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Poltava State Agrarian Academy

**SECURITY MANAGEMENT OF THE
XXI CENTURY: NATIONAL AND
GEOPOLITICAL ASPECTS. ISSUE 2**

Collective monograph

In edition I. Markina, Doctor of Economic Sciences, Professor



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PREFACE

The issues of security management in the conditions of the modern environment instability are of top-priority and stipulate continuous scientific research on the topics of the global and national economic, technological, food, energy security, innovation aspects of forming social, educational, and information security, management of economic security in conditions of integration processes and other.

In the early 21st century, the world faces with cardinal transformations accompanied by changes in geopolitical configurations, integration processes and other changes that affect the state of national and geopolitical security. The events of the last decade have revealed an exacerbation of the problems of global security and the ambiguous impact of the processes of globalization on the development of different countries. Under the circumstances, the rivalry between the leading countries for redistribution of spheres of influence is stirring up and the threat of the use of force methods in sorting out differences between them is increasing. The global escalation of terrorism has become real, the flow of illegal migration and the probability of the emergence of new nuclear states are steadily increasing, and international organized crime is becoming a threat. In addition, in many countries there is an exacerbation of socio-political and socio-economic problems that are transforming into armed conflicts, the escalation of which is a real threat to international peace and stability. These and other factors have led to the fact that the potential of threats to global and national security has reached a level where, without developing a system state policy to protect national interests and appropriate mechanisms of its implementation, there may be a question of the existence of individual countries as sovereign states.

The threat of danger is an immanent, integral component of the process of civilization advancement, which has its stages, parameters and specific nature. Obviously, the problem of security in general, and national one in particular, should be objectively considered in terms of its role participation in the development process, that is, to set it up as both destructive and constructive functions (as regards the latter, it is necessary to emphasize the undeniable fact that the phenomenon of safety is based on counteraction to the phenomena of danger, the necessity of protection from which exactly stimulates the process of accelerating the search for effective mechanisms of counteraction).

The formation of new integration economic relations in Ukraine and the intensification of competition objectively force managers of all levels to change radically the spectrum of views on the processes of formation and implementation of the security management system in unstable external environment that is hard to predict. Today, the main task is to adapt not to changes in market conditions of operation, but to the speed of these changes. In this regard, there is a need to develop effective security management mechanisms that are capable of responding adequately and in due time to changes both in the internal and external environment.

Therefore, this problem is being paid more attention in theoretical research works of scientists and practical activity of business entities.

Taking into account the fact that the traditional means of national and geopolitical security as a mechanism in its various models, forms, systems have reached their limits, since they do not contribute to solving the problems of globalization of the civilization development, there is an objective need to form a paradigm of security management in the 21st century, which aims to confront destruction processes; to harmonize activities of socio-economic systems: society, organization, the state, the world. The joint monograph «Security management of the XXI century: national and geopolitical aspects. Issue 2» is devoted to these and other problems. The progress in the development of the theory of security management on the basis of the analysis of theoretical and methodological works of scientists and the experience of skilled workers presented in the joint monograph creates opportunities for the practical use of the accumulated experience, and their implementation should become the basis for choosing the focus for further research aimed at improving the security management system at the national and international levels. In the joint monograph, considerable attention is paid to solving practical problems connected with the formation of the organizational and legal mechanism of organization of the security system in terms of globalization by developing methods, principles, levers and tools of management taking into account modern scientific approaches.

In the monograph, the research results and scientific viewpoints of the authors of different countries are presented in connection with the following aspects of security management: national security, food, environmental and biological security, economic and financial security, social security, personnel and education security, technological and energy security, information and cyber security, geopolitical security.

The authors have performed a very wide range of tasks – from the formation of conceptual principles of security management at the micro, macro and world levels to the applied aspects of management of individual components of national security.

The monograph «Security management of the XXI century: national and geopolitical aspects. Issue 2» consists of four parts, each of which is a logical consideration of the common problem.

The structure of the monograph, namely the presence of particular parts, helps to focus on the conceptual issues of the formation and development of national, economic, financial, social, food, environmental, biological, personnel, educational, technological, energy, information, geopolitical security, and problems of the maintenance of the practical process of application of the developed cases.

The joint monograph is prepared in the context of three research topics: «Management of national security in the context of globalization challenges: macro, micro, regional and sectoral levels» (State registration number 0118U005209); «Macroeconomic planning and management of the higher education system of Ukraine: philosophy and methodology» (State registration number 117U002531); «Infocommunication aspects of economic security» (Protocol 1-20 of February 04,

2020, ISMA, Latvia), which emphasizes not only scientific but also practical focus.

The results of the research works presented in the joint monograph have a research and practice value.

The advantage of the joint monograph is the system and logic of the structure, the simplicity and accessibility of the material presentation, the presence of examples and illustrations.

We believe that the monograph will become one more step towards a scientific solution of the problems concerning the formation of an effective system of security management under trying circumstances of globalization.

Publication of the monograph «Security Management of the XXI century: National and Geopolitical Aspects» is scheduled to be annual. Currently, Issue 2 is offered to our readers.

With best regards,

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PART 1. THE DEVELOPMENT OF THE MODERN PARADIGM OF SECURITY MANAGEMENT AT THE NATIONAL AND GEOPOLITICAL LEVELS

PECULIARITIES OF PROVIDING ECONOMIC SECURITY OF AGRO-FOOD SPHERE ENTITIES OF UKRAINE

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Specificity of agricultural enterprises requires the formation of directions for double adaptation to market and natural and climatic conditions. Higher riskiness is associated with seasonality and low producibility, use of natural resources, low elasticity of demand for agricultural products and their ability to spoil quickly, natural and climatic factors and the use of land as the main means of production [1].

The situation is complicated by the fact that under the current conditions, enterprises of the agro-industrial complex take a special place. As noted, agriculture, which depends on natural factors and has a pronounced seasonal nature of production, is unprotected, more technologically backward compared to other industries and, as a consequence, adapts more slowly to changing economic and technological conditions.

Providing economic security of enterprises is one of the priority areas, since providing security of the country is impossible without the functioning of a powerful agricultural, processing and manufacturing sectors [9].

In the scientific literature, fundamental approaches to certain aspects of providing economic security of agricultural enterprises are discussed in detail [2, 3, 4], however, it should be noted that the mechanisms for improving economic security of enterprises in the agrarian sector of economy are inadequately treated [5].

That is why there is a need for theoretical and practical justification of this problem to understand the essence of economic security of agricultural enterprises, as well as for the development of directions for improving economic security of agricultural producers.

In the context of globalization of the economic space, enterprises that are engaged in the agricultural sphere have gained broad economic autonomy, have faced the need for fundamentally new approaches to provide economic security [10], which justified the need to transform the entire system of protection of economic interests of these business entities.

