Google (today the company is part of the Alphabet holding), which gave employees the opportunity to create their own projects during working hours, the possibility of a free work schedule and, finally, remote work. Then the same opportunities for employees were provided by Marc Zuckerberg's Facebook. The same time, it was initially assumed that the employee should be located on the company's territory. For this purpose, special spaces were created – parks, isolated premises, cafes, and co-working spaces.

A new management style Musk – his groundbreaking projects have been fantastically successful. Today, Elon is one of the five richest people in the world. Elon applied a new practice in management, he found successful managers in various parts of the world – from Canada to Australia and gave them the widest possible authority. They needed to design a new plant themselves, put together their own team, and Elon considered it important to motivate the creative ideas of his employees. Musk appreciates people who literally come up with creative ideas on the go; he himself has repeatedly emphasized this. One of his employees suggested using a Tesla tablet instead of an instrument panel in a Tesla electric car, and for this innovation he immediately received a package of various bonuses. So, motivation is a very important factor in creative thinking, and creative thinking should be evaluated higher than simple performance.

The coronavirus pandemic, which began in 2019 and continues to this day, has made its own adjustments to the work of organizations around the world. In the context of the spread of infection, remote work is becoming popular, which today is becoming quite comfortable and productive. The emergence of a large number of instant messengers with video conferencing, high-speed Internet, and mobile gadgets has created a unique environment for virtual presence. Now it is not necessary to go to work, it is quite possible to work at home, and the results will be even higher, because the person is in the most comfortable conditions. The question arises-how to manage this process? How do I monitor the results of my work? Previous management styles are powerless in these working conditions; they appeared and took shape quite a long time ago, in the conditions of mandatory presence at the workplace. But what if a person's workplace is at home? By the way, the mass

spread of remote work is just a positive moment, just creating conditions for the emergence of a new management style and creative breakthroughs. The pandemic has been the trigger of the process.

The implementation of a creative style is determined by certain factors. An organization that uses this management style should strive for innovation and breakthrough creative solutions. This is a very important condition. The phrase by cofounder Google Company Sergey Brin can be used as the organization's philosophy "Happy employee works more productively". A manager who implements a creative management style should start with himself. The drive for innovative thinking and the ability to work remotely are the main components of a new type of manager. The pandemic may be over, but this does not mean that remote work will become unclaimed. On the contrary, the whole world has realized the advantages of remote work – home comfort and comfort, which provide very good opportunities for non-standard thinking. In the modern world, only non-standard, breakthrough projects ensure an increase in competitiveness and sustainable development of the organization [6]. The team of the organization should be charged with creative projects, and the atmosphere of creativity should hang in the air. So, the first components of the creative style are the atmosphere of innovation in the organization, the manager as a driver-conductor of this management style. But that's not all. How can a manager perform the most important managerial functions – motivation, control, and coordination-in a creative environment?

Let's start with motivation. Motivation is the most important condition for implementing a creative management style. Motivation should be a complex of impacts: a decent salary, a social package, and bonuses. All of this gives the employee a sense of confidence in the future, he works without being distracted by fears about his future. Here we must proceed from international standards, according to the ILO recommendations, an employee should not receive less than $ 3 per hour, but since we are trying to evaluate creative work, the lowest salary ceiling here should be at least 2-2.5 times higher [8]. In addition to the salary, there should also be a significant bonus part for a fully completed project, as well as various bonuses (free dining, dry cleaning, hair salon, fitness, paid summer vacation).

Control is also very important in the work of the organization. However, it should be unobtrusive and not take up much time. For example, before the pandemic, Alphabet held five-minute stand-up flyers every day, where everyone talked about the work they had done. This allows employees to quickly and without unnecessary bureaucracy report on completed tasks, and the Manager can quickly get information about the situation within the team. When working remotely, such training sessions can be conducted in a video conference mode or even by creating a group in the messenger, where

literally every hour the manager can "keep abreast" of the team, clarifying the most important aspects of their work with subordinates. It is important to give up a variety of paper reports and tedious screenshots, and trust the employee. Such control will give more time to the employee and Manager; in addition, it creates an atmosphere of trust and solidarity.

Team coordination is greatly simplified by using instant messengers in your work. It is enough to create your own group and constantly be in contact with your subordinates. Do I need a video conference format? Most likely, no, text correspondence is enough. But in exceptional cases, it is advisable to use the video conferencing format – this disciplines employees. In fact, the remote format of work has a lot of advantages – saving on workplaces and renting premises, simplifying control and coordination of work of subordinates, reducing transaction costs, working in conditions of home comfort and comfort [7].

A very important factor is the home environment for remote work. The area of the apartment itself does not play a special role, a modern laptop or tablet does not take up much space. However, the employee may be significantly hindered by their children, parents, spouse, or Pets. The manager should keep this situation in mind. Employees who are prevented from working at home will not be able to perform their work duties efficiently. The manager is required to conduct a small interview with the employee or conduct a survey, but the best option is to come and see what conditions the employee lives in. If the conditions do not meet, it is better to provide the employee with a place in a co-working space. Corporate co-working is a platform inside an organization with increased comfort, which is designed to replace the employee's own home during remote work. Such a platform is necessary for employees who cannot work at home for various reasons. The atmosphere of a corporate co-working space should resemble a home – made one-lots of different paintings, upholstered furniture, vending machines with a choice of drinks and a variety of snacks (chips, snacks, donuts).

Using a creative style in the framework of innovative management of an organization is a good opportunity to make a breakthrough, to reach a new level, including foreign markets. Today, many Ukrainian organizations face serious challenges. This means improving the quality of products, entering foreign markets, producing innovative products, and generally maintaining competitiveness in a constantly changing environment. Our country needs to start mass production of modern processors, electric vehicles, medical devices, and 3-Dprinters. All this can be done by applying new management approaches. One of these approaches can be the application of a creative style of personnel management in the framework of innovation management in the organization. The application of creative style should begin with

training managers; they should promote the creative ideas of employees in every possible way and encourage remote work. The working schedule for remote work should be discussed in advance, it is better, of course, if breaks are provided. Organizing remote work is very important. This can include notifying employees about the company's new philosophy, equipping employees with mobile devices, and revealing the motivation mechanism. Such transparency captivates employees and creates a sense of corporate ownership.

Today it is time for a fairly tough competition for the consumer. At the moment, Ukrainian companies need to make a serious leap forward in order to get ahead of their Western competitors. It should be taken into account that most Western companies were created for decades, during which time they have accumulated great human potential, management practices, and most importantly, consumer confidence [9]. But there are also "upstart companies" in the West. Such companies can be quite attributed to Alphabet, Amazon, Facebook, and Tesla. These companies appeared relatively recently, but thanks to a breakthrough, they were among the leaders.

For most of companies in Silicon valley is that, firstly, the small size of the territories was the explosive nature of the development of small firms, often producing the same or similar products; secondly, asset studio firms, finding camping in a state of fierce competition, were forced to constantly learn from each other, to adopt technological and organizational innovation in the process of institutional isomorphism; thirdly, they grew up on an intensive exchange of knowledge and information on the horizontal mobility of skilled personnel migrating between firms and general supportive infrastructure" [8]. By the way, it cannot be said that such management practices bear fruit only in the United States, they are also successfully used in Communist China, where such advanced companies are located (a branch of Alphabet, Alibaba, Tencent). It should be added that Alibaba and Tencent are among the top ten companies in the world by capitalization.

Ukrainian organizations are also quite capable of making such a breakthrough. You just need to believe in your employee and create appropriate conditions for him. Today a moment has come, we must act. It is very important to respond to the challenges of the external environment and introduce new management practices [1, 2, and 4]. Denying the success of the above-mentioned companies, preserving outdated views in the work of the organization will lead to a drop in competitiveness. The use of a creative style creates conditions for the constant search for new projects, including in other areas of activity. This is important for companies whose products are rapidly becoming obsolete or losing demand. In this situation, you can hedge such risks in advance by diversifying your products. A good example is the Dyson Company, which, observing a decline in demand for vacuum

cleaners created a division for the production of electric vehicles in advance.

In accordance with the main management functions (planning, organization, motivation, control, coordination), the introduction of a creative style should begin with planning. It is necessary to plan the changes that will be carried out in connection with the implementation of this management style. It is important to prepare a corporate co-working space for those employees who will not be able to work from home for various reasons. The second point is that it is necessary to develop an updated strategy of the company, focused on a breakthrough in improving competitiveness.

Organizing the use of creative style should start with equipping employees with the necessary equipment for remote work (laptops, tablets, and smartphones). This is important, since personal gadgets are usually outdated. For high-quality remote work, you need to use state-of-the-art and high-performance mobile devices. All expenses of the organization for such devices will be recouped in the future with interest thanks to breakthrough projects and savings on jobs. By the way, the vacant office space can be rented out or used as storage space. All you need to do is leave the space for a corporate co-working space.

Control in an organization should be extremely soft, unobtrusive, and comfortable for employees, and based on maximum trust in subordinates. Even when recruiting staff, it is worth paying attention to purposeful employees who strive for self-learning [8]. Subsequently, you need to build a trusting work with them, a special creative atmosphere. The employee must feel important to the organization.

Coordination in the organization is simplified with the use of remote work, the use of instant messengers. Nevertheless, the Manager needs to be constantly "in the field", indicate his presence, and be interested in the plans of employees. When working on a project, a Manager can break one large project into several small ones and assign them to teams within the team. Overall, teamwork should be encouraged.

Thus, we can draw the following conclusions. Remote work plus stimulating creative thinking create the conditions for using a creative management style of the organization. This style provides opportunities for the Ukrainian organizations to make a breakthrough in terms of competitiveness, including in foreign markets. This is an extremely important circumstance for Ukrainian people today. You should switch to this management style as quickly as possible. A creative management style creates a special creative and safe atmosphere in the organization, each employee strives to create a breakthrough project, and the organization's staff will constantly be in search of new ideas. Therefore, the issues of creating a safe atmosphere in the organization will be the subject of our further research.

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INFORMATION WEAPON IN THE INFORMATION CONFRONTATION

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Techniques of information wars of the XXI century have become much more sophisticated and therefore more dangerous due to the fact that specialists who plan and carry out information attacks are armed with modern knowledge in the field of psychology and information technology. This allows them to influence the subconscious and thus control our actions. That is, the methods of long-known traditional propaganda have been replaced by psycho technologies based on the latest advances in psychological sciences, characterized by high efficiency of informational influence not even on consciousness but on the human subconscious, which may not realize not only the purpose of influence but also happens.

The vital activity of modern society is measured by the development level, functioning quality and the information environment security. Therefore, the current level of the information sphere development is characterized on the one hand, it is the intensity and mobility, and on the other, it is the strengthening of information confrontation.

Information confrontation is a rivalry of social systems in the information-psychological sphere and is closely connected with such a concept as "information weapons". The modern world is characterized by an incredible number and variety of weapons. Information weapons differ from other types in that they do not have an open military character and do not use, at first glance, open violent actions during their use, but in terms of effectiveness they can be a weapon of total impression.

The information infrastructure of society is a target of information weapons. In particular, Ukraine's information infrastructure is a vulnerable area for offensive means of information confrontation. The most "insightful" use of information weapons is related to human consciousness and its impact on human behavior.

Information weapons pose an exceptional danger to the information computer systems of public authorities, weapons and military management systems, banking and financial systems, the economic sphere, as well as to people, influencing their behavior.

According to recent research there is no single definition of "information weapon". A universal and standard definition is the interpretation of the "information weapon" concept as a set of informational influence means on technology and people. That is, the objects of information weapons influence on the one hand is technology (communication systems, management and control of state, regional and private structures, military authorities, media and media, on the other hand are people (especially human intelligence, individual collective and mass consciousness).

Information weapons are unique in the nature of hitting targets, as they are non-lethal, covert and characterized by selective damage, and given its scale of application, it only adds to its advantages. In addition, such weapons preserve material values, human resources and the environment. Information weapons are essentially "dual" because they combine both electronic and human aspects.

Information weapons become a threat to the national security of our state, given the crisis in the system of government, especially the course of the war in the east of the state and all vital spheres of society.

The modern strategy of using information weapon is based on J. Warden's model, which reveals its essence. This model is called the "five-ring theory" [2]. J. Warden approached the problem through a systematic approach, according to which the centers of the enemy's gravity were placed in five spheres (in the form of concentric circles). The "five rings" are the constituent centers of the country's life: at the center of the nucleus is the political and military leadership of the state. The next ring is the country's infrastructure; further is basic production (especially industrial and energy base). The fourth ring is the population (which is not subject to physical destruction, but rather is demoralized) and the fifth is military structures. That is, the five components are the country's:

- leadership and the system of public administration;
- production (basic industries);
- transport network;
- population and armed forces.

In the case of neutralization of any ring, the efficient functioning of the entire system is disrupted. Depending on which ring is out of order, the malfunction can be "serious" or critical.

The essence of the theory is based on the fact that the strategic plan of information confrontation is aimed at destroying the main "centers" of the governing structures in the country.

As for the single classification of information weapons, it does not exist. We will stop (rather we will remind) the most generalized and widespread classification.

According to the area in which the information confrontation is

conducted, information weapons are divided into two types [2]:

1. Information technology weapons (equipment), which include special information or communication tools that are designed / directed to adversely affect the information infrastructure.

This type of information weapon includes computer viruses (programs), sniffers: electronic tracking and interception programs, logic bombs: software viruses similar to sniffers ("Trojan horse" technology) platforms embedded in software, "zombie" technology, viruses used via the Internet and e-mail bombs.

Today there is a more complex and effective information weapon – electromagnetic (electromagnetic pulses), which is designed to destroy information systems. Mass use of such weapons disrupts the functioning of information and procedural infrastructure: it paralyzes military control systems and vital areas of the enemy's production.

2. Information and psychological weapons have the impact on the person, which includes specially formulated and designed information aimed at special processing (psychologically, ideologically) of the population, in order to "undermine" the moral values of society, the system of public opinion, management decisions [6]. Such a weapon carries out a targeted attack and affects the psychological state of the individual / group and society as a whole. Such influence is realized with the purpose of oppression, suppression and restraint of will simultaneously: technically, visually, virtually, physically, medically and by means of sounds.

In addition, such weapons can act as traditional methods, the above-mentioned misinformation, omission of certain problems, and alternation of true / false information, imposition, blocking, substitution and distortion, misrepresentation of information, deformation of information.

Such weapons include non-traditional technologies:

• psychotropic weapon, which is associated with bio energetic research (human bio field energy);

• psychic perception (hypersensitive perception);

• telepathy (transmission of thoughts at a distance);

• psychokinesis (thoughts influence on physical objects);

• telekinesis (power of thought and its influence on physical objects) [2, p. 118].

Note that psychotropic weapons are considered as psychophysical weapons, which includes psychotropic drugs, suggestive methods of influence (known as suggestion technology, "25 frame", NLP), as well as various combinations of these tools.

That is, information weapons include a wide range of techniques and methods of informational influence on the enemy: from "simple" techniques misinformation and propaganda and to "complex" - electronic warfare,

electromagnetic weapons.

As for the information space of Ukraine, it has long been an "arena of hostilities". Note that particularly effective information weapons can be used against a country where there are social tensions and conflicts of varying intensity, although information weapons in such situations create only the necessary background.

Given the fact that the information infrastructure of Ukraine is just being formed, so there are some dangers in its functioning and this is due to:

• lack of a unified state policy in the field of information security of the state;

• insufficient funding for information security measures;

• increasing the technological gap between the world's leading countries and Ukraine in creating competitive information technologies;

• using non-certified both domestic and foreign information technologies, means of information protection, means of information, telecommunications and communication in creating the Ukrainian information infrastructure;

• outflow of human resources (specialists in this field).

Also, the problem of developing a strategy to counter not only Russian information aggression and the use of various types of information weapons to our country is relevant for Ukraine. Such a strategy (program) should reflect the basic principles of combating information weapons and correspond to Ukrainian realities:

• advanced foreign policy planning in conducting information confrontation with the aggressor country (certain concepts development, the implementation of which is in the national interests of the state);

• participation in the formation of the international agenda and the growth of the country from a subject to an object of international relations;

• use (rather risky) in the technological sphere it is rigid asymmetric confrontation: (for example, the use of technology "destabilization", which h involves increasing the instability of institutions and creating problems in the political, social, investment and business spheres; "locking technologies" involving the use of unmanned aerial vehicles (drones); the latest concepts "technologies of " subversive innovations" and technologies "black swans" or "edem-technologies, which have their own characteristics to appear unexpectedly [4, c.34].

• specialists' training in information warfare (for example, through NATO training centers);

• changing the approach in information confrontation and the use of information weapons from defensive to offensive.

Regarding information weapons as offensive, it should be noted that:

1) The offensive nature of the information weapon makes it possible to outline and clarify the potential of the enemy's aggression.

2) The effectiveness of offensive information weapons is associated with an information attack (sometimes assault), which can be preventive (precautionary / anticipatory) nature.

3) At first glance, the “softness” of information weapons can be “insidious”: in the long run, such weapons can create big problems.

4) Information weapons can have the effect of “dichotomy” [4, c.34] in the case of a continuous counteroffensive, which is especially important for the Ukrainian-Russian information confrontation, it can be directed in such a way that it becomes self-destructive for the enemy, the so-called “the system overheating” (for example, the collapse of the USSR).

Quite often the result of the information weapons use is unpredictable; does not coincide with the primary goals and the direction of influence can change radically. Therefore, political experts and analysts often point out that the Ukrainian-Russian information war may end in defeat for Russia, as it “tied” in this confrontation, clinging to Ukraine (and not only) as a “seed bull” and “exhausting” not only opponents, but also themselves.

For the first time, the term "Information War" was taken in the report of Thomas Ron "Weapons Systems and Information War" prepared in 1976 for Boeing. Then he caused an increased interest by some experts in the US special services.

In the framework of the information war there are events of offensive and defense character. Accordingly, existing and actively developing new defense and offensive means of conducting information confrontation are already improved, which will allow the information advantage over the opponent.

With a comprehensive approach to the classification of types of threats, their information security can be divided into threats of general orientation, which are divided into the following types:

- threats to constitutional rights and freedoms of man and citizen in the field of spiritual life and information activity;
- threats of information provision of state policy;
- threats of development of the domestic information industry, including the industry of informatization;
- threats of safety of information and telecommunication facilities and systems.

The defeat of objects is their destruction (disintegration), suppression and depletion. The destruction of an object is to cause it such damage that it completely loses its combat effectiveness. Suppression involves inflicting such damage (failure) on the object and creating conditions for it under which it is temporarily deprived of combat capability, its maneuvers are limited or control is violated. The main purpose is the moral and psychological impact on the object and thus reduces its combat effectiveness and the prohibition

of normal functioning.