According to most scientists, economic security of agricultural enterprises can

be defined as a state of the economic system, which, through effective management of corporate resources, ensures harmonious functioning of all components of its subsystems and competitiveness of products, as well as the protection of this system from threats to the external and internal environment under the conditions of economy globalization [6, 9, 10, 11]. Summarizing the above and taking into account the key component of the security of an agricultural enterprise – food, economic security of an agricultural entity, it is advisable to present the chain of optimal interaction «provision by means of production → agricultural production → processing of agricultural products → sales of products → consumption», which:

- provides the population with food in accordance with scientifically based standards, appropriate quality and range diversity;
- allows participants in business relationships to remain profitable, financially sustainable, solvent, and effectively use their potential (industrial, investment, innovation, scientific, etc.);
- provides extended reproduction with the impact of environmental and social factors [6].

The results of generalizations of the research done by national and foreign authors on this problem show that, depending on the scale of the system under study, threats to economic security of an agricultural enterprise can be formed both at national, regional, sectoral levels and at the direct level of an individual agrarian business entity (ABE). All these levels are interconnected in some way (fig. 1).

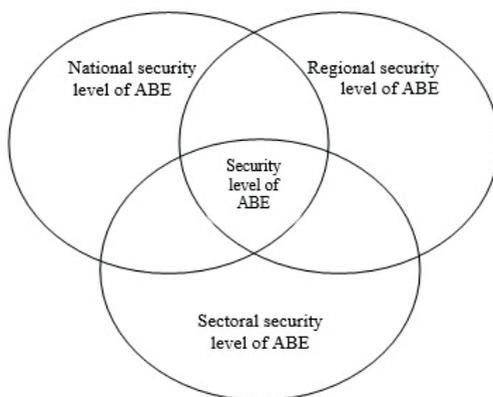


Fig. 1. Levels of providing economic security of an agrarian business entity [formed on the basis of 6, 11]

At the national level, economic security of agricultural enterprises is determined by the regulation of prices and tariffs, state support for producers through the introduction of a special regime of taxation, granting subsidies, preferential loans, providing preferential terms of insurance, state provision of agricultural machinery

leasing, certification of agricultural products, tariff and non-tariff measures aimed at agricultural import restrictions.

Economic security of agrarian enterprises at the regional level requires the adoption of regional programs for the development of agricultural production and the provision of consumption of agricultural products (food component). Such programs include financial support for agricultural producers using regional budgets, the regulation of emissions release, the monitoring of environmental conditions of agricultural production, the creation of industrial infrastructure facilities, and the compensation for the costs of forming and maintaining social infrastructure.

The sectoral level implies the creation of associations of producers, the formation of horizontal and vertical integration structures, the prevention of abuse of monopoly power in the markets of agricultural products by traders and suppliers of machinery, materials and services.

Economic security at the level of an agricultural economic entity is a complex concept that covers a number of possible components of economic security of a business entity. Thus, the main problems of economic security of agrarian business entities include:

- a low level of resource and technical support (inability to provide production with material resources to the necessary extent);
- limited financial resources;
- lack of investment (disables the process of reproduction of fixed assets);
- low labour productivity;
- lack of skilled personnel;
- irrational use of land resources;
- a low level of price competitiveness of agrarian business entities and products, in particular, etc. [1].

The essence of economic security of agrarian market entities as a system of economic interests lies in finding mechanisms of compromise between serving the national interests of the country, food security and the risks that result in stable functioning of the agro-industrial sector.

At the same time, economic security of agricultural enterprises should also be considered as a functional system that reflects the processes of mutual relations of interests of participants of agrarian relations, depending on threats, the preconditions of which are risks.

Based on the analysis [2], the factors of providing economic security of national agricultural formations have been generalized and systemized; these factors can be divided into three groups:

- 1) objective ones, which are associated with the inherited state of the economy;
- 2) subjective-objective reasons caused by market transformation of the economy;
- 3) subjective ones caused by miscalculations and mistakes in managing the agro-food sector and the economy in general (fig. 2).

In such a case, the activity related to the production of agricultural products is

complex, but at the same time, the nature is strongly-pronounced, since in this process a large part of business entities, whose activity is divided into 4 spheres, is involved.

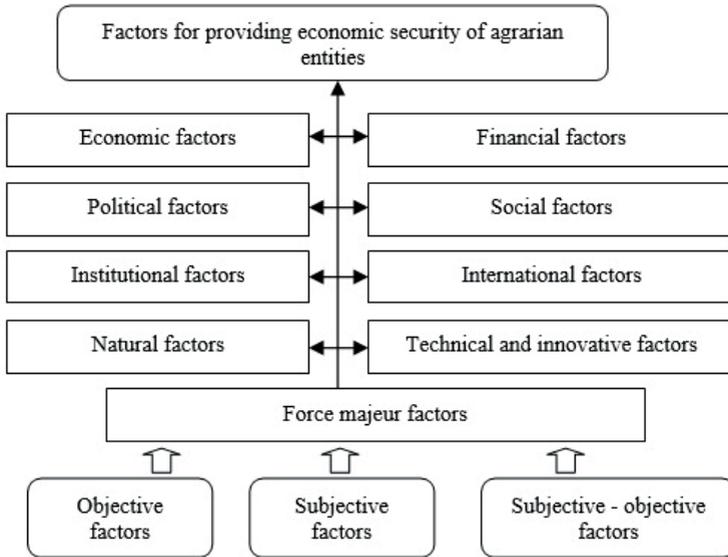


Fig. 2. Factors for providing economic security of the agro-food sector of Ukraine [formed on the basis of 4]

Depending on the goals of these spheres, the quality of each of them is influenced by a significant number of both objective and subjective factors, primary and secondary ones (fig. 3).

A retrospective analysis of the development of the agrarian branch of Ukraine has made it possible to establish that one of the main failures in institutional changes in the agrarian branch of the country was superficial consideration of the transformation potential of the agricultural sector. That is, during the institutional transformations, the following aspects were not taken into account: historical experience of the agrarian sector of the country, accumulated domestic experience of agrarian transformations, socio-economic problems of rural development in the previous periods, etc., which in the most negative way influenced the development of the agrarian sector, the ability of agricultural producers to operate effectively under the new market conditions [2, 3, 7, 8].

In view of the above, a conceptual model of providing economic security of the agricultural sector is proposed, it consists of measures grouped into three main blocks: an information-analytical block, a regulatory influence block and a direct counteraction block (fig. 4) [5].

Besides, the priority directions for improving economic security of agricultural

enterprises can include the following:

- 1) creation of a large-scale modern production capable of applying advanced technologies and using high-performance equipment;
- 2) organization of machine-technological stations or agricultural consumer cooperatives for technical and technological support of the activities of peasant farms and personal part-time farms;

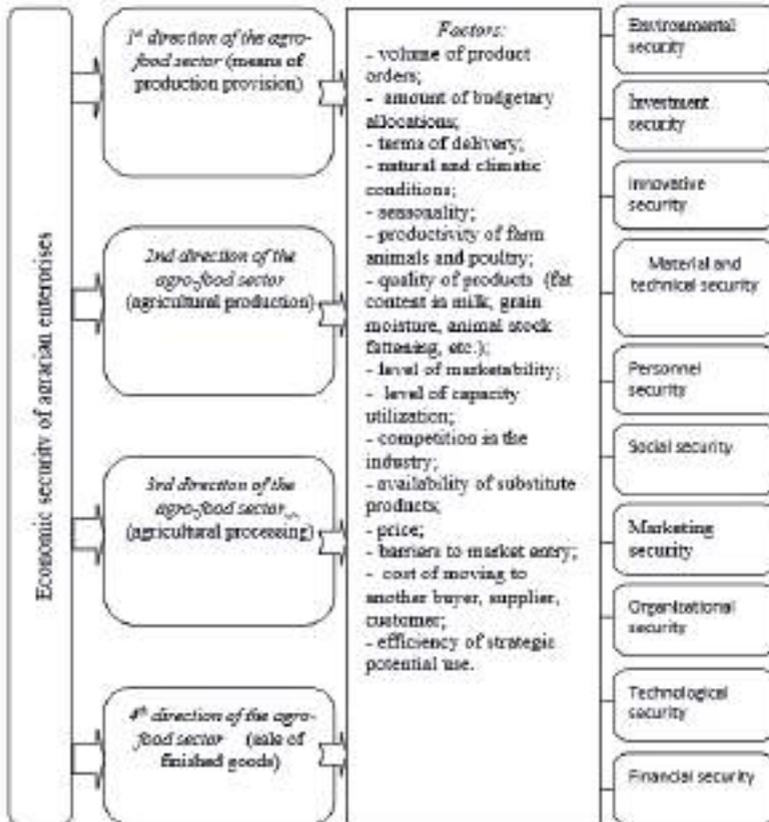


Fig. 3. Factors and components of economic security of agro-food business entities [formed on the basis of 6]

- 3) development of rural infrastructure: sale and supply cooperatives; information and consulting services; municipal guarantee funds;
- 4) optimization of social policy in the agro-food sector in order to increase a social component in the development of the branch (increase of the level of salaries of the employed in the agro-food sector);
- 5) modernization of the agro-food sector in order to upgrade fixed assets and

increase production efficiency (growth of capital productivity ratio, capital-labour ratio and productivity of labour);

6) improvement of economic policy in order to create conditions for increasing agro-industrial business profitability and sectoral investment attractiveness, increase of production volumes;

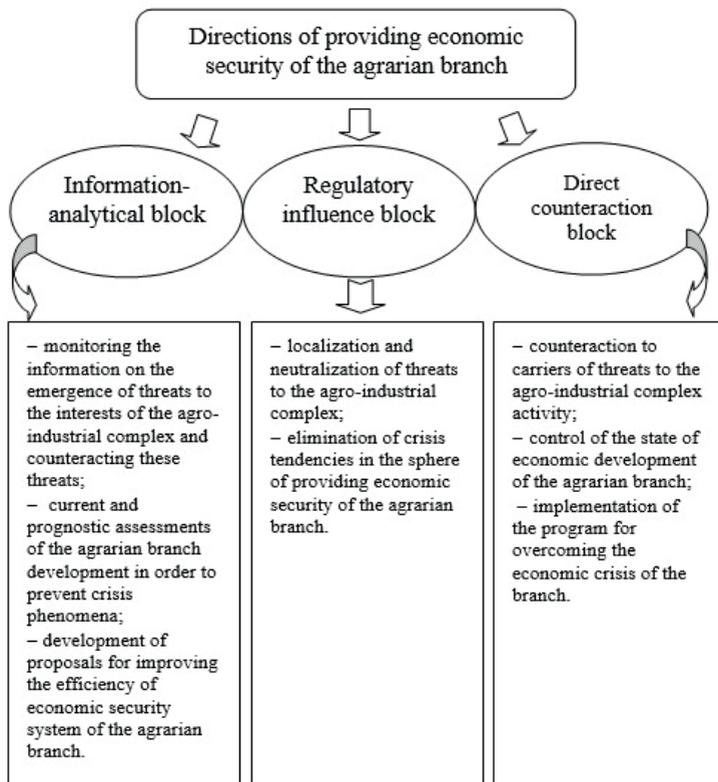


Fig. 4. Conceptualization of the directions for providing economic security of the agrarian branch [formed on the basis of 4, 5]

7) state support for agricultural production in the following areas:

- price regulation: setting guaranteed prices for resources, security prices to support national producers, mortgage prices for the purchase of products in security;
- crediting: giving credits for seasonal expenses, business projects for subsidizing interest rates on credits, futures contracts, leasing of agricultural machinery and equipment;
- taxation: granting of tax benefits, restructuring of debts for tax;
- insurance: preferential, of various risks, state payments in case of natural

disasters;

- budget financing: direct budget financing, subsidies, governmental grants, compensations, state targeted programs;
- financing of land management measures, integrated agrochemical cultivation of fields, agro- and forest melioration;
- pursuing the policy of reasonable protectionism: providing national producers with conditions for normal competition with the foreign market;
- refund of expenses for the maintenance of village social infrastructure owned by agricultural organizations;
- stimulating the inflow of investments into the agricultural sector.

Therefore, focused and permanent work on improving economic security is required to achieve the security status of agro-food entities. The problems of strategic development of the agro-food sector deserve consideration not only at the macro- but also at the meso- and micro-levels.

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BUSINESS PROCESS IMPACT OF PHYSICAL ACCESS CONTROL SYSTEM (PACS)

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The authors of this article are going to introduce how multifaceted the Physical Access Control System (PACS) is and to describe the dimensions in which this system can be used, bringing economic benefits. The use of different types of PACS functionality can also become a key tool of the core business, for example for a company renting parking spaces, providing access via PACS to a paid automated parking barrier. In order to understand the real benefits of the implementation of PACS both economically and in management quality improvement, the authors explore the concept of PACS, its variety and aspects, where the physical access control system is not yet broadly used and might be useful.

Research. Business production can be evaluated as a hybrid process of interaction between people and machines. As a result, the subject of the study, for which the optimal version of the access control system was modelled, was a mid-level food enterprise, but with a forecast of future growth into a large one. This universal model of PACS allows to apply the concept to almost any company. The high safety technologies being not discussed in the article may create for the reader the impression of the non-applicability of the model in enterprises operating within specific areas, with special requirements, like banks, military facilities and other strategically important objects with increased safety requirements, but in reality, the basis will be the same.

Describing the stages of work of the study, the authors highlight that the most difficult stage in the study is the analysis of the enterprise. The main reason is the

lack of detailed data from the enterprise to identify problems and effectiveness in meeting external requirements and internal needs. Detailed data, which make the research more narrow and specialized, less universal, aimed at a particular enterprise, means a set of all the data collected during the detailed audit. Detailed internal audit covers everything from security and IT security, manufacturing processes, HR, financial data to the data on strategic development.

The consideration of theoretical approaches to access control systems and comparison of PACS types was basing on the broad experience of one of the authors in the IT field, covering the data from different sources, book and electronic publications on PACS technology, electronic literature from manufacturers and integrators.

Further, basing on the results of the analysis of the theory and practice of the enterprise, the authors analyse the scalability of PACS in the selected enterprise and integration into existing processes, the possibilities of replacing obsolete inefficient technologies by the new system, assess the importance of such systems for business in the way both to improve the economic condition and as a necessary element covering the mandatory requirements.