Since the main element of the information infrastructure are people whose motivation is based on their physiological, social and information needs, the correctly calculated application of the so-called information and psychological methods of influence has a direct pressure on the level of state security. This is especially true in Ukraine, where there is no organized system of formation and support in society of the necessary moral values, patriotism and civic responsibility for the country's fate. Scientific and technological progress in the field of information technology, media development erased national borders in the information space and created unprecedented opportunities to suppress the enemy with non-traditional means of destruction that do not cause physical destruction. Passing through the consciousness of each member of society, prolonged mass informational and psychological influence of a destructive nature creates a real threat to the existence of the nation as a result of the transformation of its historically formed culture, basic worldviews and ideological attitudes.

The main ways to use information weapons can be:

• damage to certain physical elements of the information infrastructure (destruction of power grids, interference, use of special programs that stimulate the failure of hardware, as well as biological and chemical agents);

• destruction or damage of information, software and technical resources of the enemy, overcoming of protection systems, introduction of viruses and logic bombs;

• impact on software and databases of information systems and control systems in order to distort or modify them;

• threat or terrorist acts in the information space (disclosure and threat of disclosure of confidential information about elements of the national information infrastructure, socially significant and military encryption codes, principles of encryption systems, successful experience of information terrorism);

• capture of media channels in order to spread misinformation, rumors, demonstrations of force;

• destruction and suppression of communication lines, artificial overload of switching nodes;

• influence on operators of information and telecommunication systems with the use of multimedia and software tools for entering information into the subconscious or deteriorating human health;

• impact on computer equipment of military equipment and weapons in order to disable them [6].

Note the main doctrines of information wars, which are used in the leading countries of the world. Chinese doctrine is specific, but not unique. A lot of countries around the world today are aware of the importance and

significance of the information component of the war, as well as a new type of weapon is information. The United States began to formulate a strategy for information warfare in the early 1980s.

France, Germany, Britain and some other countries are currently actively developing information strategies for attack and defense. It can be said that the existence of information warfare as a type or part of an armed conflict is beyond doubt.

The US Critical Infrastructure Protection Administration dates back to the formation of the Presidential Commission for Critical Infrastructure Protection in 1996. In pursuance of the President's instructions in this direction, the National Plan for the Protection of US Information Systems was developed, signed by the President on January 7, 2000.

The United Kingdom uses a legal framework based on existing laws, which can be largely applied to cyberspace - the Regulation of the Investigatory Powers Act, adopted in 2000. She notes that attacks on information systems can be considered a common criminal offense with all the ensuing consequences. This act allows the British government to intercept and read e-mail, as well as require decryption of personal files at the request of government officials.

The French consider the concept of information warfare, with two main elements: military and economic (or civil). The military concept provides for a limited role for information operations and is aimed at peacekeeping purposes. In this context, allies are not seen as opponents. The economic or civic concept includes a wider range of potential applications of information transactions.

The UN Group on the Information Society (UN GIS) was established in 2006 as a specialized unit of the United Nations on information technology, as an interagency mechanism to coordinate the policies of UN organizations to implement the Geneva Plan of Action and the Tunisian Program for information society.

In accordance with the above, hostilities in the information war are unfolding:

• in the information space in the technical is the field of creation, processing and accumulation of information;

• psychological sphere is knowledge, consciousness and the enemy thinking [2].

Since information is a necessary element that ensures the functionality of any system, the need to destroy infrastructure, manpower, enemy equipment in the information war is not a priority. The object is information stored or circulating in various systems of the enemy by control, intelligence, combat, as well as the minds of servicemen and civilians.

The success of information warfare depends on the achievement of three

main goals:

• control of the information space and ensuring the protection of their own information;

• providing offensive information actions;

• optimization of the armed forces overall effectiveness [5, p. 20].

Information weapons, which are used in psychological operations, affect the structure of human reasoning, being cognitive.

As a result, a person forms a new model (picture) of the world, beneficial to the manipulator. Information weapons use the idea of transforming the communicative environment surrounding the object in order to reprogram its behavior. As an information weapon in this aspect it is possible to use the following types of information:

• the introduction of a new, unknown object of information;

• input of distorted information;

• introduction of new rules of information processing.

It should be noted that information weapons directed against social systems are certain "means" intended for information and psychological influence on individuals and social systems through the individual and mass consciousness of people through the channels of dissemination (receipt) of information.

In the State Strategy, cyberspace should be considered as a clear element of the information space. This approach is consistent with the provisions of international standards. "Cybersecurity" is understood as a narrower concept than "information security".

The cybersecurity strategy should be based on the following system of concepts:

1) information space is the sphere of activity related to the formation, creation, transformation, transmission, use, storage of information that has an impact, including on individual and public consciousness, information infrastructure and private information;

2) information security is the state of protection of the individual, organization and state and their interests from threats, destructive and other negative influences in the information space;

3) cyberspace is a sphere of activity in the information space, formed by a set of communication channels of the Internet and other telecommunication networks, technological infrastructure that ensures their functioning;

4) cybersecurity is a set of conditions under which all components of cyberspace are protected from the maximum possible number of threats and impacts with undesirable consequences.

Cybersecurity is increasingly seen as a strategic problem of the state, comprehensively affecting the country's economy, including the interaction of national software developers and management systems, manufacturers of

equipment and components to provide ICT infrastructure.

The core of the "problem field" of information security is to determine what the destructive indicators of information threats are. Mr. Cornish of the Royal Institute of Foreign Affairs in London (Chatam House) provides the following classification of information threats: activities of single hackers; organized crime operating on global Internet networks; ideological and political extremism; state information aggression [1, p. 21].

J. Goldgeier, a professor at the University of Washington, says that by definition, a cyberattack is not an "armed attack", that is, it does not fall under Article 5 of the Washington Treaty. But then he concludes that: "if the Alliance means anything, it must unite to counter attacks that threaten NATO members" [3, p. 17].Thus, in a short period of time, a system of specialized mechanisms and institutions for operational and strategic purposes was established in NATO.

Today there are no effective mechanisms to protect information resources from the use of information weapons by the enemy, as the scale of information dissemination in networks is extremely massive.

The first thing that is important for Ukraine in the information confrontation with Russia is to reasonably assess the threats.

Second, periodically carry out geostrategic analysis of the situation. Such analysis will further become the basis for outlining /developing a national concept of countering / neutralizing / protecting against information threats. Skillful possession of information weapons will ensure the national state security.

Third, although it is believed that information weapons are relatively cheap, but training is quite not a cheap field. To do this, Ukraine needs to be in the trend of the latest innovative research in the field of protection against information interference.

New challenges and threats to Ukraine should not only be theorized or put forward "correct" slogans (often formal), but also filled with actions and concrete answers. Such "response actions" must be asymmetrical, unexpected, sometimes "uncalculated", universal, multifaceted, and bring the country victory in a complex and fierce confrontation. It is important to realize that the one who forms information campaigns wins.

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COMPREHENSIVE COMPETITIVENESS MANAGEMENT SYSTEM: ALLOCATION OF STRATEGIC RESOURCES, INFORMATION AND LEGAL SUPPORT FOR RISK PREVENTION, INTRODUCTION OF MARKETING INNOVATIONS

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A flexible approach to the organization and reallocation of strategic resources is key to the success and implementation of the strategy. There are the following approaches to strategic resource allocation: resources are allocated equally to all areas; resources are allocated in proportion to needs; resources, primarily, are allocated to solve the most important problems for the enterprise.

The most rational, in our view, is the latter priority approach of strategic resource allocation. A close link between strategy and culture leads to maximum results, as corporate culture forms the corporate ethos of an enterprise, provides staff with a system of rules that determine how they behave and work, and ensures staff adherence to the enterprise's system of norms and values [2; 9; 10]. The following factors can contribute to the creation of a corporate culture that strongly influences on the strategy: a

strong leader who sets the rules and establishes the basic values and norms of behavior; the intention of the leadership of the firm to act in accordance with established traditions; manifestation of constant care for employees of enterprises; management based on maximum contact with employees.

A necessary condition for the development of an effectively competitive strategy, which ensures the acquisition of competitive advantages, is the availability of appropriate information support for competitiveness management [1; 4]. This subsystem allows to compare relative advantages and disadvantages of competitors in terms of their abilities and opportunities, to monitor actions of competitors, to warn the management of the enterprise about current and projected actions of competitors, to develop competitive strategies. Its creation is aimed at providing the enterprise with reliable and credible information about the market, competitive environment, competitors, structure and dynamics of demand, tastes and desires of consumers, etc.

The main task of enterprise competitiveness management is to create its own competitive potential with a clear focus on the market situation, taking into account competitive risk. This general task can be broken down into two separate tasks of fundamental importance. In the short term, the problem of current efficiency comes to the fore, i.e. converting existing resources and competencies into marketable competitive advantages, whereas in the long term, the problem is to develop new resources and competencies that would allow market chances to be exploited [3; 8].

It is advisable to improve the competitive potential of indicators such as technology, finance, organization of management and marketing.

The market implies the development of competition, and for companies to be competitive, they need to introduce new technologies, use new sales systems and carry out various financial operations, which certainly increase risk. In this situation, the enterprise can be wary, but do not avoid risk altogether, it is necessary to foresee and reduce it to a minimum level.

Competitive risk management is the management of risks and economic relationships arising in the business process, as well as a system of risk assessment and the development of methods to overcome them and strategies to optimize the balance between the profitability of financial-economic activity and the existing risks in order to optimize the profitability of enterprises [5; 6; 7].

Competitive risk management strategies can both reduce the likelihood of competition risk arising and reduce the potential for losses due to the actions of competitors or the adverse impact of the competitive environment (Table 1).

Thus, the proposed algorithm for the process of managing competitive risks will limit the number of risky situations in the enterprise, reduce risk

in general, reduce losses, and therefore will help to gain and maintain a sustainable competitive advantage for researched enterprise in the market.

Table 1

Recommended competitive risk management strategies

Risk level	Strategy	Content of the strategy	The direction of strategy implementation
High level of risk	Diversification	Diversification of economic activities types	Wholesale of goods, provision of intermediary, consulting, marketing services, commission trade
		Diversification of suppliers of goods	Involvement of a large number of suppliers in the purchase of similar products
		Investment diversification	Purchase of shares, other corporate securities, purchase of securities in banks or other financial institutions
	External insurance	Property risk insurance	Insurance of risks arising from force majeure (sharp fluctuations in exchange rates, inflation)
		Insurance risks related to liability	Insurance of risks arising from non-fulfillment of obligations by suppliers and marketing intermediaries

Management of competitive assets imply: consideration of competitive interaction evolution; selection of an alternative to search for exclusive competitiveness, determination of directions to achieve sustainable competitive advantages. It is determined that it is riskless enough to introduce a modified product to the market, it is reasonable to determine the possibilities of obtaining long-term competitive advantages.

The ability to maintain competitively advantages depend on a number of factors:

• sources of competitive advantage. Types of competitive advantages: set of strategic skills (technological superiority, quality of customer service); set of strategic assets (production of quality products, brand prestige, highly qualified personnel); advantages of high rank (high image, developed marketing, modern management) - lasting longer and allow high profitability; advantages of low rank (cheap labor, availability of raw material sources, not so sustainable because they can be copied by competitors).

• the obviousness of competitive advantage. If there are clear sources of advantage, there is an increased likelihood that competitors will try to deprive the firm of these advantages.

• speed of innovation. In order to maintain a leading position, the period of innovation implementation must surpass or be equal to the term of possible repetition of innovations by competitors.

• the ability to relinquish an existing competitive advantage in order to acquire a new one. Giving up competitive advantage is important for the implementation of the strategy because it creates barriers for imitators. For example, a firm has abandoned a cheaper plastic bottle in favor of a glass bottle, thereby creating barriers for imitators.

Competitive advantage must be: meaningful in terms of competitive conditions and meet the key success factors; sustainable in an unstable market environment and unavailable for replication by competitors. The following system of indicators is used to determine competitive advantages, reflecting strengths and weaknesses in a firm's competitive position. The main attributes of 'competitive strength' include: the degree of product uniqueness; market leadership; a high degree of product differentiation; innovative benefits; flexible management.

Signs of 'competitive weakness' include: slower than average revenue growth; falling reputation in customer community; relatively high costs; low market power; an inability to withstand takeover threats. Determination of strategic directions to achieve sustainably competitive advantages are based on the principles of strategic marketing management of competitiveness: maintaining competitive advantage requires a global approach to strategies - an enterprise cannot maintain competitively advantage without expanding it through the development of a portfolio of competitive marketing strategies; the basis for achieving competitive advantage is strategic marketing management of innovation, implementing certain improvements, innovations and changes; competitive advantage turns the value creation system, i.e. the whole set of activities involved in the process of creating a product and its use, covers the value chain of the enterprise, suppliers, intermediaries, consumers, a close and continuous exchange with whom is an integral part of creating and maintaining the advantage; exceeding regulatory barriers and standards in order to improve the quality of life of consumers; treating the personnel as a critical strategic resource of enterprises; highlighting as a priority the strongest competitors as a model for comparison, a source of new knowledge and strategic motivation, an incentive to improve. In order to develop an action program for creating a long-term competitive advantage for the enterprise, it is advisable to use the matrix of competitive advantage acquisition (Fig. 1), which poses certain questions to each of the four positions of using competitive assets and key competencies, and also takes into account the ambition of the enterprise plans to win competitive advantages.

It is determined that the competitive advantage of the modified product is new and new competitive assets and key competencies are needed. According to the long-term competitive advantage matrix, competitive mega-capabilities are characteristic for the enterprise, where strategic foresight

allows enterprises to identify new competitive advantages to be realized in the future, and to find new competitive assets and key competencies that will contribute to the creation of these advantages.

		Competitive advantage	
		New	Existing
Competitive assets and key competencies	New	Competitive mega opportunities	Unoccupied competitive spaces
	Existing	Filling competitive gaps	Competitive inertia

Fig. 1. Matrix for the acquisition of long-term competitive advantage

If we look at the competitive advantages in the long term it is recommended for the enterprise to: create a marketing board, to develop the marketing component in the enterprise and to achieve an increase in the efficiency of the enterprise; open a zero level of selling of product: the service shop will ensure a high image of the enterprise, rating, allow the use of marketing policy to the fullest extent; vertical integration with suppliers to reduce costs, prevent defect, optimize of the work process, increase of own financial, resource, material, personnel, information and other resources; to conduct the active competition. The competitiveness management control system covers a subsystem of analytical-control work and a subsystem of implementation of corrective actions. The developed matrix of possibilities of results of the introduction of complex competitiveness management system into the practice of activity of the enterprise (table. 2) testifies that only in condition of functioning of all components of the value chain of competitiveness management “strategic dynamic vision - planning of competitiveness management - organization and motivation of competitiveness management - competitive advantages control competitiveness management" possible implementation of the desired changes in the competitive position of enterprises. Matrix of possible outcomes of implementing a comprehensive competitiveness management system. If the enterprise lacks the first link, a strategic dynamic vision, there is a conflict of vision and opportunism. The lack of a competitiveness management planning mechanism leads to false starts and disorientation of the enterprise. Unsatisfactory organization and motivation of competitiveness management is a consequence of uncertainty and dissatisfaction.

Ineffective competitive advantage management can lead to strategic frustration and apathy in a company. Ineffective control of competitiveness management can lead to dissonance in companies, a lack of feedback. Thus, a comprehensive competitiveness management system deserves priority

attention when solution the long-term existence and future development of an enterprise in the complex dynamic conditions of economic transformation.

Table 2

Matrix of possible results of implementation of a comprehensive competitiveness management system

Strategic dynamic vision	Competitiveness management planning	Organization and motivation of competitive management	Management of competitive advantages	Competitiveness management control	Desirable changes in the competitive position of the enterprise
no	Competitiveness management planning	Organization and motivation of competitive management	Management of competitive advantages	Competitiveness management control	Conflict of vision and opportunism
Strategic dynamic vision	no	Organization and motivation of competitive management	Management of competitive advantages	Competitiveness management control	False start, disorientation
Strategic dynamic vision	Competitiveness management planning	no	Management of competitive advantages	Competitiveness management control	Uncertainty and dissatisfaction
Strategic dynamic vision	Competitiveness management planning	Organization and motivation of competitive management	no	Competitiveness management control	Frustration and apathy
Strategic dynamic vision	Competitiveness management planning	Organization and motivation of competitive management	Management of competitive advantages	no	Dissonance, lack of feedback

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COMPETITIVENESS MANAGEMENT THROUGH CORPORATE TIME MANAGEMENT, PREVENTIVE INFORMATION AND LEGAL SUPPORT AND PREVENTION OF STRATEGIC RESOURCE ALLOCATION RISKS

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A recent study by The Boston Consulting Group and World Skills found that almost 4 million Ukrainians are in a «qualification pit». That is, one in four employees is "out of place" in a job for which they are insufficiently

qualified (or overqualified). The problem is global: more than a third of the world's professionals (36 percent) hold positions that do not match their qualifications.

Obviously, it is not only the employees who suffer but also the employers: 27% claim that applicants do not have the necessary professional and communication skills. Moreover, the global economy's losses from this mismatch are already estimated at $5 trillion a year (data from the Organization for Economic Co-operation and Development). According to the forecasts of The Boston Consulting Group, by 2030 they will increase to $6 trillion a year [5, 6]. At the same time, companies are not striving to change their recruitment strategy, each time trying to find a candidate who perfectly fits the requirements. This trend is particularly detrimental to the quality of recruitment of mass personnel (drivers, salespeople, cashiers, waiters, couriers, security guards, loaders and other specialists). The recruitment process can be significantly accelerated and its quality improved by taking a broader view and hiring employees based not on existing competencies but on the potential capabilities of the candidates, which makes the topic of the research relevant.

Among the main reasons for the increasing losses that the global economy facing as the «qualification pit» sucks in more and more talent, experts from The Boston Consulting Group highlight the lag between skills renewal from the speed of technology development and the shortage of talent. This put two challenges for businesses: implementation is in step with the times of staff training programs and keeping of the best professionals.

The latter is particularly relevant considering that members of the mass professions are highly mobile, that is, they tendentious to change jobs frequently. Almost one in three (32%) did so at least once in 2018, while 4% changed jobs four or more times. And very often people are pushed to do so by a lack of opportunities for growth [3; 8].