The next stage of the research presented the analysis of the experience of other enterprises within the implementation of the operating physical access control system, where the main significant factors of PACS affecting the management within the company were derived.

The following step included the development and selection of: the technical model of the system, algorithm of work, communication with other production and administrative processes, development of a technically considered, effective and optimal financial proposal for the implementation of PACS. At this stage, the possibility of the implementation of future ideas and proposals on the basis of the introduced PACS was also considered.

The last stages were the identification of the positive effect of the implementation of the system and the generalized offer to the enterprise.

Describing the specifics of the selected enterprise in brief, it can be stated that the enterprise can be classified as a medium one on the Latvian scale. Production of the enterprise includes the full cycle, personal warehouses and logistics. Looking at the prospects, it is possible to define that the enterprise has great potential, and competitive products with their uniqueness and opportunities to expand export directions and defend positions in the domestic market.

The following managerial issues at the enterprise have to be emphasized:

- human resources issues;
- slow response to external and internal factors;
- low-performance low-level control;
- unoptimized processes and mechanisms of interaction;
- slow adaptation of the enterprise to market and government requirements;
- lack of defined procedures on a number of processes, and some of the existing ones considered ineffective.

Describing the place and role of research for the enterprise in the overall structure of objectives in the main direction of economic growth, the authors argue that the introduction of PACS occupies the top positions on the list after the creation of the main strategies and the development of detailed domestic policies. Also, PACS will become one of the powerful levers in the initial chain of creation of a highly efficient profitable enterprise. Such a role derives from the main objectives of the enterprise: stabilization of the profit decline process, increase of profit every new year, at the initial stage increase of production with existing resources and production capacity due to the increase of efficiency of interaction and optimization of working processes. It is also totally pointful to attract investors to a highly efficient profitable enterprise to obtain financial resources for the expansion of the market, to expand the enterprise both geographically and in production capacity, affecting the range of products.

Describing results and process of the conducted research basing on the experience of other enterprises, it is possible to judge the research quality basing on: the reliability of a poll scale checked by the Cronbach's alpha calculation being equal to 0.886 ($\alpha \geq 0.9$), implying a very good coherence between internal results of poll and creating the opportunity to use data for the analysis. When analysing the PACS factors and their importance for a small number of enterprises having it already introduced, the analysis demonstrated that one of the main processes in the enterprise is a human resource management; the highest rating by respondents was assigned to the factor of agility of PACS response (mean = 3.00); Lowest - PACS flexibility (mean = 2.22). The largest standard deviation is presented in the interface convenience assessment (std. dev = 1,042); The smallest - in factor of PACS operation speed (std. dev = 0,767). Regression analysis showed that the Integragibility, Agility factors definitely affect the main Human Resources Management value, and the remaining factors did not show a certain influence. All enterprises surveyed had an economic positive effect. Applying in the study the developed model of implementation of PACS on the selected enterprise also showed economic benefit.

Discussion. The authors concluded that interviewed representatives of companies with the introduced system use PACS only for safety reasons and for accounting of working hours. The analysis of the experience study of the enterprises having introduced PACS led mainly to the human research management and all processes related thereto, without revealing the technical potential of PACS. Therefore, it is useful to disclose some internal aspects of the subject, such as functionality, flexibility and technical possibilities for understanding how widely and how much PACS can cover for one's needs. The feasibility of the implementation of the PACS system as a mechanism for integration, optimization, automaton and interaction of the processes in between is the fact that the system can be scaled and integrated with many processes that the reader may not be aware of.

Research of opportunities. Authors are going to familiarize with a number of standard and non-standard uses of PACS. For a start, it is necessary to note that most

already using PACS are limited to standard usage.

The first aspect to consider is safety. The desire for security applies to almost all areas of human activity not only within the enterprise. Fences and doors are put, increasingly complex locks are invented and surveillance systems are created, methodologies to prevent penetration into one's territory are developed, official schedules and visits are drawn up, as well as various tools to track cyber-attacks, to search and prosecute violators offline and online are broadly used. Data protection has come to the fore in recent decades, but the essence of the issue has remained the same, as in the most ancient times: the price of security should be below the cost of what is being protected. In fact, it is a universal formula on which the whole evolution of life on the planet is built, while safety is one of the fundamental needs of any living organism, crucial, but not the only. Just as a turtle can afford a shell of a certain thickness, business is limited in resources that are reasonable to invest in security systems. Therefore, the choice of a protection solutions is a matter of balance. Let us consider this proposition on the example of the PACS technology that is presented in this article.

The PACS system is mainly used as a basic electronic door access system replacing the older solution - opening with metal keys. It is similar in information security area: protection, access differentiation, transfer, enciphering and data storage, as well as monitoring of correspondence and conversations via various communication channels. Safety also includes hybrid systems where PACS is integrated with one or more other systems. A prime example of this is integration with video surveillance systems that allows the use of information obtained from video cameras directly in the access control system. Cameras can be controlled manually «directly» from the PACS software interface. In addition, events in PACS can initiate actions of the video surveillance system. For example, start recording when access is denied, turn security on or off when a video camera is active. Moreover, in connection with video surveillance there can be automatic recognition of car numbers, which allows to automate control of entry of vehicles, increasing the capacity at the auto entrance, automatically record movement of cars on the territory of the object, maintain black and white lists and limit zones and time of access to the object by any vehicles. Depending on the configured algorithms, the decision on access and control of actuating devices (barrier, traffic light, etc.) is made automatically. All received information about the car is stored in the PACS database: number, image, date and time of an entry, as well as the of movement.

Another integration for security is a hybrid with an electronic key storage and issuance systems. This bundle of systems allows one to constantly monitor and analyse the actions taken with keys in the enterprise and record all events in the system (by whom and when the key was taken, who returned it last, etc.). When integrating the electronic key with the security subsystem, one can link a certain security area to each key. At capture of a key the area will be is removed from protection, and when being returned - having protection activated.

When the authors talk further about integration for safety, it is possible to mention integration with elevator systems. There are various reasons why one may need to separate access through the elevator. The business centre has tasks to restrict the access of outsiders to floors occupied by the certain organizations. The enterprise can also have at its disposal its own working hotel - in which the need to organize access of residents only to its own floor appears. In addition, the management company might restrict access to the specific technical floors for visitors apart from the cleaning staff. It solves similar tasks of elevator access controller. The ID in PACS can also be assigned a priority to non-stop movement to the floor or restrict access to the elevator to a certain group of persons.

With regard to buildings and facilities belonging to the enterprise, the integration of PACS with the fire alarm system should not be missed, while an integrated approach to ensuring the safety of the facility is expanding the functions of PACS. For example, if a user is authorized to pass through a door, one can automatically remove the room's security status, and if a fire occurs in a particular area, automatically open access-protected doors for personnel evacuation. Additionally, rooms that require a certain chemical treatment or are prone to fire can be filled with inert gas, and in order to avoid an accident, the system can monitor the presence of personnel in this area, preventing the start-up of processes endangering people and blocking the doors for security reasons.