Another argument in favor of training of employees within the company is the inability to acquire some of the skills needed for the job on their own. Josh Davies, head of the Centre for the Development of Work Ethics in Denver, predicts that more than 40% of new jobs will be in the "middle skills" segment by the end of the current decade, i.e. requiring more competencies than a high school graduate, but fewer than university graduates [1; 9]. At the same time, almost every third representative of a mass profession (29%) has declared his or her desire to obtain a specialty that is not related to the one in which he or she currently works, every fourth (23%) would like to deepen his or her professional skills, and every tenth (11%) would like to obtain additional skills in related industries. This indicates that there is a demand for training from the part of employees and employers need to satisfy it [2; 4; 10].

According to Thomas Kachan, professor at the Massachusetts Institute of Technology, in the current environment employers should treat employees as an asset to be managed rather than a cost to be controlled [7]. Thus, the implementation and application of a training program in a company requires some costs, but it is a serious contribution to increasing the productivity, involvement and loyalty of the staff. And all of these metrics directly correlate with business profitability.

Also, the fact that a company invests in staff training is an indication to potential employees that it is possible to grow and develop in the company. Moreover, this is one of the needs of the mass professions representatives, for the satisfaction of which they are ready to change jobs (in 52% of cases the reason for this step is the lack of opportunities for growth in the current place of work). In fact, training programs strengthen the HR-brand of a company, making it more attractive and reliable for an ordinary candidate. And strong employer brand is especially important for companies that have branches across the country and face the problem of seasonal hiring [10]. Deloitte Access Economics predicts that up to 2030, two-thirds of jobs in one way or another will be tied to soft skills (in comparison to half in 2000). Their importance is increasing as technology develops. More and more processes can be automated, and in these conditions, "soft skills" come to the fore: responsibility, discipline, emotional intelligence, the ability to communicate with others, the desire to achieve goals and others [8].

That employee who has the "flexible skills know how to work in a team, listen and hear people around he. Mass professions are mostly about communicating with people, so this is especially relevant for their representatives. This is why when hiring such employees you should focus on their personal qualities rather than on their "crusts" and work experience. Teach a person to use a POS terminal is much easier than teaching him how to communicate. For the same reason, you should not ignore pre-retirement candidates with extensive experience in any field. Recruiters often label them as "too good". But on the one hand, they are usually ready and willing to learn, and on the other hand, they are good candidates for promotion because of their education and experience (e.g. they make excellent deputy of managers) [5]. Launching a training program today is an investment that will pay off tomorrow. In a world where artificial intelligence has already begun to displace people from their jobs, the latter must continually learn to remain in demand as professionals. And a company that provides such an opportunity will always be one step ahead of the competitors.

The training of personnel capable to work productively in a business environment, their rational deployment in structure and space and an effective management culture depend on the quality of human resources management and are therefore key to the organization’s success. No company can set

up an effective production, marketing, finance, sales or accounting systems without a motivated and skilled workforce. Human resource management takes on a special significance in the face of global competition and rapid scientific advances, during which technology, products, operational methods and organizational structures are rapidly becoming obsolete and employee knowledge and skills are becoming the main source of sustainable prosperity in a competitive business environment. In this situation, it is necessary to regularly monitor the condition of the workforce, which is realized through the organization of a comprehensive system of personnel assessment of the organization. An appraisal process is a systematic approach to summarizing and evaluating all the information that has been obtained from testing and using it to make decisions about the further carrier or employment of workers.

The activity of staff is under the close attention of managers. Based on their own observations and information about the performed work, each manager does conclusions during the work process that characterize the actions of the subordinate. In essence, this is an evaluation. But, in the system of personnel management in the business environment, a special role is assigned to appraising the work results and effectiveness of staff work. Evaluation is built from carefully organized procedures, implementation of which allows you to collect and accumulate information about the results of work, business characteristics of workers, to find reserves to improve effectiveness, make informed management decisions. When implementing the evaluation procedures, not only of the professional parameters of the work requirements but also some features of individual behavior which influence on the results of work, as an example, observance of principles, norms and rules established in the organization, are revealed.

The process of appraising an organization's personnel consists of the following steps:

1. Define the strategy and objectives of the organization. Conduct a survey of owners, top managers to formulate the strategy, benefits, key activities indicators and factors of success of the organization.

2. Formulation of the personnel's main tasks arising from the organization's strategy. To formulate the requirements for the filling of contents of the set of competencies of specialists; to understand how specialists should behave in a team; to determine what a concrete specialist can do for other team members and the company as a whole within the framework of the responsibilities, he/she will have or already has in place.

3. Development of a scientific and methodological approach to personnel assessment. Formation of a competence system: using a readymade model or creating a new system. It is possible to involve external consultants or develop competencies yourself.

4. Establishment of the data system required for the assessment. The necessary information may include: list of specialists, list of personal competencies, list of job salaries, list of experts, score system, evaluation letters.

5. The development of a rating scale for each level of competence. The scale is created to describe unacceptable (unacceptable behavior for the organization), acceptable (minimum acceptable requirements) and outstanding (the best behavior) levels of employee behavior in the workplace.

6. Definition of a model (profile) of an employee's competence the ideal model for assessing the competence of an employee's professional level is noted.

7. Modelling real salary based on competencies. Formation of a mathematical model of an employee's real salary based on competence analysis, testing of the model, analysis of the obtained results.

8. Application of the developed methodological approach. Introduction of the methodology into the organization activity ensures a link between the personal abilities, qualities and behaviors of the employee and the tasks that are assigned to him or her.

Personnel appraisals provide information about the potential abilities and growth potential of personnel, the effectiveness of employee's work, causes of inefficiency of individual workers, ways to improve work organization, the needs and priorities for training and professional development. However, managers can make mistakes when organizing and conducting assessments. That is, assessments may be undertaken without a clear understanding of their goals and objectives. The result is the development of a program that will be ineffective. Errors can occur in both the organization and the evaluation phases.

An essential requirement is the effectiveness of the appraisal system. Validity is achieved when there is a clear link between results of work and pay, a high level of motivation and maximum output from employees. A second requirement is that the appraisal system must be used practically. The condition of practicality is achieved when the appraisal system becomes easy to use in practice both for the people who carry out the appraisal and for those who are appraised. The process of implementing an assessment system will be difficult if the assessment methods are complex and the assessment indicators are questionable.

The organization of a comprehensive system of personnel assessment of the organization in a competitive business environment has been defined. It is proved, that preparation of the personnel capable to work productively in the business environment, it is rational placing in structure and space, an effective culture of management depends on quality work of HR service and accordingly is a guarantee of the organization's success. Systematized

data sources, data collection methods, procedures for assessing an organization's personnel and levels of assessment of the organization's personnel. Generalized practices of errors in the staff appraisal process of an organization and their consequences.

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INNOVATIVE PROJECT MANAGEMENT IN THE CONTEXT OF CHANGING CONSUMER PREFERENCES, DECENTRALIZATION, SUSTAINABLE DEVELOPMENT AND SOCIAL PARTNERSHIPS

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The project management system is one of the most important processes of an organization's activity and its effectiveness determines the final result and success of the organization. In order to improve the existing project management process of organizations we propose to implement the following measures:

Introducing the principles of social entrepreneurship into project activities. At first glance, it may seem that the communal organization does not have the capacity to conduct business. However, under Ukrainian law, its non-profit status does not at all prevent it from carrying out entrepreneurial activities. How does it work in practice? The organization is exempt from income tax, and the income it receives is used for its operational activities and the realization of its social purpose. This approach is a type of social entrepreneurship. The greatest benefit of this method is the ability to achieve financial stability and sustainability, namely by reducing dependency on grantors and donor requirements. It can be a solution to overcome the problems of finding funding and not being able to implement all the available ideas due to lack of funds. In our view, this approach will provide

the organization an alternative source of funding and enable it to achieve its social mission more quickly and effectively [2; 9; 10].

Introduction of social enterprise principles into the work of the organizations that we propose also implies the development of a business mindset among employees and the introduction of a set of tools that have proven to be effective among entrepreneurs in practice. At the same time, the communal organization, having identified its main goals, objectives and needs, must search for a balance between two components: business practices and those that are accepted in the non-profit sector. However, even having multiple sources of funding does not guarantee the successful realization of projects. Many of the organization's planned ideas are not implemented; they are rejected due to a lack of specificity about the objectives, consequences, results and benefits of the project. Communal organization is mainly focused on getting quick results, whereas considering today's global trends, timeliness and permanence should be taken into account. This is why we propose to introduce sustainability assessment tools for programs and projects of enterprises based on the following components (Fig. 1). Consider the proposed evaluation principle on the example of the stakeholder support criterion (Table 1-8). It is advisable to carry out the assessment according to the following principle: answer as many questions as possible. If it is difficult to give an answer or the question is not relevant for the project, please indicate "no answer" (NA). For each item, it is necessary to circle a number that indicates the level of relevance of the project to a particular factor [3; 6].

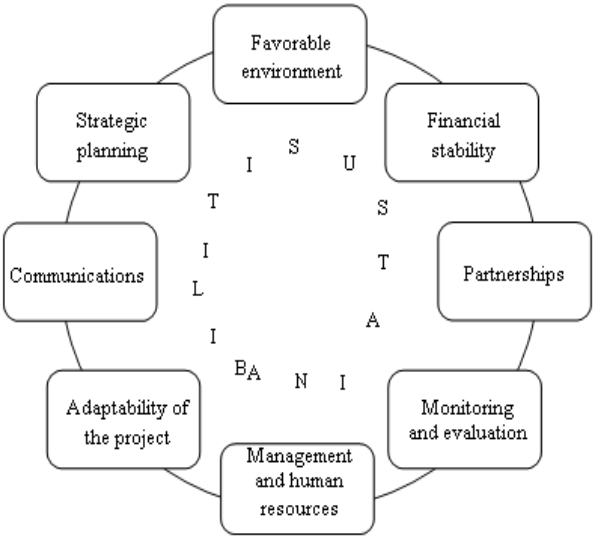

Fig. 1. Constituents of innovation project sustainability

Table 1

Sustainability assessment tool for stakeholder support

Question	No, or in insignificant amounts				Yes, or to a large extent			Difficult to answer
1. There are community / stakeholder representatives who provide significant project support.	1	2	3	4	5	6	7	NA
2. The project involved community / stakeholder representatives who are able to raise resources.	1	2	3	4	5	6	7	NA
3. The project is supported by management of organization.	1	2	3	4	5	6	7	NA
4. The project is supported by decision makers from outside the organization.	1	2	3	4	5	6	7	NA
5. The project has strong public support.	1	2	3	4	5	6	7	NA

Table2

Tool for assessing the sustainability of a project according to the "Financial sustainability" criterion

Qustion	No, or in insignificant amounts				Yes, or to a large extent			Difficult to answer
1. The project exists in a favorable state economic climate	1	2	3	4	5	6	7	NA
2. The project uses various mechanisms aimed at ensuring stable funding.	1	2	3	4	5	6	7	NA
3. The project is funded from various sources.	1	2	3	4	5	6	7	NA
4. The project combines stability and flexibility of funding	1	2	3	4	5	6	7	NA
5. The project has stable funding.	1	2	3	4	5	6	7	NA

Table 3

Tool for assessing the level of sustainability of the project by the criterion "Partnership"

Qustion	No, or in insignificant amounts				Yes, or to a large extent			Difficult to answer
1. Various organizations and communities are involved in achieving successful results by project.	1	2	3	4	5	6	7	NA
2. Project maintains information links with community leaders.	1	2	3	4	5	6	7	NA
3. Community leaders are involved in the project realization.	1	2	3	4	5	6	7	NA
4. Community members support the project with great enthusiasm.	1	2	3	4	5	6	7	NA
5. The community is involved in defining the project objectives.	1	2	3	4	5	6	7	NA

Table 4

Tool for assessing the level of sustainability of the project by the criterion "Management and Human Resources"

Qustion	No				Yes, or to a large extent			Difficult to answer
1. Project is well integrated into the activities of organization.	1	2	3	4	5	6	7	NA
2. Existing organizational systems to support the various needs of the project.	1	2	3	4	5	6	7	NA
3. Management effectively communicates the project idea to external partners	1	2	3	4	5	6	7	NA
4. Management effectively manages personnel and other resources.	1	2	3	4	5	6	7	NA
5. The project has adequate human resources to achieve the project objectives	1	2	3	4	5	6	7	NA

Table 5

Project sustainability assessment tool according to the criterion "Monitoring and evaluation"

Qustion	No				Yes, or to a large extent			Difficult to answer
1. The organization has potential for quality project evaluation.	1	2	3	4	5	6	7	NA
2. The organization shall report on the short-term and interim results of the project	1	2	3	4	5	6	7	NA
3. The results of monitoring and evaluation are used in planning and realization of the project	1	2	3	4	5	6	7	NA
4. The results of the project evaluation are used to demonstrate the achievements to sponsors and other key stakeholders.	1	2	3	4	5	6	7	NA
5. The project provides the public with convincing evidence that it is effective and efficient.	1	2	3	4	5	6	7	NA

Table 6

Tool for assessing the level of project sustainability according to the criterion "Project adaptability"

Qustion	No				Yes, or to a large extent			Difficult to answer
1. The evidence base of the project is constantly updated	1	2	3	4	5	6	7	NA
2. The organization shall adapt the strategic directions of the project if necessary	1	2	3	4	5	6	7	NA
3. The organization adapts the project in accordance with the scientific progress.	1	2	3	4	5	6	7	NA
4. The organization shall adopt the project to changes in the external environment during its implementation.	1	2	3	4	5	6	7	NA
5. The organization shall decide which components are ineffective and should be discontinued.	1	2	3	4	5	6	7	NA

Table 7

Tool for assessing the level of sustainability of the project by the criterion of "Communication"

Qustion	No				Yes, or to a large extent			Difficult to answer
1. The organization has communication strategies to engage and implementation public support for the project.	1	2	3	4	5	6	7	NA
2. Personnel involved in the implementation of the project shall inform the public about its importance.	1	2	3	4	5	6	7	NA
3. The project is promoted in such a way that the project arouses public interest.	1	2	3	4	5	6	7	NA
4. The project increases public awareness about the issues it addresses	1	2	3	4	5	6	7	NA
5. The project demonstrates to the public its importance for society.	1	2	3	4	5	6	7	NA

Table 8

Tool for assessing the level of sustainability of the project according to the criterion "Strategic planning"

Qustion	No, or in insignificant amounts				Yes, or to a large extent			Difficult to answer
1. The organization analyzes the project's resource needs.	1	2	3	4	5	6	7	NA
2. The project has a long-term financial plan.	1	2	3	4	5	6	7	NA
3. The project has a plan for future sustainability.	1	2	3	4	5	6	7	NA
4. The objectives of the project are clear to all stakeholders.	1	2	3	4	5	6	7	NA
5. The project clearly outlines the roles and responsibilities of stakeholders.	1	2	3	4	5	6	7	NA

The evaluation according to the other seven criteria is based on the same principle.

As a result of the analysis of these factors, an evaluation table is compiled, which includes the following indicators: total for all questions; average evaluation of the area; and overall evaluation.

The consolidated results will help to form an average assessment of the sustainability of the project. A low (1 to 3) or medium (3 to 5) score indicates that in this area the potential of the planned project requires additional efforts to ensure sustainability [1, 4].

The final stage of the assessment is to develop a concrete action plan to ensure the sustainability of the project, which will include:

- Priority sphere;
- Indicator(s) that need improvement;
- The next steps to be implemented (specifying terms for the implementation of each step and The responsible person);
- The authorities, organizations or person to be involved;
- The resources needed and how to mobilize them;
- Ways of tracking achievement and determining of their success (monitoring system).

It is also important to note that the project management process depends on an external environment that is volatile, uncertain, complex and ambiguous. The impact of the COVID-19 pandemic has tested the ability of global organizations to carry out projects and programs effectively. Rapid and effective adaptation to the new environment is a clear priority over delay or cancellation [5, 7, 8]. Ways of adapting to today's challenges vary, but we can identify four suggested steps for a not-for-profit organization to respond to them:

Stage 1. Reaction. A quick and large-scale transition to telecommuting; failures in flow programmes; a change in the way projects are managed.

Stage 2. Stability. Applying to remote or disturbed operating conditions; e-evaluation of the main business cases.

Stage 3. Reconstraction. Creation of methods and tools that allow for the stable implementation of the agreed programme

Stage 4. New reality. Change the catena of ways of working forever; adaptation to the new project implementation approach.

In order to adapt project management processes in response to the COVID-19 crisis, we offer organizations to adhere to the following aspects:

1. Optimize rather than cancel projects. Transformations need to be implemented that will allow you to move to new operating environments.

2. Remote management. Apply flexible management styles combined with necessary adaptations within the team and the use of collaborative tools to achieve successful results.

3. Disciplined agility. Find a balance between having a flexible outlook on project activities and establishing the certainty provided by clearly documented project plans and control documents.

Sometimes an organization does not use any formal, structured.

Methodology to define its strategies and build its project portfolio. There is an informal dynamic in which proposed projects and the history of projects already completed are evaluated, but in our view, this practice needs to change. Based on the research and analysis of existing project management methodology we propose a developed conceptual project management model adapted to the specific context.

The framework of the model is the Project Excellence Model, into which has been integrated a modified and reinterpreted GPM Global P5 Standard. Modification of the GPM Global P5 Standard means that indicators that can be applied to projects have been introduced into the model without any changes, indicators formulated general in generally way have been specified and linked to the project. In addition, new indicators have been created to cover all areas of project sustainability, innovation and creativity.

The seven dimensions that make up the model consist of project management elements and guidelines, specific characteristics of the activity sector, and the environmental, and cultural context of the communal organization. By taking it statute as a guiding base for project portfolio management, the model can facilitate both the implementation and the identification of further strategies. The proposed model can also be used as a driving force for project management practices as well as for the deployment of strategic actions, missions, visions and goals. In the developed model takes into account project types, fundraising regimes, compliance with technical standards and adaptation to change.

Nevertheless, integrating the concept of sustainability into project management leads to expanded boundaries for new projects, not only in terms of the life cycle, but also in terms of stakeholder relations and organizational learning.

Project outcomes have their impact (direct or indirect; in the short or long term) on a multitude of stakeholders, which are divided into the following macroblocks: organization (project sponsor, shareholders), individuals (project team leader and members), client (consumer and end-user) and global society (local and global communities). Each macro-block takes into account the involvement or influence of stakeholders and project outcomes, i.e. positive or negative effects for which project can be considered successful in terms of sustainability.

Thus, only the continuous improvement and universalization of project management competencies and acquisition of flexibility in adapting to complex conditions will enhance the competitiveness of the organization.

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SAFE EDUCATIONAL ENVIRONMENT AS THE BASIC CONDITION FOR PRESERVING INDIVIDUAL'S MENTAL HEALTH

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Educational reform in Ukraine involves updating and modernizing all components of the system to improve its quality. Its main idea is to ensure the rights, freedoms, and interests of young people. Responsibility for the results of educational activities is on a teacher, student, and educational environment, as they are integral components of the learning process. The realization of modern education goals depends on the creation of such an educational environment in which young people are an active subject of activity, where the needs of their personal development are met. Consequently, the problematic issues of the educational space and the organization of its security become extremely important. In recent years researchers have become increasingly interested in the safe educational environment issues.

Systemic analysis of the concept of educational environment occupies one of the prominent places in modern pedagogical science. Educational environment has been extensively studied by the Ukrainian and foreign scholars (H. Ball, I. Bekh, Ye. Bondarevska, D. Gibbon, N. Hontarovska, Ye. Korovin, S. Maksymova, B. Mau, A. Mezhuiev, O. Piekhota, K. Prykhodchenko, V. Rybalka, S. Roshchina, V. Rubtsiv, V. Semychenko, V. Sierikov, S. Sysoieva, M. Turvei, Ya. Fruktova, A. Tsymbalaru, T. Tsiuman V. Yasvin and others). In their works, A. Kolupaieva, L. Koval, S. Myronova, T. Sofii, Z. Shevtsiv highlight the issues of the inclusive environment specificity in the educational institution.

Modern educational space is flexible and creates opportunities for various activities, evokes joy, stimulates imagination, and motivates learning. The most prominent qualities of modern educational space are: integrity, unity, and orderliness of the subject-spatial environment and visual perception; versatility, flexibility, and mobility; age compliance; personalization,

availability of personal space; freedom, the openness of perception, creativity; practicality and ergonomics; harmony and balance; socialization and cooperation [4, p. 17].

Ukrainian and foreign scholars and practitioners interpret the educational environment as a part of the vital social environment of a human, which manifests itself in the totality of all educational factors that directly or indirectly affect the individual in the process of learning, and is a friendly educational space in which personality can develop and function.

The educational environment is considered as a defining factor in the development of personality, a set of natural, physical, and social objects and subjects that affect the formation of the learner as a personality and influence his creative and professional development, contribute to the formation of inter-subjective interactions and personality-oriented communications, provide comfortable learning conditions within the educational institution and beyond [3, p. 18].

Modern approaches to the organization of the educational environment require humane treatment and respect for the rights and freedoms of each individual, regardless of its physical and psychological characteristics. "If a child has special needs, he/she enters the educational environment on his/her own terms: not the child adapts to the environment, but the environment must be adapted to the child" [5, p. 48].

One of the most burning tasks of the educational system modernization is creating an inclusive educational environment. The scholars define it as “a set of special conditions created for the co-education of children with special educational needs and children with normative development. They study together in the same class, taking into account the logistical, educational, informational, staffing, unimpeded access to education, and relocation in it. It will promote effective socialization, education, upbringing, development, correction, and rehabilitation of students with disabilities and will not interfere with the education of other children"[10, p. 11].

The educational environment is a subsystem of the socio-cultural environment and is regarded as a set of specially-created psychological and pedagogical conditions which can facilitate the formation and development of personality. It comprises psychological and pedagogical reality, purposely created conditions for the formation of personality, opportunities for its development in the social and spatial-subject environment; a totality of personal characteristics and features of the participants' interaction; the education content based on the unity of the subject learning material and the methods of mastering it [1].

Assessing the educational environment as a systemic tool for shaping the personality, V. Yasvin suggests considering the following components of the system: spatial-subject (spatial-subject conditions and opportunities for

training, education, and socialization of the individual); social (conditions and opportunities, created for interpersonal interaction between the subjects of the educational process); psychological and didactic (educational technologies (content organization and methods of teaching and learning), built on the appropriate psychological and didactic principles) [12, p.11-15].

The majority of the educators agree that the educational space is a complex organized system, which provides grounds not only for educational problems solution but also creates conditions for the socialization and mental development of children. The psychological state of the educational environment reflects the quality of its participants' relationships, and the content of these relationships, in turn, determines the quality of the whole system space.

Along with this, many researchers point out that the issue of security in various human activity spheres is much broader, and therefore remains relevant and needs further study.

V. Pylypenko and N. Chesnokov contributed significantly to the study of the education environment safety issues, offering their models on how to develop this safety system. L.Gayazova studied the issues of complex security of the educational institution. S.Petrov investigated the safety of the educational environment on the whole, O.Obozov – the safety of the school educational environment, L.Sydorova – the educational environment safety of the pedagogical college, etc.

In her studies of the educational environment of the pedagogical college, L.Sydorova specifies the concept of safety as an environment for forecasting, identifying, managing, and eliminating hazards and risks at various levels that may have a destructive effect on the quality of education [8].

I. Baieva, T. Kabachenko, T. Krasnianska, O. Lebediev, N. Lyz', N. Rassokha, L. Rehush, V. Semykin, S. Smolian, and others analyze the phenomenon of the psychological safety of the educational environment.

L. Gayazova analyzes the safety of the educational institution environment through the assessment of socio-psychological, pedagogical, informational, legal, medical, as well as material and technical aspects of its security [2].

S. Petrov considers the educational environment safety as a state of its organizational, spatial, and social facilities, which in addition to ensuring the life safety and health of educational process subjects, is a necessary condition for these subjects' personality development and provides legal, social, psychological, informational security of students, teachers, parents, etc. [6].

S. Tarasov believes that the educational environment requires a structure that comprises the following components: spatial-semantic (architectural and aesthetic organization of vital space, coat of arms, traditions, etc.); content-methodical (concepts of teaching and education, educational curricula, forms

and methods of teaching, etc.); communication-organizational (features of learning process subjects, communicative sphere, features of management culture) [9].

M. Neschadym, N. Nyzhnyk, G. Sytnyk, V. Bilous, in their scientific works, analyze the system of threats, dangers, and risks that under certain conditions may affect the level of the educational environment safety.

V. Yasvin examines the educational environment as an aspect of the educational institution's inner life with a focus on the system of influences and conditions of personality formation, a system of opportunities for its development that exist in the social and spatial-subject space of the institution.

In a rapidly changing modern world, the educational environment of the educational institution is not safe and protected from external and internal factors influence. These factors can be beneficial or such that carry some threats, dangers, and risks of destructive changes.

It is obvious that the educational environment must be protected and safe to combat negative changes. It requires the creation of mutual respect atmosphere and a responsive attitude to each other in interpersonal communication in the learning process.

To support this view, we refer to A. Maslow's theory of needs, which argues that the need for security comes next after meeting the physiological needs of food, water, sleep, etc.[13].

E. Fromm also supports the position that humane relations between people can best develop when there exist security and safety in society. Accordingly, we can argue that the concept of safety is closely related to the concept of security, and safe educational environment conditions are a prerequisite for the secure comprehensive development of personality.

The absence of a unified definition of the concept of "educational environment safety" is caused by the approach variety regarding its basic features interpretation. The analysis of risks and dangers of the educational environment safety involves the evaluation of the psychological, psychological-pedagogical, socio-pedagogical, environmental, informational, and other elements of this concept.

Researchers who study the issues related to the psychological safety of the educational environment assume that various traumatic situations directly or indirectly affect the physical and mental health of the individual. Thus, psycho-traumatic situations in the educational process of an educational institution include:

- conflicts in the teacher-student relationship, student-student relationship, student-parent relationship, etc .;
- the problem of adaptation in the educational environment;
- manifestations of rivalry between peers;

• unreasonable demands of teachers, etc.

Regarding the ecological aspect of the educational environment safety, the study of S. Sovgyra is of particular interest. He understands the ecologically safe educational environment as a system of psychological and pedagogical conditions, influences, and opportunities that protect the individual from the negative pressure of environmental factors and determine the optimal interaction with the natural world" [7, p. 3].

Scientists also highlight the issue of the pedagogical safety of the educational institution. The educators argue that the pedagogical safety of an educational institution is a system of pedagogical activities aimed at creating such a pedagogical environment when the actions of the administration and the entire teaching staff are organized so as not to endanger the mental and physical health of all its participants and provide opportunities for their safe individual development.

The informational component of the educational environment safety is also of great importance as it has a colossal and global impact on the individual via the use of information and communication technologies in education [11, p. 150]. The most significant among the negative impacts of information on the modern educational environment is the lack of proper mechanisms to control the quality of information available through modern telecommunication technologies. A powerful flow of diverse information provokes the uncontrolled penetration into the educational space of a large amount of unreliable information of dubious, aggressive content, which contributes to violence, bullying, cyber-bullying, etc.

The issues of psychological security of interaction within the educational space are extremely acute in modern society. Psychological security of the educational environment is "the situation, free from the manifestations of psychological violence in interaction, which helps to meet the needs of a person for truthful and sincere communication, create a reference value of the environment, and ensure its participants' mental health" [1, p. 21]. I. Baieva determines the index of psychological security of the educational environment, the integral indicator of which is protection from public humiliation, insults, ridicule, threats, abuse, abusive name-calling, contemptuous and hostile treatment, or from what makes you do a thing against your will.

According to researchers, the psychological safety of the participants in the educational environment means friendly and trustful relationships and protection from adverse influences. We can promote psychological safety by forecasting possible dangers to prevent them. Some scholars consider it in terms of the manifestations of violence in interpersonal interactions and interaction with the social environment in general.

The institutional audit aims at stimulating higher education institution

to become better and cultivate a culture of education quality based on transparency, innovation, and partnership of participants in the educational process. The audit has defined the integral elements of a safe educational environment: safe and comfortable working and learning conditions, absence of discrimination and violence, creation of inclusive space and motivational atmosphere.

The emotional component of educational safety significantly affects the learning outcomes and the formation of psychological security of the individual. Thus, people with disabilities, due to the peculiarities of their physical and mental development, are characterized by certain disorders in the emotional and volitional sphere, increased tension, emotional imbalance, neuroticism, anxiety, insecurity, low level of requirements. Accordingly, the weakened volitional mechanisms of this category of people cause states of confusion, apathy, alienation, irritation, which provoke additional socio-psychological barriers in communication with other participants in the educational process.

Feeling of inferiority, that occurs in persons with disabilities due to a lack of understanding of their problems, prevent them from enjoying the whole range of human life opportunities. As a result, young people develop qualities that discourage or impede their effective interaction with the social environment. A high level of personal anxiety can become a serious barrier for a person with permanent health problems in building up friendly relationships with their peers and teachers in the learning process and accepting the educational environment as safe.

Thus, a vitally important requirement for the educational process of a modern educational institution is creating an environment that is comfortable for every participant in the educational process and which is physically and psychologically safe. Therefore, all the above-mentioned approaches are fundamental for a new quality educational space organization, and their implementation can strongly improve the psychological climate of the learning process. A safe educational environment provides safe conditions for study and work, comfortable interpersonal interaction which contributes to the emotional well-being of students, teachers, and parents, ensures protection from any manifestations of violence and the sufficient resources to prevent them, guarantees the observance of the rights to and norms of physical, psychological, informational, and social security of each participant of the educational process.

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THE ESSENCE AND MEANING OF STRATEGIC HUMAN RESOURCES MANAGEMENT

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The main objective of management is the establishment of all necessary conditions (organizational, technical, social, psychological etc.) to perform organization tasks as well as coordination of employees' activities in order to achieve certain planned results. It consists of such main components as work object (something that is to be influenced and processes), work equipment (something that is used to make influence) and process, i.e. goal-oriented activity and result [5, p. 27].

The most important element of productive forces and the main source for the economic development of both a country and every enterprise refers to people, their experience and professional training.

There are different studies concerning strategic human resources management and its practical application [1; 2; 4; 5; 8; 9]. It is determined that strategic management and conception of human resources management can make business more competitive, create additional values and form efficient management of an enterprise. The formation of strategic trends and improvement of intangible assets are considered to be the priorities in strategy development.

There are different definitions of the term "the strategy of human resources management".

One of the most common is the definition of A. Kibanov who refers the strategy of human resources management to top-priority line of operations which are specially determined by top management and essential to achieve long-term objectives of creating highly qualified, responsible and cohesive team and take into account strategic tasks of an organization and its resources [8, p. 48].

It is necessary to agree with this statement since it focuses on the significance of the formation of an efficient organization structure which can provide the optimization of the efforts of an enterprise.

Efficient human resources management is based on the certain principles:

1) goal orientation – any management process is oriented to the

achievement of the specific business goals of an organization. If there are no well-defined goals, the work with the personnel will be much less efficient;

2) systematic approach – all actions concerning the personnel should be conceptually unified. The programs, procedures and practical instruments for human resources management used in various areas (or at various levels) should be the components of the unified system and should not contradict to each other;

3) scientific character – management subjects should use science-based methods in the process of human resources management [3].

The selection of the methods should meet a number of requirements. The application of the methods which are not science-based (e.g. psychological tests that are not scientifically valid enough) can result in time waste or in the worst case it can provoke serious conflicts or mistakes in an organization.

4) optimality – it means that in the process of human resources management (as well as in any other management area) it is not reasonable to achieve the result no matter the cost. It is necessary to strike the right balance between the result and the cost to achieve it;

5) subsequence of management process – this principle means that selected management procedures and methods, established rules and norms of relations in an organization should not contradict to each other, they should be unified to all employees and unchangeable unless there are well grounded reasons. The lack of logics and consequence of the applied actions, different standards used to the employees of the same professional group or unjustified changes in "game rules" in management misinform the personnel, drive a wedge to the team and decrease the ability of the personnel to be managed;

6) balance between authority and responsibility should be followed at all organization levels, from top management to every employee. According this principle, every employee should be responsible for operations or processes that are in his or her sphere of influence and control;

7) harmonizing personal, team and organization interests means that while achieving its goals an organization takes into account the interests, needs and goals of its employees and departments and does its best to avoid conflicts [6; 9].

Numerous approaches to determine the essence of human resources management are come from specific characteristics of this category.

Summarizing the research concerning the essence of human resources management [1-10], we refer this term to the process of preparation and provision of actions directed to achieve the goal stated by an organization. This process includes working out a complex of regulations which determine the place and role of every subdivision of management apparatus and every employee in the management system, the order of interrelations

between them, the norms of interrelations in the management apparatus, the forms of influence on management objects and types of contacts with the environment.

The term of strategic human resources management of an enterprise is based on the conceptual framework of strategic human resources management in general.

The main goals and ways of the implementation of strategic human resources management are presented on fig. 1.

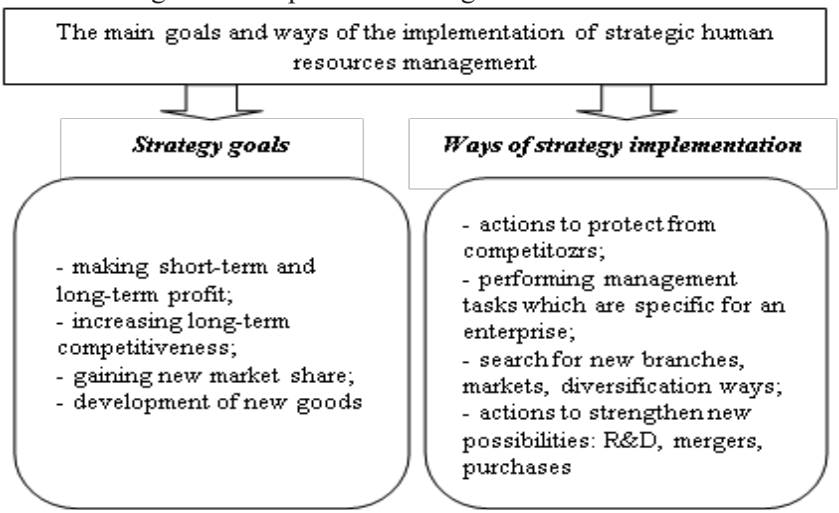

Fig. 1. The main goals and ways of the implementation of strategic human resources management [2]

Thus, the main features of strategic human resources management are the following:

• long-term character which can be explained by its direction to the development and change of psychological patterns, motivation, personnel structure, the whole management system or its specific elements;

• correspondence between the goals of strategic human resources management and the general strategy of enterprise development. They should be aimed at achieving the goals of economic development of an enterprise, rather than contradictory to;

• taking into account the effects of external and internal environmental factors of an enterprise on strategic human resources management, which may need to adjust general development strategy of an enterprise, and accordingly to changes the structure and number of personnel, their skills and qualifications, style and methods of human resources management [7].

The strategic approach to human resources management provides, first

of all, qualitative changes in the field of personnel work. These are that strategic aspects are becoming increasingly important in the traditional areas of personnel work. While combining with strategic technologies, personnel planning, hiring, evaluating, training are the components of the strategies of human resources management, that take on a new quality and a single focus on achieving strategic goals of enterprise development [4].

According to Armstrong M. there are three types of process of development and implementation of the strategies of human resources management strategies [2]:

• integrated process – that considers a strategy of human resource management as one of the functional strategies within a business strategy of an organization;

• compliance process – with this approach, the strategy of human resources management is developed in parallel with a business strategy. Parallel development of these strategies increases the probability of their interpenetration and obtaining a comprehensive result;

• isolated process – with this least common approach an independent action plan of human recourses management is developed. It is formulated and compiled separately from a general business plan, simultaneously with it, or beforehand (then it acts as part of it), or upon completion (for comparison). The value of the strategy of human resources management depends on the adequacy of information related to business. This approach characterizes the concept of human resources as an area of interest for human resources professionals dealing exclusively with human resources issues.

Differences in traditional human resources management are in all elements of the human resources management system of an enterprise – from the involvement of personnel to the functions of human resources services of an enterprise.

Strategic human resources management of an enterprise is formed with the strategic goals of development, the peculiarities of environmental factors and trends in the labor market, the possibilities of resourcing of personnel activities. The goals of human resources management, in turn, affect the implementation of the human resources strategy of an enterprise (Fig. 2).

The importance of strategic human resources management is determined by four factors:

1. Use of planning.

2. A holistic approach to the development of human resources management systems and their management on the basis of labor relations policy and human resources strategy, based, as a rule, on the «philosophy» of a company.