Authors considered some of the directions in the multi-faceted PACS system that are related to security. The next area going to be covered is the integration with business processes.

The first task of the business process with the integration of PACS will be to take into account the working time of employees. This is the most important possible feature of modern PACS, logically related to business analytics, therefore it should be considered broader. As a rule, there is a big system error in any discussion about the need for time accounting. All arguments of opponents are that strict accounting of working time does not affect efficiency of work, that means the employee having spent the requested time at work might have not completed any tasks or completed them with low quality. The error is that time accounting is only one of the tools that affect labour efficiency. Elaborating on the point it is necessary to present the more correct phrasing: it is the task of time accounting systems to show the effectiveness of already used plans of motivation and its impact on efficiency (plans of remuneration, KPI, etc.). Neuroscientists argue that the desire for justice is formed at the genetic level in the process of evolution and is inherent in every person. The fair distribution of wages and bonuses is very important for comfortable work environment. Recording working hours in this case as an impartial mediator encourage ones working harder and punishes those, whose efforts to complete the tasks is low. All this creates unique conditions for automatic selection of employees, when the low-effective employees leave, but the high-effective ones stay. The authors insist, that one should not take the accounting of working time as a repressive measure, but

as a comfortable way to increase the efficiency of the completion of tasks. In any case the labour discipline has to be monitored and controlled. With automated time accounting, this happens without human participation, which is beneficial due to the reason, that the human factor is excluded. Additionally, the modern flexibility algorithm makes the system more convenient for employees: they can leave earlier or come later and subsequently work out this time afterwards. PACS provides the possibility to reduce the efforts of the employees targeting on the completion of the timesheets. Even if the accountant takes into account the actual time worked, rather than the conditional eight hours per day, the timesheet is formed in the legally provided format – as an algorithm of flexible time.

Turning to other integrations, in this article authors are going to present them as ideas that one can use for the implementation in the business and analyse economic benefits.

For almost every production, raw materials are brought, and one of the tasks of the enterprise is that this process would be qualitative and accurate. That is why integration with weight platforms and additional weight control at entry (exit) to the object or to its territory is one of the most important tasks for a number of enterprises. Accurate and operational accounting helps to organize a competent flow of material, as well as to monitor and suppress possible violations in a timely manner and to generate the required reporting. Objects whose weight can be controlled are people, animals, passenger and cargo transport, agricultural machinery, etc.

However, if the previously described process concerned more cars and raw materials, automation of the process of testing employees for the state of intoxication is an important task not only at facilities where there is a risk of injuries and different life threats, but also where production processes and communication with visitors take place. The integration of PACS with the alcohol testing kits automates the primary control for the state of intoxication and retains the history of all indications (regardless of whether intoxication has been detected or not). In order to get the pass, the employee applies the ID to the reader and then exhales into the alcohol testing kit. If the content of alcohol vapours in the exhaled air does not exceed the norm, the employee will be allowed to the facility. The passage in turn can be both one-sided and two-sided.

When faced with new challenges, it is necessary to generate new ideas for their implementation. Authors will present some more solutions of a number of problems using PACS.

If the ideas of the work of SCUD and its main elements - reader and electronic card, go further than many are used to, then a long-distance identification is the key: structurally simple and therefore flexible technology. The solution is based on the long-range radio frequency identification technology. Active labels are compact, inexpensive and can be fixed on any objects and operate from 1 to 50 meters and up to 5 years without replacing the power supply. As a result, this technology might be successfully applied in a variety of spheres. It can be used to register objects with

active labels, such as the removal of guest laptops or projectors from the conference room outside the enterprise. The technology allows to control automobile entrances, parking, cargo and other objects, to control automobile traffic, organization of automobile checkpoints. Active marks are used as the car identifier, which can be attached outside the vehicle, or stored in the car cabin. For logistics, this technology allows one to coordinate the work of the warehouse, monitor the movement of valuable cargo and loaders.

Considering even longer distances, it is necessary to consider the possibility of connecting elements to the system via Internet and such an element as mobile access control. A mobile access terminal is the optimal solution in situations where the usual access point is not allowed due to some specific circumstances (for example, in an agricultural equipment warehouse, a construction site or on a bus). It records the facts of the entrance to the territory or identifies personnel without recording the fact of the entrance or passing by. At the same time, there are no costs for installation and licensing of the point of entrance or exit, while the identification and decision on access is made via the application. On the basis of the data from the mobile point, one can also set up the working time reports.

Further, in revealing the possibility of operating the system over long distances, let the authors mention the possibility of using the smartphone as an identifier, through software and communication with any point in the world, as well as the replacement of the access card, which eliminates cases of cloning, loss or transfer of the identifier to another person. There is no need to purchase and personalize access cards, and the implementation takes place with minimal time. The identifiers can be both smartphones using Android and NFC support and Apple, with Apple Pay support and a linked bank card.

In conclusion, it should be noted that by implementing more ideas on PACS integration, the elimination of many small systems in favour of one large system, using maximum functionality, let the enterprise benefit economically from acceleration, optimization, automation and implementation of production and business processes. At the same time, one should not miss the costs of maintaining PACS and the costs associated with reducing the risks of system shutdown or failure. Finally, also the storage and processing of PACS data must not only meet the state requirements on biometric personal data, but also the security policy of an enterprise.

Summarising the aforementioned data, it is important to emphasize that the images, characterizing physiological and biological features of the human being, which make it possible to determine whether a pass presented by the PACS belongs to the specific person, on the basis of which it is possible to define the identity by comparing the photo and data already stored in the PACS with the data presented to PACS, are used by the representative of the enterprise to establish the identity of the personal data subject in case of doubt that the pass is presented by its valid owner. Thus, the photographic image and other information used to provide a single and/or multiple entrance to the protected area and to establish an identity also refers to

the biometric personal data.

Conclusions and further research perspectives. It was possible to formulate ideas and methods (in addition to the accounting of the working time and centralized security system), which the investigated enterprise was presented after analysis. Various methods and ideas of integration of PACS for the enterprise can be the introduction of technology in the following aspects:

- in office management and archiving;
- in payments at the dining room of the enterprise and in payments for the services like coffee machine;
- in payments of the parking fees;
- in control of production process sequence;
- in marking and tracking of product movements;
- in discounts acquired by the employees in the chain of brand stores and from a number of partners;
- in the access to resources by counter (copiers, printers);
- starting the specific equipment (production units, fleet, computers);
- identifying the identity for signing contracts, journals, acts, meeting the requirements of personal data non-disclosure;
- in the various surveys or polls;
- in the installation and removal of alarms;
- in the secondary identity identification;
- in marking expensive small fixed assets that cannot be removed from the territory or can be authorized and tracked.

Many other technologies are not mentioned in this article, that can be used in the Physical Access Control System, from perimeter lasers with distances of 40 km to object recognition elements by acoustic signal. The authors plan further to reveal the role of using PACS as a tool of data analysis in the enterprise to improve the health of employees, increase motivation to work, reduce stress from the work process and improve the overall environment in the enterprise.