3. Coordination of activities and directions of human resources management policy with the adopted business strategy.

4. Attitude to company's employees as a «strategic resource» to achieve a «competitive advantage».

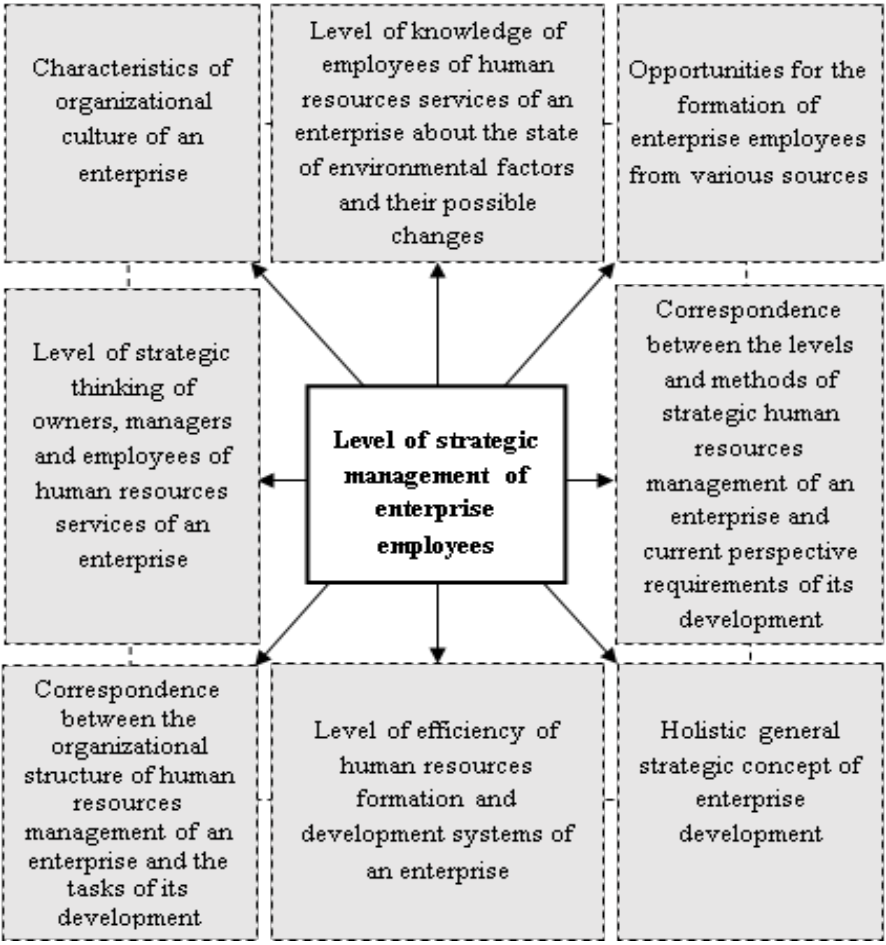

Fig. 2. The system of basic elements that form the level of strategic human resources management of an enterprise [2]

The analysis allows specifying the main approaches to determining the management strategy of enterprise employees:

• the universal approach based on the fact that the areas of human resources management policy and practices of human resources management inevitably lead to high quality work, regardless of the specific strategy, that is, development of the most effective personnel areas;

• the approach of probability, or correspondence is that different

enterprises must have different policies and practices of human resources management depending on the general strategy and the external environment in which the enterprise operates, determines the relationships between the general and human resources strategy;

- the approach based on available resources;
- functional strategies;
- the approach is based on available or necessary human resources that form the strategy of human resources management, according to which it is a central independent functional strategy;
- the approach to the formation of the strategy of human resources management, which involves the coordination of the general strategy of an enterprise with the available and necessary human resources.

Today, every business entity, considering the current situation for the future, must pay attention to the needs and values of human capital internally, because human capital is the main driving force for a successful business entity in market economy and in the processes of globalization as well.

In our opinion, if a manager thinks effectively, has a strategic vision, is not afraid of changes and responds to the problems of each member of the workforce, as the main component of an enterprise, the business works and develops. In this case, the strategic development of an organization and human resources comes to the foreground. The strategy of human resources management is a subsystem of the organization's strategy, presented in the form of a long-term program of specific actions to implement the concept of using and developing the potential of an enterprise in order to ensure its strategic competitive advantage.

Thus, directions for further research should be aimed at studying the relationships between kinds and types of enterprise strategies and the strategies of human resources management, namely the determination of criteria for the classification of strategies of human resources management of an enterprise.

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HIGHER EDUCATION: A COMMODITY OR A PUBLIC GOOD

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Traditionally, education has long been seen as a public good, creating a set of external effects that provide a benefit not just for the students but also for society as a whole.

However, in recent years, the development of international legislation on trade in services has called into question the well-established idea that higher education is a public good. The idea of the need to legitimize the sale

and purchase of education as a commodity intended for trade is increasingly spreading [1, p. 450].

The emergence of the international trade in educational services and globalization processes have only given credence to the idea that education is a commodity. This found its expression mostly in Eastern Europe, as well as in most English-speaking countries, the Organization for Economic Cooperation and Development (OECD) and China [2, p. 131].

Higher education is subjected to the significant impact of both national and international trade, their interests being represented in the World Trade Organization (WTO) and the General Agreement on Trade in Services (GATS), the institutions established beyond the United Nations system. This has led to higher education being seen as a private commodity influenced by national and international markets [1, p. 450].

Studies have been conducted to provide an answer to the question whether higher education is a product or a public good. They showed that there are at least four reasons for discrepancies in public / private distinctions in higher education and in other fields.

First, the public / private categorical apparatus is widely used in the activity areas (public and external sectors), financing sources (state, household or private enterprise), and the nature of the activity itself. Since the central focus of the study is higher education, one should distinguish between social / private in terms of the social nature of learning activities, and the understanding of the "public" - as the public sector.

Secondly, the difference between public / private in different countries of the world is different depending on political culture. There are different views and practices of the "public/social", "private", "society" and "state" in the Nordic countries, in the German ordoliberalism, Anglo-American society and Chinese civilization tradition with its strong family structure. The public / private balance of expenditure is very different in national systems that are often similar in other respects, and it reflects a variety of assumptions about the contribution and responsibilities of the state, families and students in higher education [3, p. 2].

Thirdly, social / private concepts differ in social sciences, from economics to different trends in political and communication theory.

Finally, there has been a steady and dominant perception of the notion of public good or public interest in Anglo-American social science over the past half of the century, and it partially overshadowed the public dimension in higher education and other sectors.

Neoliberalism introduced a new regime of regulation or the form of government in the field of higher education. To understand this, one must understand that the liberal welfare regime maintains fundamentally different assumptions at the level of politics and economic theory, as well as at the level

of philosophy. The central defining feature of the new mark of neoliberalism is the revival of many provisions of classical liberalism, especially classical economic liberalism. Basic assumptions of neoliberalism are as follows:

• Self-interested person: people are viewed as economically interested actors. From this perspective, the person was presented as a rational optimizer and the best judge of their own interests and needs;

• Free market economy: the best way to distribute resources and opportunities is through the market. The market is the most efficient and morally fair mechanism;

• A commitment to non-interference: a free market is a self-regulatory order, it regulates itself better than a state or any other external force. In this aspect neoliberals demonstrate a clear distrust of the state power and seek to limit it within the framework of a negative concept, limiting its role in protecting personal rights;

• Free trade commitments: cancellation of tariffs or subsidies or any other form of state protection or support, as well as support of a floating exchange rate and an "open" economy [4, p. 314].

Thus, Anglo-American policy in higher education focuses on private benefits for students and graduates. This mainly concerns higher earnings, individual choices and consumer satisfaction. The emphasis on private benefits, which is consistent to a greater extent with a marketing approach, has encompassed many higher educational institutions and is used to substantiate a steady increase in tuition fees. The social aspect is defined narrowly and in terms of a market economy, in which individual preferences constitute a priority. Thus, the main social role of higher educational institutions is seen as their contribution to profitability, innovation and economic growth. Neoliberal governments have no desire to identify, control, measure (where possible), and regulate the collective effects of education such as social literacy [3, p. 3].

In social policy, the contribution of the higher educational institutions to social justice is considered to be core. Other social contributions are often considered as a side effect of the benefits of graduating. Such an approach reduces the fiscal burden of the state, but also reduces the share of social institutions and increases the risk of not providing public goods [3, p. 3].

In The Pure Theory of Public Expenditure, Paul Samuelson defined the concept of the public and private sector, which is dominant in economic policy today. Public goods are defined as non-competitive and / or non-exclusive. The goods, when they are defined as non-competitive, are consumed by any number of people and are not exhausted. The benefits are non-exclusive when access to them cannot be limited to individual buyers. Private goods are neither non-competitive, nor non-exclusive. They can be produced, packaged and marketed as individualized products in the markets.

Public goods and partly public goods are produced unprofitably and require state funding or charitable support. They do not necessarily require full state funding, but may be produced in public or private institutions [5, p. 387-389].

P. Samuelson's concept of public and private goods has created the basis for the following variations, such as: the benefits of shared use, competitive but not excluded; "club goods", exclusive, but not competitive; and "customs goods" that are accessible to all but specific groups of the population and are non-competitive within the group. Public goods are goods that are produced in both the private and public sectors, which are competitive and exclusive, but are funded by the state, since otherwise there will be a shortage of these goods. Despite rather generalized conditions, the definition of P. Samuelson is not universal, since it cannot be applied to all societies, but rather embodies the norms of a capitalist society that corresponds to the idea of an "institutional world".

Among the capitalist societies, John Locke's or Adam Smith's concept of the limited liberal state and the "zero sum" between the private and social are most commonplace. In such societies, state economic entities view private business as the default manufacturer, except in cases of market failure with respect to the production of important goods. This political approach increases the opportunities for trade and capital accumulation, while providing a simple distribution of funding for such fields as higher education and research. The government finances the goods to the extent that the market does not. Samuelson's definition of the public / private correctly defines the market failure as a basis for fixing the minimum required level of public spending on education and research. However, its definition is simplified and has certain gaps.

First, this definition is separated from the historical events. Whether the good is public or private is determined in accordance with the nature of this good: universal, unchangeable and not context-related. It is right sometimes, but not always,. This is right in relation to sunlight, which is always a public good. But this is wrong when the character of the good is determined by politics or state system, as is the case with higher education [3, p. 5].

The second problem is the assumption of a "zero sum". This is the idea that if the good is not social, it should be private, and vice versa. Under certain circumstances, public goods and private goods are not goods substitutes, but rather complementary. For example, the fundamental research of the university, together with its links with commercial and non-profit organizations, generates both public goods and private goods directly and indirectly. The policy differs from the fact that higher educational institutions are funded on the basis of a zero-sum distribution between public and private costs and benefits, as in the UK; or higher educational institutions

are funded by taxation as a universal service with private benefits, as in the Nordic countries. A zero sum or a positive sum is a political choice.

The third problem is that the definition of P. Samuelson does not solve the majority of problems associated with the public goods, which, as a rule, go beyond the boundaries of the economy, are hardly limited, investigated, measured and evaluated under shadow prices. The naturalistic formula by Samuelson is not able to clearly observe the regulatory aspects. The economic definition of public goods by P. Samuelson differs according to the standard assumptions of the economists. Neoliberal economists tend to mitigate the market failure for collective goods, or they assume that private investment will generate the necessary public benefits with the help of the spillover effect. Social democrats and endogenous growth theorists are talking about increasing potential of public goods and public investment.

All three of the mentioned problems are correlated. Despite the definition of P. Samuelson, products manufactured on the market, and non-market goods are not the two sides of the same coin. They do not have a common ontology. Market public goods should be viable in the current market of transactions, and state social goods should be politically viable, they are created under the influence of many factors, in addition to the market failure. We can make a conclusion that the definition introduced by P. Samuelson is too brief [3, p. 6].

John Dewey gave the most influential definition in political science about the distinction between the public and the private as state and non-state. In Dewey's book "Society and its Problems," Dewey notes that while most social operations fall into the private sphere, some concepts are perceived as social, because they have a broad "public interest" and are turned towards society. A social transaction can become "social" when it has indirect consequences for others, then people outside the group will be directly involved in the transaction. According to Samuelson, higher education is only a public good by its nature, if it cannot be provided by the market. For Dewey, any or all aspects of higher education can be both public or private. Potentially education or research have a comprehensive impact when they affect a sufficient number of people. Even privately owned commercial higher education is a matter of public interest if people and the government determine what it should be [3, p. 8-10].

In order to answer the question of the essence of higher education from the point of view of the topic of this study, the features of higher education, which can be attributed to both the public good and the commodity, were analyzed.

Thus, what features of higher education allow to assert that it pertains to the public good? To answer this question, it is advisable to analyze the main features of public goods once again.

Economic thought determines public goods as being non-exclusive and non-competitive. Non-exclusivity means that such goods cannot be provided exclusively to someone and cannot be excluded from consumption. Non-competition means that the consumption of goods by some people does not reduce its consumption by others. Public goods create a large number of externalities. They are accessible to everyone alike; the marginal utility is equal, and the marginal costs for the production of the public good are zero. It is also a commodity of collective consumption. Economists share public goods that strictly satisfy all of the above conditions as pure public goods, and other public goods that do not necessarily fully satisfy all the conditions, are treated as semi-or quasi-public goods. Moreover, if the benefits of public goods are geographically limited, they are called local public goods, and public goods, the benefits of which are aimed at the whole world, are called global or international public goods. Private goods are different, they do not satisfy any of these conditions.

An important feature of public goods is that their production is funded by the state at the expense of total incomes and does not necessarily rely on prices or any other revenue from users. Therefore, the personal or market provision of public goods is impossible, and even if it is possible, it is ineffective. In addition, public goods are generally available to everyone and they are not subject to competition. In fact, public goods that are subject to economy at scale are better provided by the state as a monopoly than by many producers [1, p.451]. If a product or service can be defined as a public one, then it must be "accessible to everyone" and nobody can use them because of the lack of resources. In practice, the situation is different: access to education depends on the place of residence, the size of the income and, ultimately, the mental capacity, which, in turn, shows that higher education is a commodity.

Some scholars argue that higher education cannot be regarded as a public good, since it does not satisfy one of the first two demands, namely, non-exclusivity and non-competitiveness [1, p. 452].

J. Stiglitz argued that knowledge is a public good since higher education and research fulfill all characteristics of the public good. For example, the theorem is non-exclusive, since as soon as it is published, no one can be excluded from reading and using it, and non-competitive, since the use of the theorem will not affect the use of it by others. It is impossible for the knowledge to become a commodity, because the seller does not lose it by selling it. However, such an argument is based on a mistaken perception of the nature of property. Ownership is not a thing, but rather a set of rights, a social institution. Moreover, in the modern era, it makes no sense to speak of property as a social institution, not to mention the legislative nature of the nation-states. In the modern sense, there is no property without nation-

states [6, p. 402]. It is worth noting that access to many scientific treasures is limited by copyright and patent laws, a free product accessible to everyone becomes something expensive or inaccessible because of geographic location, providing rent for copyright owners or patents [2, p. 137]. As J.Styglitz noted, there are two critical properties of public goods: it is impractical to allocate public goods, and there is no desire to make such an allocation. Although it is appropriate to distribute access to higher education, it is impossible to distribute the benefits of higher education. Eliminating the poor from education consumption will lead to loss of capital and efficiency in the economy. Thus, education, namely higher education, satisfies all three main features of public goods: non-exclusivity, non-competitiveness and the creation of external influences. Other public benefit functions, such as "free-riders", are also relevant to education. Higher education is also associated with asymmetric information, especially as regards incomplete information about quality. In addition, higher education institutions have several goals, and they are not only economically viable. They also produce various output products, some of which are tangible, and many others are not [1, p. 452].

Traditionally, the functions of higher education constitute the basis of life of the societies. First and foremost - higher education helps in creation, improvement, absorption and dissemination of knowledge through research and education. It has been established long ago that universities are a cradle of ideas, innovations and development, and gradually they become a reserve of knowledge. Secondly, higher education promotes the rapid industrialization of the economy by providing human resources with professional, technical and managerial skills. In the context of transforming society into knowledge society, higher education provides not only skilled workers but also workers prepared for the new knowledge that is necessary for the rapid growth of the economy [7, p. 21-22] The supporters of the theories of endogenous economic growth argue that the groups of well-educated people who work together are more productive rather then if they all worked individually with less educated people. E-mail and the Internet are an example of this. Knowledge, which is free to access, has a great influence on overall productivity [8]. Thirdly, universities are institutions that help shape the person's character and morals; they embody ethical and moral values, formulate well-behaved habits and make possible changes in the views that are necessary for the socialization of individuals, encourage the modernization and general transformation of society through protection and strengthening of public values. Fourthly, higher education also helps in the formation of a strong nation-state, promotes the development of democracy by educating active citizens who participate in the civil, political, social, cultural and economic activities of a society that understands, interprets, preserves, strengthens and promotes national, regional, international culture

and history, in the context of cultural pluralism and diversity. It also has the potential to produce high-level social and political leaders [7, p. 21-22]. At the very end, recent studies have revealed many non-monetary benefits from higher education: longer life expectancy; reducing alcohol and tobacco consumption; less probability of obesity; more likely to be involved in prophylactic health care; better mental health; better general health; greater satisfaction with life; less crime; greater propensity to vote, volunteering, trust, and tolerance. Almost all of these provides wider social and individual benefits [9, p. 9].

In addition, higher education promotes the development and improvement of education at all levels and allows people to enjoy the expansion of the "life of mind", offering wider cultural and political benefits, and thus serving the public interest. An important component of public interest in higher education is its role in creating a meritocratic society capable of educating the best political leaders, civil servants, doctors, teachers, lawyers, engineers, and business and community leaders at the same time [10, p. 37-39].

However, the study of the essence of higher education showed that there is a rapid change in the paradigm of higher education. Even in economically prosperous countries, higher education systems are in a state of strong financial constraints: on the one hand, an increasing number of students, and a chronic lack of public funds on the other. In recent years, in most countries, this has led to serious consequences, caused by the reduction of the state allocation of higher educational institutions, respectively, and the cost per student [1, p. 456].

Externally, universities are increasingly approaching private governance models and public sector corporations. The structural subdivisions of universities turn into centers of financial responsibility, whose heads are executives coming from the private or public sectors. Regardless of the different views on the advantages and disadvantages of such changes, transforming education into goods is a reality in which scientists have to live.

Proponents of education modification movement argue that this process will transform higher education into a more flexible and efficient institute. Expansion of the market in the audience will provide better value and quality, and the university sector will become more efficient and more responsive to the needs of society, economy, students and parents. The political direction of creating a market for higher education is fundamentally ideological. However, the transformation of education into goods does not necessarily lead to the creation of a market for the sale and purchase of academic education. Indeed, it is not always clear what is being bought and sold. In this way, conditions are created for the institutions to compete for resources and funding. It is important to understand that the transformation of education into goods is

equally a political, ideological process as an economic phenomenon. For example, governments often contribute to a well-defined policy through a market economy. This tendency is not a triumph of a free market economy. Indeed, it can be argued that the market-based trade in education has led not to a decrease but to increased interference and micro-management of university life. Governments are desperately mobilizing students and their parents to choose a university under pressure from the market and marketing tools. According to the logic of the market, the customer is always right, so universities are guided by the interests of students, and not the academic community [11, p. 1-3].

Another important factor contributing to a radical change in thinking about the nature and role of higher education is the use of neoliberal economic policies for stabilization, structural adjustment and globalization associated with the International Monetary Fund and the World Bank. Neoliberalism, as well as liberal neutrality, is insolvent and extremely inadequate in the management of social practices, especially in the case of higher education. Such a policy undermines the role of the state and involves eliminating the influence of the state, as well as the liberalization and privatization of several social and economic sectors, including higher education and even social security programs. This policy also clearly contributes to the growing role of markets. The treatment of higher education as a product received great support from such politicians and organizations. Liberal policies have been introduced in almost all developing countries, and even in many developed countries, where there is reasonable justification for reducing public funding for higher education. Higher education, as a commodity of international trade, is capable of generating a huge amount of profits for exporters of education [1, p. 456].

Many governments of exporting countries have encouraged higher education negotiations under the GATS and WTO, since trade in higher education is essentially seen as an important source of income for universities, thus reducing the obligation for governments to allocate most of their resources. For example, even some of the best universities in the world, such as Oxford and Cambridge, seen as the gold standard in higher education, are involved in business, trading and selling their degrees to students abroad [1, p. 457]. Creating the General Agreement on Trade in Services (GATS) reflects the formalization of the market processes, driven by the growing need for independence of public institutions and the procedures for international trade in services. The GATS covers all international services, including education. Within the education sector, GATS covers the following categories of education services: primary, secondary, higher, adult and "other". GATS education trade takes place in four modes: cross-border supply of services (where consumers remain within their own country);

consumption abroad (where consumers cross the border); the commercial presence of a provider in another country (institutional mobility); the presence of persons in another country (staff mobility) [12, p. 9]. The GATS considers public goods as commercial goods and even global public goods as global commodities intended for trade and profit. It is equitable to fear that the nature of the benefits of general consumption will be revised and that public education will be a commodity for which GATS will provide a political and legal basis for deregulation and privatization [12, p. 58]. The transformation of education into commodities leads to a mass privatization of education that increases tuition fees and growing inequality because of the access restrictions. Moreover, as the driving forces of the national state and state control over higher education are reduced, the ability to plan the education sector for national needs will completely disappear, as education will be formed in the markets to meet the needs of the market, and international trade will prepare people to meet the requirements of the labor markets of the developed countries [12, p. 62]. Entry to the domestic market of foreign private institutions may also have a negative impact on domestic government institutions, especially in developing countries, which are not necessarily competitive and not fully oriented to the needs of the market and often serve the national interests ofmore influential countries [12, p. 65].

As a rule, it is stated that international trade in higher education is beneficial both for exporting countries and for importers. Importing countries have access to a high-quality higher education system, and exporting countries are gaining economic benefits, in addition to receiving academic payments. However, as practice shows, developing countries have both economic and academic losses, whereas rich countries can only have economic benefits.

Individuals with average and higher incomes are more likely to profit from the state financing of higher education rather than low-income groups, thereby exacerbating uneven distribution. Although this argument is true to a certain extent, the situation in developing countries is changing rapidly: access to higher education is no longer limited to middle-level groups, and the level of engagement of poor social and economic groups is increasing, albeit slowly. On the other hand, the adoption of neoliberal arguments on state funding for higher education and the withdrawal of state will reduce the participation of socio-economically weak sectors of society in higher education and will further emphasize their inequality in accessing higher education services [1, p. 459]. The transformation of education into goods and its internationalization leads to the brain drain and a serious shortage of skilled labor in developing countries. Higher tuition fees paid by foreign students, relatively low wages in their home countries, and better job markets in developed countries will even more potentially contribute to the brain drain [12, p. 65].

With regard to academic research at universities, there is a steady increase in private interests. Knowledge, which is essentially non-exclusive and non-competitive, has been privatized. An argument for the privatization of codified knowledge is the possibility of obtaining high benefits, which in the future encourages more investment in research and creativity. [2, p. 139]. In a broader sense, the transformation of knowledge into goods in the field of higher education is one example of the "second movement of the corpus". The first movement began in England in the fifteenth century, and this is especially true in the process of moving away from the jointly-owned land and turning it into private property in different ways and means of the state-involvement. In the center of the "second movement of the corpus" knowledge (instead of land) is regarded as a private commodity that is subject to commodity registration. Reflecting this, Radder implies that the redeeming of academic research can be seen as part of the "economization, or economic instrumentalisation, human activity and institutions, or even the goals of the social subsystem" [6, p. 400].

Thus, it remains ambiguous whether higher education is a public good or a commodity. Studying at high school is usually a combination of both. Public goods include individual non-market benefits and acquired knowledge that is not excluded or non-competitive. However, when studying creates additional value, it acquires a new feature, which is competition. Apart from that, admission to higher educational institutions with high demand is exclusive. This creates prerequisites for higher education market emergence. The transformation of higher education into goods is caused by the need for institutional independence of universities, as a consequence of neoliberal policies, trade agreements, and bolstered up competition [13, p. 29].

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STUDENT CLUB ORGANIZATION AS A PROJECT IN THE ACTIVITY OF THE SOCIO-CULTURAL SPHERE MANAGER

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Socio-cultural project as a special form of organization, allows you to attract resources, systematize the competent actions of professionals, maintain relationships between different structures, enterprises and organizations, to act as an effective modern management model. Project management means organizational measures aimed at developing certain stages that contribute to the effective solution of problems and tasks, as a means of direct interaction, resource potential, a specific systemic form of

regulation of socio-cultural processes. Due to the fact that a specific feature of project management, associated with the analysis, development and implementation of various phased activities, this aspect has the ability to influence technologies that meet modern needs of the socio-cultural sphere.

Addressing issues related to the functioning and development of management processes, development and testing of socio-cultural management technologies, project activities are devoted to research in various conceptual areas. In the context of our work, aspects of project management are explored by R. Archybald (2017), who focuses on organizational and practical concepts, the basic elements of planning and project management, creating design offices. M. Brill (2018) notes the growing influence on the personal professional traits of professionals in the field of socio-cultural management, which are associated with conditions of uncertainty and innovation. F. Colbert, J. Nantel, S. Bilodo, J. Rich (2004) consider the organizations of the cultural sphere as a whole, studying their place in society and their mission in the production of goods in the cultural sphere. K. Davydovskyj (2014) formulates the parameters of the art project and determines educational and extracurricular art projects of educational institutions, also determines the features of resonant art projects and their impact on the formation of the cultural and artistic environment of Ukraine. N. Ivanovska, V. Shulgina, O. Yakovlev (2018) analyze the theory and practice of socio-cultural design in art, determine the system characteristics and reveal the functions and forms of innovation in the modern cultural space. Ya. Martinyshyn and O. Kostyuchenko (2018) point to project management as a strategic tool for the development of socio-cultural sphere. The authors emphasize the main components of effective project management as a kind of generator of competitiveness in the management of socio-cultural industries, able to ensure the implementation and high level of viability of socio-cultural projects in the context of globalization. S. Obors'ka (2018) explores and analyzes key aspects of event management in the creation of auxiliary structures of artistic processes and analyzes the impact of art projects in social, artistic and economic aspects. L. Obukh (2018) identifies and comprehends the theoretical and practical aspects in the field of academic music, as the realities of the modern economic world encourage to master the basics of management and use music as an advertising product. M. Poplavskyj, (2019) describes the phenomenon of project activity «point of intersection» and its spread in contemporary art practice. Noting the importance of the research of these scientists, it should be emphasized that there are still many unresolved issues in this problem.

The problem of managing socio-cultural projects in both theoretical and practical aspects deserves constructive attention. In particular, student club organizations need further study as a project that allows to supplement

the very nature of practical work, to identify and form competencies in the activities of the manager of the socio-cultural sphere.

The current state of economic development in Ukraine requires new approaches to the activities of socio-cultural organizations and, above all, a high level of management culture, perfect innovative and creative ideas aimed at meeting the demand of consumers of cultural services and finding ways to succeed in competition. Practice shows that solving production problems in the project management process requires the development and application of special innovative principles, methods, tools and forms of operation. This necessitates not only the search for new ways to improve the efficiency of organizations, but also the development of scientific foundations for their development, which allow to justify and effectively apply the modeling of innovative approaches in the management of socio-cultural projects. N. Ivanovska, V. Shulgina, O. Yakovlev (2018) emphasize the innovative and creative component of project activities, «because it involves the transformation of reality, it is built on the basis of appropriate technology that can be unified, mastered and improved» [5, p. 22].

M. Bryl (2018) emphasizes that «a manager is a business entity, a market orientation manager who actively implements effective business conditions carries, innovations and achievements of scientific and technical progress, carefully takes into account changes in international relations, timely influences the structure and dynamics of supply and demand, skillfully restructures production and economic activities taking into account market requirements. A manager is not only a professional, he is a person who is a subject of work in the field of management» [2, p. 47]. This means that the management system of the organization must be open to innovation and promote self-development and staff training at all levels of the relationship with the environment and at all stages of the life cycle. If the control system is not improved at the end of each phase of its cycle, then there is no transition to a new quality, ie it collapses because it does not meet the requirements of the external environment.

Socio-cultural project management has emerged as a new direction of management and requires material and labor resources, organizational, economic and legal support to implement the creative idea of the project. R. Archibald (2017). notes that «projects are designed to achieve a specific result at a certain point in time and within a set budget. They do not rely on the functional structure of the organization. Each project is unique: none of them is an exact copy of the previous ones. A project is a process of creating certain results. The project can be considered as a holistic process necessary to create a new product, a new plant, a new system or other predetermined results» [1; p. 57-58]. That is, the management of socio-cultural projects is aimed at obtaining an effective result from a particular project under certain

conditions, over a period of time, to master modern technologies, new forms of interaction with audiences and consumers of cultural services, partnership development, cultural interaction with other areas of economic activity. Ya. Martinyshyn and O. Kostyuchenko (2018) define the features of project management: «first, that its holistic concept is based on the interaction of economic, cultural, socio-psychological, creative and technological aspects; secondly, its effectiveness depends on effective time management, material and human resources, project team, innovation and efficient use of investment, as well as the realization of creative potential, professional competencies (multicultural, speech, information, political, socio-psychological, etc.); thirdly, its competitiveness as a component, complex comparative characteristics of competitive advantages, management factors and productivity of resource use, compliance of the economic entity with objective socio-cultural conditions, a measure of attractiveness for the consumer of socio-cultural services» [6, p. 26].

As we have noted, the management of socio-cultural projects orients the creative team to achieve a specific result over time, focusing on limited resources - financial, human, informational, organizational and others. Thus, the management of socio-cultural projects is also characterized by functions: organization, planning, motivation, control. Each of these functions is necessary for the manager of the socio-cultural sphere. Planning provides the basis for the implementation of the main strategic goal – the creation and implementation of the project, profit, and the functions of organization, motivation and control are focused on the implementation of tactical tasks. Socio-cultural project management plays a key role in the effective implementation of the project concept, in bringing the project to the audience as the end point of the creative process, the implementation of organizational and managerial decisions adequate to modern conditions.

The organization as a technological process has characteristic features and principles, among which we can highlight the following:

1) situational principle, based on determining the degree and nature of socio-cultural organization and establishes its activities;

2) the principle of partnership, which provides for the construction of relations between the participants at the level of subject-subject relations, mutual interest, cooperation;

3) the principle of constant action of the organizational factor, which permeates all stages of preparation and implementation of the project.

Regardless of the scale of the socio-cultural project, the manager in the process of performing the organizational function must be able to:

• analyze and determine the goals of the project, detail them, determine the degree of participation in the project of the organization, person;

• identify activities necessary to achieve the goals;

• to carry out distribution of directions of activity between experts, and also to establish coordination by means of establishment of duties, types of the reporting, terms of performance.

The function of the organization is to unite the activities of the entire group involved in the development and implementation of the project, in defining the mission, role, responsibilities and accountability of each of them. The organization is the most important function of managing the process of development and implementation of socio-cultural project.

Thus, the organization of management of socio-cultural projects is a structural system in the form of relations, rights, goals, roles, activities, and with on the other hand, it is the process by which a project is developed and implemented, clarifies, maintains or reduces the project structure of the organization.

S. Obors'ka (2018) «features of event management of art projects are the combination and coordination of methods and processes of business administration with the art world – practical aspects of doing business, such as rational support of budget expenditure management, efficiency» [7, p. 389]. The concept of "management" is more universal and is used in cases where there is a problem of influencing the system or the person in order to transform them into a new quality on the basis of the laws inherent in this system. The department performs the functions of regulation, coordination and control over the activities of various institutions and organizations, working groups, committees involved in the project, at different stages.

Socio-cultural project management is a rather complex entity, as it absorbs the content of activities, organizations and technologies. The content of the project management process is determined by the essence, goals and objectives, principles, methods, functions, specifics of the sphere of activity, the level of this body in the general system of governing bodies. The most common in the management of socio-cultural projects was a functional management system, built taking into account the goals and objectives of a particular project.

Depending on the tasks to be solved in each specific project, the management system is a complex dynamic structure in which three interrelated parties can be distinguished: functional, structural, informational. Each element of the management system functions and develops on the basis of the solution of the set purposes and tasks, and at the same time all elements of system, functioning, acquire new quality and new value. The process of managing socio-cultural projects is characterized by a constant change of states in the system, a change in the relationships between its elements, due to the goals and objectives of a particular project. L. Obukh (2018) emphasizes that «cultural project management is a purposeful process of system management in order to create, preserve and disseminate

cultural content that gives the expected result. Although the project, unlike the process, has a limited set of actions, limited resources and is a temporary organization» [8, p. 89-90].

Management of socio-cultural projects includes a system of resource provision: staffing; financing; the amount of salary; types of encouragement or punishment; material and technical resources.

As cultural institutions operate on the basis of market conditions, where there is a potential consumer and a potential producer, the main goal of the project is to combine their interests and obtain mutual benefits. The spectator gets the opportunity to enjoy communication with art, the organizers – material benefits. However, dividends, ie income from art projects, are not only material but also moral, ethical, social, cultural. M. Poplavskyj (2019) characterizing the phenomenon of project activity – «point of intersection» and its spread in modern art practice emphasizes the need for such an approach because the existence of art culture in public practice is carried out in accordance with business laws in which the commercial component is crucial value» [9, p. 249].

In the market of socio-cultural conditions in the development of the project is an acute question of project cost, income, profit, ie obtaining the projected result. When calculating the cost of a project with autonomous financing, two main parameters are taken into account – tangible and intangible costs. Conquering the market for an art project is one of the main conditions of a market economy, and it is necessary to begin activities with its conquest by collecting and analyzing information about the target audience, ie from marketing research.

According to F. Colbert, J. Nantel, S. Bilodo, J. D. Rich (2004), «marketing in the field of culture – is the art of covering those market segments that are likely to interest this product, adapting to commercial product variables – price, place of promotion in order to establish contact of the product with a sufficient number of consumers and achieve goals compatible with the mission of the organization» [3, p. 27].

Marketing research may include gathering information on the following issues: similar projects have been created over the last five years, and if so, to which target audience they have been addressed; whether they were successful, what were the responses of experts and spectators; in what point of the city they were located, what method of pricing, duration of operation; the audience must be studied in terms of segmentation of the information field to identify interest in the planned project.

The next stage is the launch of the project into production: development of an advertising campaign to promote the project on the market, the beginning of the rehearsal period, the inclusion of all production services.

The project management model and the principles of forming the council

and delegating powers to it are determined in the process of constructive dialogue between stakeholders, organizations, legal entities and companies. financial structures regulated by the relevant legal documents. An important condition for effective management is the use of different models of stakeholder participation in project management: participation in decision-making, participation in project development and implementation, participation in the evaluation of the creative team, participation in obtaining the planned results.

When developing and implementing socio-cultural projects, the manager must take into account the possible means of implementation and motivation of those involved in the project. In order to determine the personal contribution of each project participant (or group of people), it is necessary to analyze the project process by areas of responsibility, identify key people in its development and implementation, determine the individual motivation of each. These are first of all: persons who are the initiators of the project idea; persons involved in project development and its protection from investors; persons responsible for project implementation.

The implementation of a socio-cultural project requires material and personal resources, as well as organizational, legal and financial support. The main direction of project management is the implementation of entertainment projects: shows, competitions, festivals, theater performances, carnivals, public holidays. The implementation of such forms of projects becomes real and productive in the presence of patrons, sponsors, stakeholders, organizations and government agencies. The possibility of payback of these shares and profits can be real at a high ticket price or with an increase in the number of leases of these shares. When selecting, preparing and conducting large-scale projects should pay attention to: the thematic nature of the action; venue; frequency of holding; the volume of involved creative teams and performers; financing system; market orientation. K. Davydovskyj (2014). concludes that «long-term art projects have the greatest semiotic influence on the formation of a new cultural and artistic environment. Unlike one-time artistic actions, which, despite careful preparation and successful conduct, leave listeners with only pleasant memories, art projects that operate on a permanent basis, create their own sign-semantic system of cultural and artistic interactions» [4, p. 113]. Increasingly, both government and commercial entities are beginning to show interest in allocating special grants and announcing competitions to develop specific projects and areas of the country's cultural life.

In our opinion, the project management system in socio-cultural organizations is a holistic set of various interconnected functional components that have a managerial impact on the objects of management. The directions of the management system are distinguished by the specifics

of management functions, the scope and scale of authority, uniformity of load distribution, qualification requirements for the team, information support and opportunities for territorial location. Therefore, all these factors affect the dynamics of the formation and distribution of areas of work in the management system as a whole and in general [10, p. 138-152].

In the activities of the manager of the socio-cultural sphere in the formation of concepts of student club organizations as a project, it is necessary to take into account the following criteria:

• the student club should be an open system of artistic and creative development of the individual in interaction with the socio-cultural environment of his life.

• members of student club organizations must quickly adapt to new approaches in the innovative artistic and creative development of the team, to a new strategy of interaction between participants in this process, to modern new requirements of socio-cultural practice.

• artistic and creative activities of student club organizations should be manifested and deepened at the level of practice with a focus on humanistic, national and cultural values.