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GLOBAL CHALLENGES OF CORPORATE EXPANSION POLICY AND SOLUTIONS TO THE KECSKEMÉT JOB MARKET

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In 2008 Kecskemét became the automotive industrial centre of Hungary and Central & Eastern Europe. Regional corporate human resource management was faced with both internal and external challenges in respect to employment and job markets. Unemployment and significant shortage of qualified labour simultaneously impacted the national economy.

The first challenge facing the Hungarian job market was the advances in digitalization and automation in the production processes. Digitalization and automation are posing new challenges for the economy. The changes are and will continue to directly affect the operation of industrial players, especially with regards to their needs for technology and the labour market, and in a broader sense will affect both the environment and society.

Problem identification. After 2010, the primary goal relating to management of the economy was to increase employment and to take actions to reduce unemployment. Following actions taken by the government, the rate of unemployment has dropped to 4.2 percent (7.4 percent with public employment) by the end of the 2nd quarter of 2017, while the employment rate of 15-74 year olds has increased from 48.8 percent in 2010 to 58 percent by the end of 2016. However, this lagged behind the relevant German data by 10 percentage points. By June 2017 the number in employment has increased by 712 thousand heads to 4.444 million heads, parallely job vacancies have increased to above 65 thousand by June 2017.

In Bács-Kiskun county, the dynamics of the job market have followed the national economic pattern. The present job market challenges are hitting Kecskemét and the region hard, reflecting the situation in the national economy. This means an increasing shortage of labour that is limiting the production of companies. On the other hand it greatly affects Kecskemét as an industrial centre, because industry is stepping into a new technological phase where the digital economy and the Internet

of Things (IoT) is restructuring the production systems at their core.

These challenges also represent opportunities: the leaders of the future economic regions will be those who are able to turn technological and organizational innovations to their advantage in the 4.0 process of the Industry by the highest degree, and who are able to harness the lower qualified potential workforce and provide them with appropriate training, so they can enter the job market.

Based on this hypothesis, in the long term, the solution to both challenges will be first of all the development of education, especially professional and adult training. However in the short and medium term the management of the first challenge means that by focusing on the municipal (and national economy) employment policy tools and the improvement of the recruitment processes of the companies may provide a solution.

Structure and methodology of the study. In the first chapter t Kecskemét workforce market requirements will be briefly introduced for the period between 1995 and 2005. Later the factors of the post 2006 economic policy direction change will be analysed followed by an examination of the characteristics of the present job market and the implementation of local council programs. Following the examination of the job market trends, in the last chapter, the study will define some proposals for a solution for Kecskemét and also in a wider sense for the management of the national economy workforce challenges, and the potential solution opportunities through the development of professional and adult training programs.

As for its methodology, the study relies on workforce market processes, and in the case of the defined proposals, on local and international statistics, trends, corporate questionnaire literature and personal interviews.

I. Labour market processes between 1995-2005 in Kecskemét.

In a ten-year period between 1995-2005 the number of unemployed stabilized around 3-4 thousand, however in Bács-Kiskun county the unemployment rate increased by 2.8 percent between 2000 and 2005 to a rate of 8.5 percent. In the county, the employment rate was below the national average of 47.5 percent at the end of the period.

As for the structure of the job market, the number of people working in agriculture and industry decreased, while the number of labourers in the services sectors increased.

The typical characteristics of those unemployed was that close to one third of those unemployed were older than 46 years old (around 1300 people). For this group the city management began a special training and support program. Also close to one third of those unemployed were active labourers without any professional trainings, however people under 25 had a typically higher motivation, quality and ability level.

II. 2006 Change of Direction in Economic Policy.

Reacting to the lower employment than the national economic average, and to the

high regional unemployment rate, in 2007 the city management launched an initiative. The local economic policy set a goal to form an investment friendly environment, hoping to see a strengthening of the local and regional economy as a result.

The investment boost was implemented with two main actions:

1. Municipal bond issue;

2. Gradual reduction of the business tax (IPA) – from the maximum 2 percent in 2007, to a 1,6 percent by 2011.

The actions to boost investments proved successful in the short term, as the number of local businesses started to increase and despite of the reduction of business tax, the city’s revenue increased. Based on the calculations of the city council, since 2008, more than 10 billion Forints have remained at local businesses. As a result of these actions investments and technological innovation in particular have boosted, and many new jobs have been created..

The fact that in 2008, Mercedes-Benz announced its decision to build a new factory in Kecskemét played a significant role in the economic upsurge and the new factory began its production in 2012. The arrival of the German international company proved a true catalyst for the economy of the town and the region: the number of suppliers to Mercedes establishing operations in the city grown significantly and it provided a significant positive impact on local businesses. As a result of these industrial events and over a very short time frame, the need for professional workforce increased significantly in the region.

Reacting to the urgent need for skilled labour experienced not just regionally but across the whole national economy, the pre-existing dual education system was introduced on secondary school level under Act CLXXXVII. of 2011 on professional training. This had a highly positive impact on Kecskemét and its region with respect to the great need for professionally trained skilled workers.

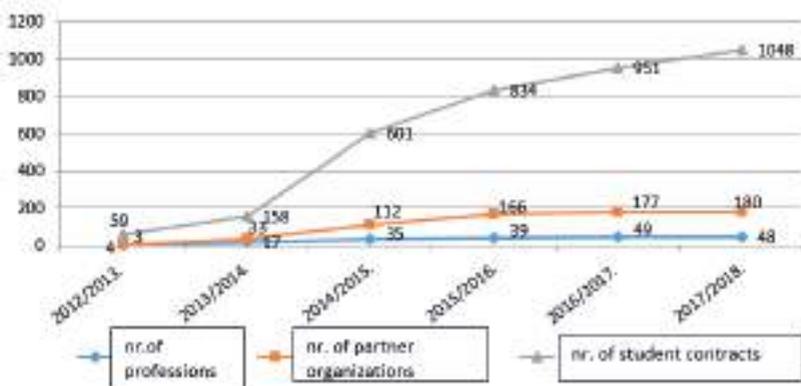


Chart 1: The improvement of dual training in Kecskemét

Source: *Bács-Kiskun County Chamber of Commerce and Industry*

In Kecskemét the number of professions available in secondary vocational training increased to 46 in 6 years, by the 2017/2018 school year, while the number of partner organizations of the Professional Training Centre increased to 180. The number of student contracts increased from 158 to 600 by the 2014/2015 school year and in the 2017/2018 school year, there were 1048 student contracts in effect. (Chart 1).

Reacting to the local job market needs, in addition to the secondary dual training, the Kecskemét College (today John von Neumann University) concluded a strategic contract with Mercedes-Benz to train highly qualified professionals specifically for employment in the automotive industry. Within this framework the former College

- established the Department of Vehicle Technologies;
- started a Vehicle Engineering BSc course;
- completed the necessary infrastructure investments and purchase of tools (new building, test benches, labs, and purchase of further tools);
- as the first one in the country, established the practice oriented higher-education dual training.

In parallel, Mercedes-Benz established the Mercedes-Benz Academy. The training centre, playing a significant role in Industry 4.0 is occupying an 8 thousand square meter campus and is presently training 186 students in six professions participating in secondary dual training and is accepting 39 students of 3 university faculties.. In the modern training halls, there are project works, while in the training rooms there are internal training, administrative and factory management training, recruitment days that offer trainings for new recruits to work on the production lines in the factory.

III. Kecskemét job market.

When the national employment hit its lowest point, the number of registered job seekers in 2009 reached 6200 in Kecskemét, a figure that is roughly double of the number of job seekers measured on average between 1995-2005. By 2017 the number of registered job seekers decreased to 2957 (Chart 2).

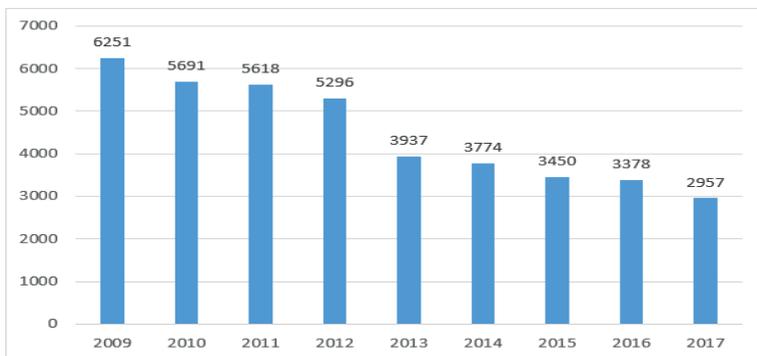


Chart 2: Number of registered job-seekers in Kecskemét

Source: KSH, T-Star, NGM, TEIR

Analysing the number of job seekers by their school qualifications, it can be seen that since 2009 their number has decreased in all groups. Presently the number of job seekers with high level school qualifications does not exceed 300, while the number and rate of unemployed with elementary and secondary school qualifications is more significant.

It is important to highlight that while the negative trend can be continually seen in the unemployment of those with professional qualifications since 2009, the number of job seekers with elementary school qualifications only reduced only by 59 people between 2013-2015 and is still just above 1000 heads. Similarly to the situation with those possessing basic level education, the number of job seekers with secondary school and higher education qualifications has decreased at a slower rate compared to skilled workers over the same period (Chart 3).

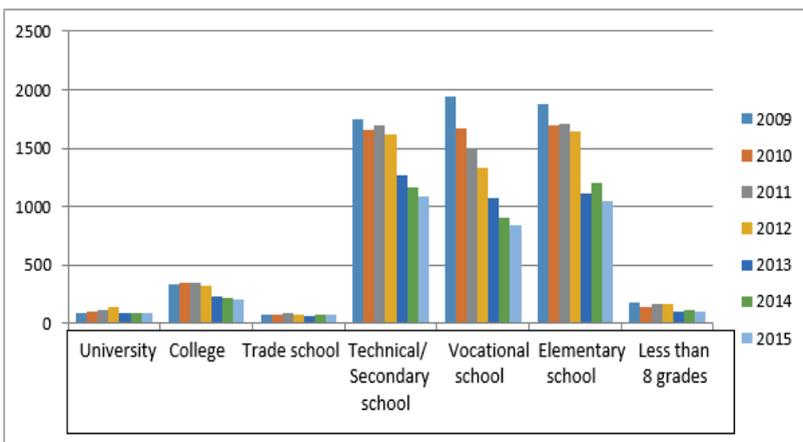


Chart 3: Number of job seekers in Kecskemét by school qualifications
 Source: BKMKH

According to the survey made by Kecskemét AIPA Ltd. in the summer of 2017, the businesses in Kecskemét needed 2520 employees. Based on qualifications it can be seen that businesses (41.6 percent) needed mostly technical skills – as provided by former trade schools – although their rate of need decreased by 9 percentage points since 2016. Over one fifth (20.7 percent) of labour demand is targeting the vocational high school – former technical school – qualifications, while there is a slight increase in the demand for high level qualifications (14.4 percent). It is important to highlight that close to one fifth of businesses (18.8 percent) are still searching for employees with elementary school qualifications, therefore the shortage of labour in the circle of unskilled workers can also be highlighted (Chart 4)

Analysing labour needs in Kecskemét by job types it can be seen that out of the 2520 workers there is a 65.8 percent of demand for skilled and unskilled, 12.6

percent for high level qualifications and 19.5 percent for office or unskilled positions.

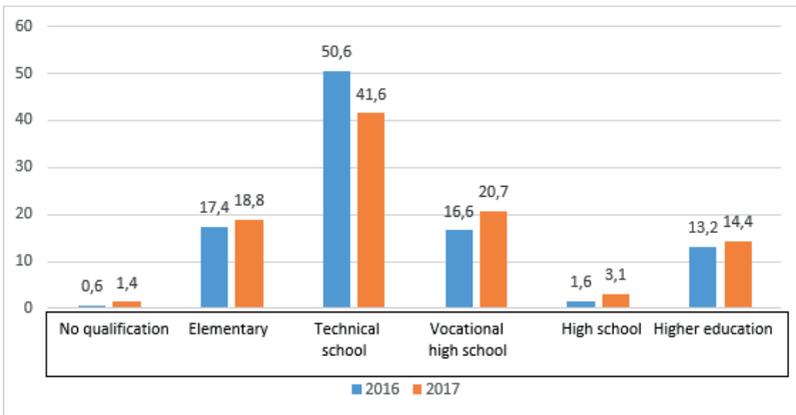


Chart 4: Labour needs of Kecskemét businesses by qualifications

Source: AIPA Ltd. 2017 survey

AIPA Ltd. has also surveyed the most important skills Kecskemét businesses are looking for. Based on this the first requirement of professional expectations is the professional knowledge relating to the scope of activities required to perform the job in question, followed by an ability to create and read technical drawings, machine management, mathematics and basic digital knowledge. Among intellectual expectations, accuracy, logical thinking, the ability to work independently, endurance and the ability to cope with monotony are shown as requirements.

IV.. City Council initiatives to manage the challenges of the job market.

The elimination of shortage of labour can be achieved in the medium and long term through an appropriate professional and adult training system (recommendations to this are detailed in chapter V.).However, in the short and even mid-term active government and council employment policies can play a significant role along with modern job recruitment policies and processes of potential employers.

In order to support increased employment Kecskemét Council, has instituted the Kecskemét 4.0 program.

IV.1. PRESTEP – Kecskemét 4.0, a Creative Knowledge Centre.

A unique program established together with the John von Neumann University. The aim of the Kecskemét 4.0 program is to enable the city of Kecskemét to manage separated strategic areas interconnected by economic development under the aegis of a program.

Through the program as a management tool the city is able to respond quickly and effectively to the challenges of economic recovery in order to provide long-term attractive life prospects for residents, long-term settlers and the business community.