• the management of the process of artistic creativity of students united in the club team is carried out by its leader – mentor – manager.

Thus, the purpose of student club organizations is to ensure the aesthetic and educational impact of club activities on the formation of the inner world of its members, their awareness of spiritual values, the development of their worldview, as well as the content of youth leisure with various types and forms of art.

First of all, proposing a concept that provides for the formulation of various aspects of student youth participation in productively organized activities should highlight: 1) the application of principles aimed at forming the interests, needs, values of student youth; 2) promotion of self-determination, self-improvement, self-realization of each participant; 3) the formation of worldview and values to national culture; 4) the use of techniques, methods and forms of work to create an atmosphere of cooperation between the subjects and objects of club activities; 5) ensuring a positive psychological climate in the activities of the student club; 6) the idea, creation and implementation of events, cultural and artistic projects that meet with annual requirements of socio-cultural practice; 7) application of an integrated approach to the organization of student club activities.

Thus, the main purpose of implementing the socio-cultural concept in the activities of student club organizations of higher education is to create conditions that help primarily in the socialization of the student's personality, identifying his individual qualities, learning, skills, activities in various areas of specially organized artistic and creative work.

In accordance with the purpose, principles, approaches and principles, we determine the main functions of the socio-cultural sphere in the activities of student club organizations. The integration of educational, developmental and recreational functions determines the content of the concept and is aimed at cognition, assimilation and translation of spiritual values, as well as the identification of personal qualities of club members in the cultural and leisure sphere. The student club covers various types of activity, which allows you to design the dynamics of effectiveness in achieving goals and developing the creative personality of members of the organization. In accordance with the functions laid down in the concept, a team of specialists capable of effectively implementing the artistic and creative process in a higher education institution will be formed.

Thus, taking into account certain functions and factors, we will ensure the variability of the content and forms of classes in the holistic context of the organization of the activities of various student clubs.

The concept of organizing the activities of the student club as a project will be tested in four stages: 1) ideological and ascending; 2) structural-indicative; 3) strategic and technological; 4) conceptual and implementation.

Within the ideological and ascending stage, the organization of a student club in a higher education institution as an idea will be formed according to the official decision of the leadership or the organization of student self-government.

Strategy formulation: the mission of the purpose, the basis of the existence of the organization is reflected in the planning of the student club.

Characteristic features: organizational instability; short-term ideas about internal and external processes.

We define the following tasks: implementation of ideological, psychological and pedagogical diagnosis of the organization and team members: why the organization was created; what values the organization promotes; understanding by members of the organization of corporate standards, creation and planning of work of art and creative council. For this purpose, forms and methods of work will be used: the collective form of activity of the student club requires methods of free conversation, explanation, illustration, etc.; individual form of work - encouragement, survey of participants, listening, observation, evaluation of individual properties and qualities; cooperation between the management of the educational institution, the artistic council, the public in determining the mission, goals, objectives, work of the club team.

The purpose of the structural-indicative stage will be the natural need for further activities by expanding, structuring the organization and planning activities.

Formulation of strategy: planning and preparation of programs of activity

for the year, mission and tasks are formulated and based on the ideas that formed the basis for the creation of the organization at the first stage.

Characteristic features: division of responsibilities; team work and formed hierarchy; own standards and methodology; funding combined with long-term planning.

At this stage, the following tasks are set: acquaintance of participants with the structure and diversity of the student club; formation of interests in culture and art, artistic tastes, development of empathy, creative qualities and properties. The tasks of this stage were: to use various forms (lectures-talks, group visits to concerts and historical and cultural monuments, workshops, meetings with famous cultural and artistic figures, planning and implementation of events, rehearsals, further projects) and methods of work : (communication, persuasion, suggestion, positive example education, self-knowledge, stimulation, illustration of artistic values and cultural heritage) for productive organization of student club activities.

Thus, the methods and forms of work used at this stage, contribute to the active enrichment of students' new knowledge, the formation of values, moral imperatives, artistic tastes, preferences, development of needs and interests through cultural and artistic practice, will understand the mission, purpose, structure and direction of activity of student's club.

At the strategic-technological stage, conditions will be created for «immersion» in the content of the practical activities of student club members.

Strategy formulation: development of strategic club management.

Characteristic features: constant exchange between linear and functional management structures; long-term plans; quality growth and emphasis on results; clear targeting.

The main tasks of this stage: the formation of practical skills necessary for the activities of the student club; actualization of theoretical knowledge from ku culture and art. At this stage, the following forms of work are used: rehearsals, lessons, practical work, analysis of activities. Among the main methods – explanations, illustrations, reproduction, exercises, search methods, situational creative tasks.

Thus, the work carried out at the strategic and technological stage will prove its effectiveness. This will be manifested in the creative attitude of students to different activities of the student club, in the formation of creative abilities to rethink new knowledge from one field to another, gaining new information, to actively interact while performing certain tasks.

The next conceptual and implementation stage will be aimed at implementing the acquired knowledge, skills and abilities of participants in the activities of the student club.

Strategy formulation: new management methods, interactive strategic

management.

Characteristic features: lack of clear delineation of functions of employees, flexible relations in the student body; ingenuity, creativity, innovation

At this stage, the following tasks were set: analysis, design and implementation of projects; participation in various cultural, artistic and leisure activities; demonstration of the practical level of the student club. Forms of work: preparation and organization of collective performances; participation in concerts, festivals and competitions; analysis and discussion by members of the student club of artistic events, works, impressions from their own projects. Methods of dialogue, mutual influence, empathy, comparison, psychological influence, subordination, discussion, round tables, consideration of opinions, strategies of own behavior, etc. were used.

Thus, the theoretically developed meaningful description of the concept of organizing the activities of the student club will be practically implemented in the form of an integrative approach at all stages of implementation. Thanks to it, students will intensively develop knowledge, practical skills and abilities in the socio-cultural sphere.

Summing up, it is necessary to emphasize the main features of the future creative manager of club organizations, which determines: the problematic vision of the world, working with facts and objects in the socio-cultural sphere; carries out modeling of situations; conducts productive cognitive, communication and presentation activity during practical, training classes; demonstrates creative approaches using imagination, fantasy and intuition; sets and formulates management goals and objectives; carries out a systematic and panoramic perception of reality, psychological self-regulation, insight, inertia of thinking, the ability to involve people in joint activities, the ability to quickly rebuild. [11, p. 130-138]. New research on this issue should be aimed at clarifying the composition of the elements of the system of creative manager and the development of new innovative methods.

Conclusions and discussions. The paper formulates the results of research on the identification and generalization of current trends in the use of socio-cultural projects as a special form of organization in management and identifies the main directions of its effective functioning. Generalizations of modern trends in the socio-cultural sphere allow us to draw the following conclusions:

1. Project management in socio-cultural organizations is a structural system in the form of relations, rights, goals, roles, activities, and on the other hand, it is a process by which the project is developed and implemented, helping to attract additional resources, accelerating adaptation of organizations and institutions culture to modern conditions.

2. The activity of student club organizations, as a project, is to ensure the

impact of club activities on the formation of the inner world of its members, their awareness of spiritual values, the development of their worldviews, as well as the content of youth leisure with various types and forms of art.

3. The introduction of socio-cultural concept in the activities of student club organizations of higher education is to create conditions that help primarily in the socialization of the student's personality, identifying his individual qualities, learning, skills, stimulating activity in various areas of specially organized artistic and creative work.

The practical significance of the results is revealed in the possibility of their use to solve a number of theoretical problems and develop recommendations for the use of higher education institutions in the preparation of plans, programs, development of methodological materials to support cultural organizations and institutions, practical activities of student clubs.

It is promising to study the importance of the approach in project management, which can complement the character of the manager of socio-cultural sphere, his creative and professional competencies, taking into account the cultural and artistic needs and their comprehensive perception by a wide audience.

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THE CONSEQUENCES OF DIGITALIZATION OF ENTERPRISES BUSINESS PROCESSES

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The main prerequisites for the digitalization of Ukraine's economy and in particular the business processes of enterprises are the expansion of Internet access; increasing the number of users of this network; development of e-commerce, the country's IT industry and the national e-government system. The level of development of technological infrastructure reflects the growing opportunities for storage, transmission and processing of data, and the digitalization of all areas of economic activity, stimulating the use of digital technologies in enterprises indicates the priority of such development at the state level.

In turn, the digitalization of the economy will lead to changes in economic management models from program-target to program-forecast; economic structure, traditional markets, social relations, public administration, in connection with the implementation of digital technologies; the main source of added value and structure of the economy through the formation of more efficient economic processes provided by digital infrastructure; mechanism of economic development to institutions based on digital models and processes [1].

To study the consequences of digital transformations, it is necessary to solve the following tasks [11]:

• to determine the phenomenon of structural changes in the economy

caused by the digitalization of business processes of enterprises, its content, forms of manifestation, functions and causes;

• to classify structural changes and structural changes in the economy, to identify their quantitative and qualitative characteristics and to explore the patterns of their interaction;

• to analyze the impact of changes and shifts in the structure of the economy on the dynamics of key macroeconomic indicators;

• to study the features of structural changes in the modern domestic economy as a result of digitalization and to identify strategies to avoid and prevent the dangers associated with these changes.

The transition to something new is always, on the one hand, a process aimed at achieving the set result or goal, and on the other hand, it is an assessment of the risks associated with the expected changes in the current conditions, as well as the development of effective management measures. conditions and factors that determine the success of digital transformation processes.

Digitization of both the country's economy as a whole and individual enterprises and business processes leads to certain structural changes and has its positive and negative consequences. It depends not only on the development of digital technologies, digital infrastructure, but also on network and cybersecurity, electronic identification and trust services, digital skills and innovation, e-government and open data, and so on. The study of such shifts is very relevant because they in turn affect human, financial, technological, informational and national security in general. Perederiy TS also highlights digital security, which according to the author differs from economic security by automating most business processes, the use of the latest digital technologies and their introduction into economic activity [9].

The security system of enterprises in the context of digitalization is presented in the form of a three-layer sphere in Figure 1, where the core is the security of individual business processes, the protective shell - their legal protection, and the link between them - four components (financial, personnel, information and technology). provide protection for both individual business processes and the enterprise as a whole.

The security system of enterprises in conditions of digitalization presented in view of the three-layers bullet in picture 1, where the security of separate business processes is the core, their law protection - is the protective shell and connecting links between them are 4 components (financial, staffing, informational and technological). They provide the security of separate business processes and enterprise security in general.

The state security and security of separate branches and enterprises always was the object of attention of many scholars, science institutions, R&D centers. In conditions of digitalization, the importance of this question

intensifies by the negative impact and risks behind positive trends. In this direction actively working the following scholars: Dzhusov O.A., Apalkov S.S., Apalkova V.V., Kopteva G.M., Markina I.A., Dyachkov D.V., Bagatska K., Heydor A., Ukrainska L.O., etc.

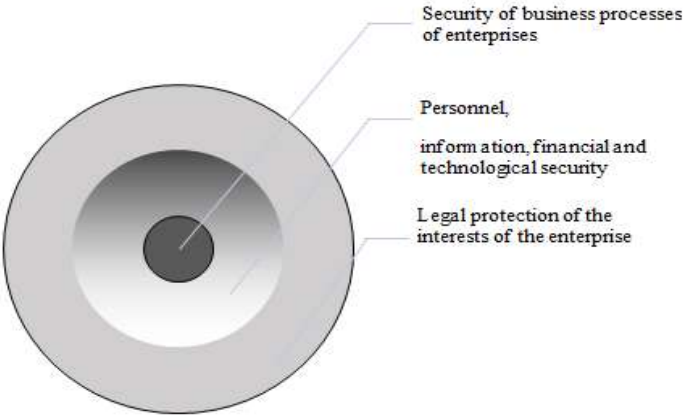

Fig.1. Security system of enterprises in the conditions of digital transformations (developed by the author on the basis of [2-7; 10-12]

Investigations of theoretical, methodological and practical aspects of digitalization and its influence on Ukrainian economy necessitates and gives the opportunity to justify main directions and approaches of execution of progressive structural transformations and define its most dangerous areas.

To provide ease and success of ongoing transformations, it's necessary to perform a detailed analysis of existing business processes and opportunities of their transformation with minimal risks. That's why formation of competency of existing staff and hiring people, who are capable to implement changes and evaluate their resultative is the basis of staffing security as a part of state security and the security of separate enterprises.

Under the influence of active investment activity of leading countries and aggressive policy of the largest IT companies of the world observe structural changes in the capital market. Dzhusov O.A and Apalkov S.S are noticing that observe the trend of increasing investment to global projects based on the formation of consortia and integration groups with the participation of leading countries and developing countries, and global investment flows are directed as in the technology of "mass demand" (Internet games, e-commerce), and in the technology of storing database arrays, which leads to the monopolization of global companies on intellectual capital and information digital space [3]. In this case, the financial security of enterprises will be dependent not only on effective management, level of organization

activities, and resources provided but also on the level of the capital security organization, property, and commercial interest.

The sequence of digital transformation of business processes of enterprises according to the results of the study of domestic and foreign experience by Bagatska K. and Heydor A. [2], has the following stages:

1) transfer of data from paper media to electronic;

2) transfer of the process, operations, subsystems, and control functions into digital format;

3) full integration of enterprise into industry 4.0.

At the first and second stages, when transfer into digital space, the positive effect is manifested in the simplified and accelerated implementation of certain processes associated with the accumulation, retrieval, storage, and analysis of data, through a gradual reduction of necessary resources (labor, material, information, etc.). But also there is a temporary increase in financial investments in technical re-equipment and retraining of staff, the necessity of solution of technological and organizational issues on changing business models and business processes. At the last stage, enterprises can increase production, improve digital technologies, achieve the highest quality of goods, works, services, at a lower cost. That's why today, in our opinion, the sooner the company reaches the third stage, the more chances it has to take a leading position in the market.

In the conditions of digitalization of business processes of enterprises before the management and security service of the enterprise there are new tasks and concerning "acceptance of additional measures for preservation of a trade secret as one of directions of protection of business processes; creation or escalation of the existing structure of information security at the enterprise with the use of information technologies (elimination of leakage of information circulating in information systems from unauthorized access and through technical channels); clarification of the algorithm of functioning of the security service of the enterprise, etc. ”[6]. Therefore, in the system of information security, an important place is occupied by a thorough study of the identification, assessment and control of risks in accordance with digital transformations.

The main factor that increases the level of safety, according to most scientists and practitioners, is effective risk management. The danger, and in some cases even the threat, in the context of continuous digitalization are the factors presented in Table 1, together with the consequences of their occurrence and factors for their prevention.

The efficiency of transformation always has to be evaluated by improvement of results of activities of domestic enterprises in different industries and prosperity of the population. But in fact, the analysis of indicators of the real GDP shows their negative dynamic. Also, the level

of unemployment and the size of public debt are continuing to grow. These factors are decreasing the investment attractiveness of the country and separate enterprises.

Table 1

Causation of possible threats to digital transformation

Components of security of business processes of enterprises in the conditions of digitalization			
personnel	financial	informational	technical and technological
Threats (dangers) caused by digital transformations:			
inconsistency of staff qualifications with modern digital trends	outflow information	hacker attacks and other cyber threats	dependence on the availability of the Internet and electricity; digital device failures
Consequences of digital hazards:			
poor performance of work, increase in terms of its performance	loss of financial stability, solvency, competitiveness	software crashes	downtime in production and maintenance processes
Factors that prevent threats during digital change:			
continuous training of existing staff, search for professionals with digital skills	determination of trade secrets of enterprises	creation of departments, digital security services of enterprises	availability of alternative energy sources and alternative Internet providers, support of technical devices in working order

Source: developed by the author.

For sure, such trends are conditioned by many factors such as: growing competitiveness on internal and external markets, war conflict in the East of Ukraine, worldwide pandemic, etc. But we shouldn't underestimate the influence of digitalization, which has embraced the whole world. Its influence significantly changes business models and processes in the country and around the world and has an impact on the life of society and separate citizens.

In conditions of digital transformation, the organizational structure of business gradually changes. So-called virtual enterprises become more popular. There are innovative enterprises, which have just a core of the company, and necessary resources involved on the agreement basis. For example, trade companies, which don't have physical stores; taxi companies without their own car parks, garages, and repair shops; building companies without basic equipment and development departments; manufacturing

enterprises without workshops, factory buildings, account offices, HR departments, and lawyers. Pros of such virtual enterprises are agility and the possibility to perform projects with different budgets and timelines, by signing contracts with HR agencies, outsourcing companies, and manufacturing enterprises which are able to refurbish fast according to innovative technologies of manufacturing defined products and so on.

Such a business organization from the first view is risky enough, but in the condition of an economic crisis, it allows adapt faster to dynamic changes of environment and market needs. Examples of such enterprises in Ukraine are e-commerce (Rozetka, Allo, Foxtrot, Mobilack, etc.); digital banking (PrivatBank, MonoBank, Oschadbank, Alfa-Bank, etc.);

Consequence research of digitalization business process of enterprises shows that: 1) digitalization bring changes in organization and managing of enterprises, aimed at accelerating the implementation of all technological processes, achieving the highest quality of products, meeting customer needs; 2) development and use of high-tech information and communication technologies requires new digital knowledge and competencies from employees, strengthens the importance of information security; 3) digitalization of the business processes of enterprises is increasing the level of innovation and becoming a source for its economic growth, development of virtual entrepreneurship is gradually replacing traditional models of production organization.

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AUTOMATION OF HUMAN RESOURCES MANAGEMENT PROCESSES

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Economic security is one of the important issues of enterprise management in a market economy. Every enterprise must be protected and able to withstand threats of various kinds, as well as be able to recover from such threats. For the effective operation of the enterprise in a market economy, it is necessary to ensure effective measures of economic security.

The modern enterprise should be considered as a complex system in which material, intellectual innovation and human components of development of own activity interact. Effective use of these components and the achievement

of priority interests is possible due to the regime of economic security - stable operation of the enterprise, its dynamic scientific, technical and social development, prevention of internal and external negative influences [6].

Personnel security is one of the main parts of economic security of any enterprise. Recently, there has been a noticeable increase in threats from its own staff. This is the result of increased risks in personnel management.

Personnel security is an opportunity, as well as all permissible measures to ensure the security of the enterprise in economic terms by minimizing all existing and anticipated risks and threats associated primarily with the unreliability of employees and poor performance. This also applies to the intellectual potential of the company as all and individual workers, as well as labor relations in general [1].

For the most efficient operation the enterprise must constantly change in accordance with external factors that affect it. Thus, every year the process of transition of enterprises to automated personnel security systems is gaining momentum. This is due to the increase in the amount of information, the constant complication of the tasks set before the personnel security service. Increasing number of employees in the company is also no less important, when it is no longer possible to process the entire flow of information manually.

Despite the existing developments and achievements of domestic and foreign scientists and researchers in the field of personnel security, the problem of timely implementation of modern tools for automation of personnel management processes to ensure and improve it remains unresolved [8].

Existing personnel security systems are constantly in need of updating and improvement. It is necessary to implement and use new tools and mechanisms in personnel management and as a result we will get the most efficient and productive team that will achieve its goals.

Yu. Chaplygina [10] considers the concept of personnel security from the standpoint of the probability of constant threats to the company by its staff, and to avoid such a threat, in her opinion, it is necessary to coordinate the goals of employees and enterprises by identifying mutually beneficial priorities. [10, p. 102-104].

S. Bortnik considers the company's personnel as "the main strategic resource, a priority object of investment and security of the enterprise and the source of its economic development" and proposes to understand personnel security as a state of protection of the enterprise from personnel risks, as well as the ability to resist internal and external influences and threats related to personnel and labor relations in general, the mechanism of which is an effective personnel policy of personnel management, aimed at the formation, maintenance, use, strengthening and development of

personnel, taking into account the development strategy of the enterprise" [3, p. 331-339].

Tactics of any enterprise includes recruitment, dismissal, team relations. Certification and advanced training of employees also play an important role, which is an important part of enterprise security.

Recruitment is a very responsible and important process from a security point of view. In many companies, the recruitment process involves representatives of the company's management, members of the personnel department, and among them there must be a representative or head of security services of the company.

When selecting staff often have to deal with the assessment of personal qualities for compliance with the requirements of the position. In recent years, in the first place, especially in the selection of leaders, the assessment of the ideological position of person was on the first place. At present, this criterion has lost its significance, but the applicant's attitude to economic reforms, knowledge of new official materials and the presence of elements of new economic thinking are important. The main requirement in the selection of personnel is the professional competence of the applicant [2].

Equally important for recruitment is the function of assessing the quality of its work. Special units are created for this purpose. Many companies use a model in which the functions of evaluating the work of staff are distributed between the heads of various departments and human resources. HR develops and implements the evaluation system, develops training programs, conducts surveys among employees and deals with the preservation of information. It is on the basis of these data that the need for new staff is calculated and training is planned. All this, of course, affects the level of wages of workers.

The final word in the assessment of staff belongs to the immediate supervisor. After all, he knows his subordinates and is responsible for the results of their work.

To date, many programs and special software have been developed to automate all of the above processes.

More than 66% of company executives believe that automation of HR processes can improve the quality of human resources. HR-applications for automation - the main category of software for employees in the modern field of personnel management [5].

The following applications and software help members of the human resources department and the security department of enterprises to make the most informed decision when hiring an employee.

1) Bullhorn is a cloud computing company headquartered in Boston, Massachusetts. The company provides customer relationship management (CRM), applicant tracking system (ATS) and operations software for the staffing industry.

2) Breezy HR is an online employee search service that allows recruiters quickly find and work with candidates. Collaborates with LinkedIn and AngelList, as well as working with the team and future employees in real time.

Features of Breezy HR:

- Easy recruitment and tracking of candidates;
- Optimized mechanism for mobile devices;
- Setting questions and requirements for candidates;
- Resume analysis;
- Video interview;
- Real-time collaboration with reminder support;
- Google Calendar integration;
- Interview planning;
- Reminders to candidates;
- Support for external recruiters;
- Etc.

3) Workable is an online system for managing recruitment processes. This solution combines the Applicant Tracking System (ATS) and a recruitment platform with a powerful search engine, sharpened to search for relevant resumes on the Internet and job search sites.

4) Beamery - recruitment software focused on fast-growing companies. Supported on PCs and smartphones.

5) Hurma System is a recent addition to the HRM / HRIS market. It is a comprehensive solution for HR, recruitment and OKR in one system. From the first contact with the candidate, going through all the stages of the recruitment funnel, to his transfer to the staff, onboarding, adaptation, maintenance and even mood monitoring.

6) Zoho People is an information system where the HR manager can record important information immediately in the interface, without unnecessary details. The system provides the following functions: employee portal, self-service portal, organizational structure, checklists for business processes, etc.

All these programs give you the opportunity to find candidates who best meet your requirements. This facilitates the process of interaction between future employees and the company. The first acquaintance can take place online.

Despite the many advantages of digital technology, we must not forget about the basic aspects of personnel security, which must be performed by all actors that ensure the personnel security of the organization, and it is not superfluous to divide it into three stages [4; 7; 9].

1) Thorough verification of the candidate and his admission to the organization. The inspection should take place at the level of specialists of

the security service of the enterprise, at the level of the personnel manager by interview with the applicant, analysis of personal data, psychological tests. The issue of personnel security should not focus only on the activities of the security service or personnel department, only the interconnected work of employees of these services, as well as the management of relevant units will provide a high level of protection from threats from staff [4; 7;9].

2) Control of the employee at the stage of his professional functioning. At this stage, the leading role in ensuring staff security should be played by line managers who are able to monitor changes in employee behavior. The lack of information about the state of the team will not provide an acceptable level of personnel security. You can get this information from team members who are in direct contact with an employee who is interesting to the organization in terms of personnel security. The functions of the security service at this stage are reduced to working with informants, identifying the facts of destructive behavior of employees. Personnel service, in turn, implements programs for the formation of loyalty to the organization, strengthening motivation [4; 7; 9].

3) Ensuring security at the stage of dismissal of an employee. Upon receipt of information that the employee is going to resign, it is necessary: to find out the real reasons for dismissal, the place of possible future work, to identify the employee's motivation, his loyalty to the organization. It is also necessary to find out the amount of information known to the employee, to establish the probability of disclosure of confidential information and to take measures to minimize it. It is important to control the submission of all confidential materials by the dismissed employee. And at the end to instruct on non-disclosure of confidential information [4; 7; 9].

Personnel security of the enterprise is a set of measures that can exist only together. Only in complex work you can get the desired result. New information technologies and automation systems increase the efficiency of personnel security management.

On the one hand, they reduce the workload on the human resources department, and on the other hand, they help to find the necessary candidate faster and more accurately. Special programs, applications and platforms help not only companies, but also the candidates themselves to find exactly the place where they would like to see themselves.

With regard to domestic enterprises, we can say that full automation and work in the digital space of personnel security is still far away. There is now a mixed system that to some extent provides the required level of security.

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ENTERPRISE DIGITAL SECURITY MANAGEMENT

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In the conditions of active development of digital economy, penetration of processes of digitalization in all spheres and branches of management, effective construction of information system of management becomes an important condition of achievement of the set tasks of the organization

development [1]. A special role is given to the introduction of elements of digitalization management modern organizations, as they affect their competitiveness, innovation, automation, information, and create a strong basis for effective business process management and development of the organization as a whole [5].

Digitalization, in a broad sense, is informatization aimed at improving the efficiency of business processes of the

enterprise [6]. According to scientists, the main direction of enterprise development in the context of digitalization is the creation of integrated ecosystems, developing all actors in the industry on the basis of the interaction of business, the scientific community, the state and citizens. For enterprises, the introduction of digital technologies provides an advantage over competitors, serves as a tool for innovation [3].

It is expedient to allocate the basic directions of digitalization of activity of the enterprises: formation of a digital infrastructure; introduction of digital tools; development of digital competencies (Fig. 1). Accordingly, with the emergence of new activities of modern enterprises, the need is formed to ensure their safe implementation.

This necessitates the formation of the latest direction of security – digital security of the enterprise.

In most implementations, digital security is identified with information security. It is defined as a set of measures aimed at protecting the confidentiality, integrity and accessibility of information from virus attacks and unauthorized interference.

Digital security is a collective term that describes the resources used to protect online identities, data, information, digital objects, and other assets. These tools include web services, antivirus software, SIM-cards for smartphones, biometrics, secure personal devices, etc.

A related term is cyber security, as illegal access to information, data or financial resources is called "cybercrime", which in turn creates a need for cyber security. However, there is a difference between digital security and cyber security. Digital security involves protecting your presence on a particular network (data, identity, assets). Cyber security is a broader concept that encompasses a larger area, protecting entire networks, computer systems, and other digital components, as well as data stored within those systems, from unauthorized access.

Many industry professionals use the two terms interchangeably, but in reality digital security protects information, and cyber security protects infrastructure, all systems, networks, and information.

In other words, digital security is a process used to protect the identity of a digital object.

This study proposes to consider digital security at the enterprise level as

a set of resources that create safe conditions for the functioning of digital and physical "digitized objects" of the organization and help improve its efficiency. That is, in this case, the concept of digital security involves not only data protection, but also the formation of an integrated infrastructure with mandatory management to ensure the safe use of digital objects.

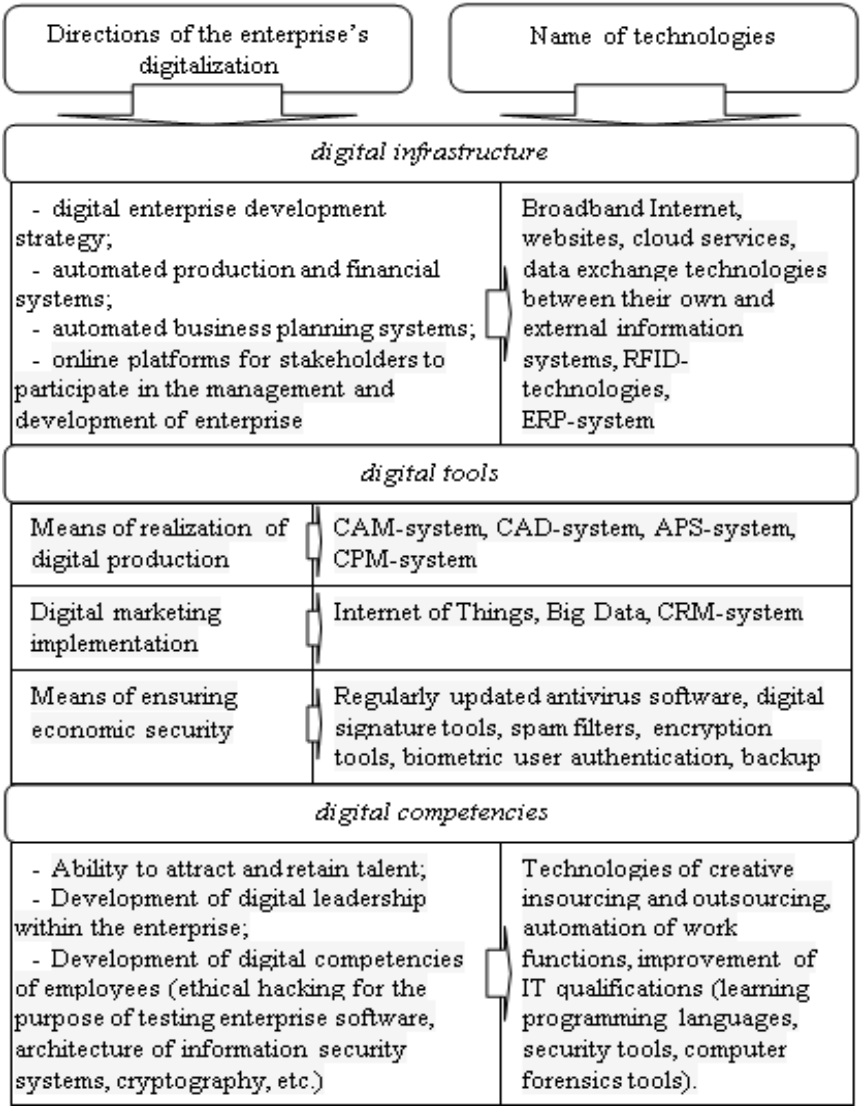

Fig. 1. Directions of introduction of digital technologies at the enterprise [developed by the authors based on 1; 2; 3; 4; 5]

According to the IBS Platformix research, the main components of the digital security system have been identified, including: a single platform for perimeter security systems and access control systems; accumulation of telemetry data base for further analysis; analytical modules for recognizing actions and objects; analytical software for data analysis "on the fly"; biometric identification systems; digital video surveillance to control production processes; machine learning when working with data; specialized software for analyzing the effectiveness of processes; specialized software for integrating physical and industrial security systems with business processes of enterprises. telemetry equipment control systems;

Their percentage of practical application and the need for application at the enterprise are determined and analyzed (Fig. 2).

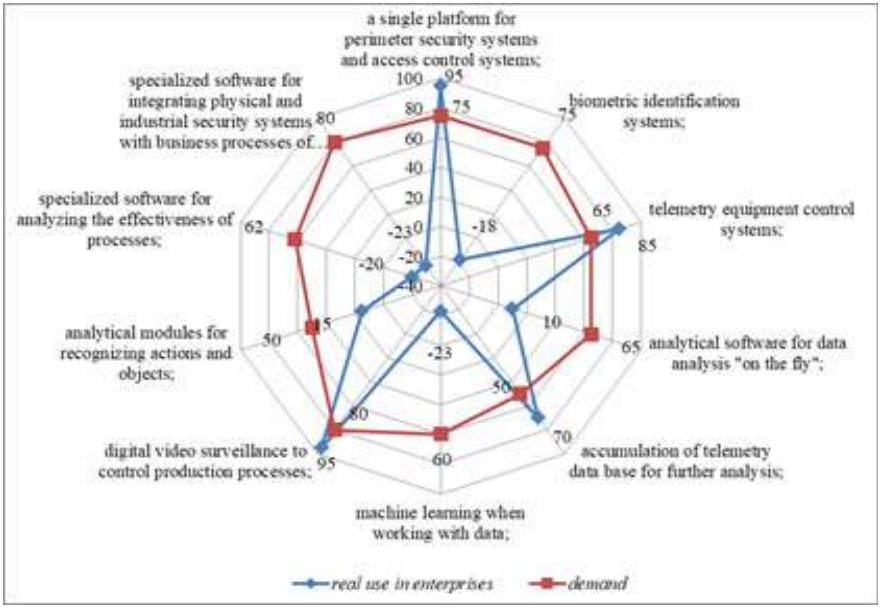

Fig. 2. Demand and applicability of IT solutions in digital security management [developed by the authors based on 2; 4]

The first group includes the most popular and used elements of the digital security system. Both solutions (a single platform for perimeter security systems and access control systems; digital video surveillance to control production processes) are understandable in terms of "how to do them" and have transparent implementation advantages.

The second group of solutions is characterized by high demand and, at the same time, low level of use in enterprises. This is specialized software

for combining physical and information security systems with business processes, as well as the use of biometric identification systems. The reasons why customers are interested but do not actively use these solutions are different. For biometric systems, the problem is that the effect of their implementation, taking into account the technical possibilities, does not yet reach the costs associated with their implementation. But mature security solutions implemented in the management software of the enterprise already exist, but it is still difficult for customers to psychologically decide to implement them. The question is obviously the need to divide the areas of responsibility, i.e. in the structure of the enterprises themselves.

The third group is solutions that are characterized by approximately the same level of demand with completely different levels of use in enterprises. These include telemetry equipment control systems, accumulation of telemetry database for further analysis, analytical software for data analysis "on the fly", specialized software for process efficiency analysis and machine learning when working with data. To unite these decisions in one group allowed a single subject of decisions. All of them involve the use of data collected automatically to make certain decisions in the management of the enterprise. The relatively low level of demand for these solutions is a consequence of the duration of achieving significant economic effects. Installing sensors, accumulating a database, researching and studying this data, testing hypotheses, learning to make decisions – it takes time. In the area of "demand – use in enterprises", the solutions of this group, in our opinion, should in the medium and long term confidently "drift" towards high demand with a high level of use.

Tasks of providing digital can be systematized as the analysis of mechanisms of disturbance of digital space, modeling of destructive actions; digital security management, determination of the zone of stability of the object of protection, analysis of digital risks, development of standards and standards of digital space security; synthesis of means of protection of digital space and control of a current condition and functioning of components of digital system of the enterprise. Accordingly, the modern digital security management paradigm should include:

• review of access control models, taking into account openness, flexibility and distribution. Models should be based on temporal logic;

• adoption of virtualization technology as the most powerful means of protection, which allows to move from the concept of "secure system" (from a fixed set of threats) to the concept of "system with predictable behavior";

• implementation of the separation information principle of processing environment and means protection;

• construction of theoretical bases of dynamic protection management (adapting to current threats) as object of automatic regulation with the

concept of stability zone, consequence (inertia) by dynamic characteristics;

• acceptance of openness systems (Internet connection) as an integral property and construction of protection taking into account this development bases an estimation of elasticity (system adaptability) and scalability.

The protection paradigm during development should be based on the following 10 principles:

• minimizing the attack surface. When adding new features, you need to analyze how they will affect the overall safety of the product and what mechanisms can be added to minimize risk;

• secure default settings. Enhanced security should be the default mode for users. At the same time, they can be given control over the possibility of reducing their safety requirements, while informing about the possible risks and consequences of such actions;

• minimum proxy. Each account must be given the minimum credentials needed to run their business;

• segregation of duties. Adherence to the system of creating and using different user groups according to their responsibilities;

• multilevel protection. One level of control is good, but more levels of control that allow you to deal with risks in a more diversified way are even better. The more efficient the structure of your security levels, the more difficult it is for an intruder to exploit system vulnerabilities, even if they exist;

• minimizing the negative impact of system failures. The software may have errors that will cause it to malfunction. But the task of the digital security management system is to ensure that these failures in the system are not used by attackers;

• transparent process of cooperation with third-party companies. Using third-party services is often a business necessity. But for secure cooperation and protection of critical customer information, it is necessary to introduce a transparent process of interaction with such providers, based on best global practices and approaches to outsourcing;

• choosing a simple and effective solution. It is desirable to avoid the use of excessively complex approaches and the use of redundant functions when there are simpler and more effective solutions;

• digital security audit. Ensuring registration and analysis of all important events related to system security;

• do not rely on concealing the fact of vulnerabilities. It is sometimes difficult to hide something, but it is much easier to reveal hidden vulnerabilities, especially for an experienced attacker who wants to break into the system;

• constant checking of the system for the presence of critical security vulnerabilities and their timely elimination [4].

The modern world requires companies to have a high level of adaptability to environmental conditions. This applies to all aspects of work, both business and social. The ability to quickly change processes, including the rules of security systems, is achieved through the use of digital technologies. At the same time, not much time is given to the digitalization of enterprises and security services and a limited resource is allocated. This necessitates the formation of an affordable, but at the same time, effective digital security management system of the enterprise.

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