The coordination of the tasks of Kecskemét 4.0 project is carried out by four

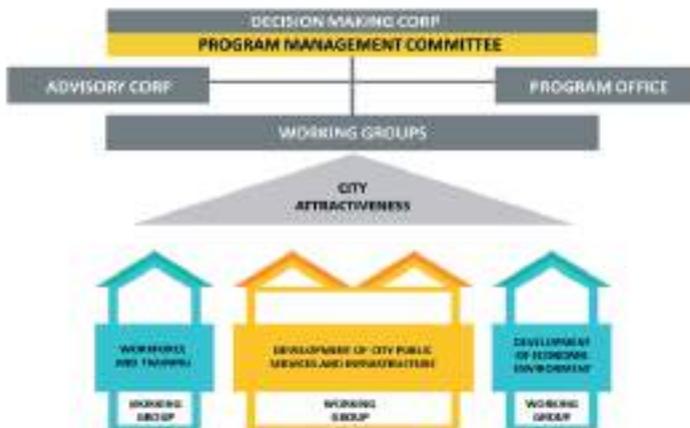
working groups, which play an active role in the issues of workforce supply and training, development of urban infrastructure, public services and business environment, as well as answers to the issues of urban attractiveness.

The program is based on the cooperation and teamwork of the actors of the public sector and private sector. The program manages the tasks, demands and expectations that arise in different areas in a project-based approach. Within a well-structured organizational framework, the different actors work together to find solutions.

The strategic directions of the program are determined by the Program Management Committee consisting of the leaders of the city, the university and major companies of Kecskemét. This panel monitors the realization of the goals as well.

AIPA Nonprofit Ltd. manages the program and organizes the annual Kecskemét Economic Development Forum. During the Forum, the representatives of the program will present the developments implemented in the given year to the determining economic and institutional actors of Kecskemét.

In 2019-2020, the Kecskemét 4.0 program, with its brand reflecting its spirituality will enter the public consciousness under the name “PRESTEP - Joy of Success”. At the same time, Kecskemét, as one of the most dynamically developing cities in the country, has gained the encouraging, understanding love of its inhabitants and is thinking together to create a happy, livable, modern city. This is the «JOY OF SUCCESS» that takes you step by step to a well-defined direction.



The Kecskemét 4.0 program is accompanied by a wide range of marketing and communication exercises (“Kecskemét the home of your future!”), to support the coordination of the 4 areas with an emphasis on continuous program management activities.

IV.2. Establishment of an Employment Pact.

The goal of this project established in 2016 is to create a cooperation between

the council and businesses working in Kecskemét and its region, where training and employment programs are implemented to reduce unemployment and increase gainful employment at the same time. Benefits supporting employment are subsidies for wages, providing a subsidy for salary when obtaining work experience, support for commuting, supporting mobility (e.g. contribution to the rent). Initiatives linked to requisition of services in the job market generally are allowances towards the costs of commuting in the recruitment phase, activity compensation linked to employment, child care or support for care of the elderly or disabled family members, supporting self-employment, and also support for the costs of medical and training aptitude tests.

IV.3. Establishing an Employment Board.

The largest employers of Kecskemét and the region, council officials, the management of John von Neumann University and selected executives from organisations working on city development are represented in the employment board. The Board meets on a regular basis, where interested parties have an opportunity to debate and discuss the job market opportunities and provide recommendations for solutions.

IV.4. Flats with lease designation rights.

The essence of the model is that in the case of flats renovated from council budget sources, large local businesses can purchase lease designation rights and in return they guarantee 100 percent occupancy during the period of the agreement, whilst the tenants pay rent and overhead costs to the council.

IV.5. Preferential land sale program.

Besides 4.0 the city council have initiated a preferential land sale program that is designed to support families, to motivate childbirth and foster long-term settlement in the city. Within the program, families wishing to settle in Kecskemét can purchase council land at a preferential price. The discount in case of one child is 10 percent, for two children 20 percent and for three or more children it is 30 percent. The condition for this benefit is that the people applying do not have ownership or interest in any property in Kecskemét. They need to commit to build a house on the land within three years, and to reside in the property for the following ten years without selling it within this period. This last condition assures, that this scheme is for the benefit of families wishing to live in Kecskemét and not for the interests of property developers or agents.

V. Measures to retain labour.

There are measures for employers to be able to retain and motivate employees and modernise their recruitment processes. The requirements of modern employees towards workplaces are changing parallel to the development of the labour market. Presently Hungarian employees expect commensurate salaries, personal and professional development, a good team environment, interesting work and acknowledgement from their employers. These criteria can be assured by the following actions:

- Health improvement measures, extending financial and non-financial benefits.

- More flexibility from employers.
- Training for employees, supporting work with professionals (e.g. psychologists, mental health professionals).
- Continuous measurement of employee satisfaction, and as a result, implementing problem management solutions.
- Establishing employee recommendation programs.
- Gamification, playful method of employee training, resulting in more effective work.
- Creating family friendly workplaces that primarily help establishing the work-life balance (e.g. employing pregnant and young moms, job sharing, operating a nursery, summer camps for children).
- Widening the recruitment zone to attract the appropriate number of qualified personnel (e.g. resettlement allowances).
- Employer branding.
- Using social media.

Close contact with training institutions to attract young employees already during training. Employers have to pay special attention to young employees, the members of the Y generation. The job market expectations of the Y-generation can be characterized by the following:

- lower number of staff;
- mobility;
- high expectations with regards to wages and improvement opportunities;
- using smart devices.

In order to reach the Y-generation, businesses need to word advertisements on recruitment portals (perhaps tailored to mobile devices), studies and competencies that are available to search through modern search engines, competition through internship programs, virtual recruitment games in the language of youth.

VI. Global workforce trends.

Digital revolution and Industry 4.0 will create major changes in the global job market and in wider terms, to the environment, technology, economy and society will create major changes in the next few years. Through the impact of automation and robotics a significant realignment is expected in the area of production and service procedures that will have a major impact on the job market, therefore on the structure of professions and trades, and competencies necessary to execute and perform the work.

Automation has two opposite effects on the job market. The first is called the creative destruction in international literature that new technologies will replace human workforce at companies and that will bring forward an increase in productivity. The second effect is the so called capitalisation effect meaning that the surplus workforce will be directed towards high productivity (and higher added value producing) companies. As a result of the two effects – if the training system is unable to adjust – automation increases the productivity of the national economy

and employees are headed for sectors creating higher added value.

Due to the continual innovation within the workplace, current professions, jobs and activities are disappearing and the appearance of new scopes of activities are continually to be expected. In the realms of global competition, those economies will be successful, that have a flexible professional training system, and can quickly adapt and satisfy the new workforce needs, and are able to quickly retrain workers that were in positions recently automated.

In 2017, McKinsey carried out an analysis on what percentage of present work activities would be likely replaced with the currently available technologies. Therefore, it is important to emphasize that the study is based on current known technologies not the yet unknown future technologies and it seeks to examine ones that are financially not yet viable to use. Based on the results, today only 5 percent of professions can be completely automated, therefore the impact of automation is not to be regarded as abolishing jobs in large measure, but that some of the activities and phases of certain trades will disappear. The analysis also points out, that in the case of around 60 percent of work activities, at least 30 percent can be automated. For businesses this means that the amount of time that their employees work will decrease, and they need to consider how to utilise the excess (time) capacity of their workforce. As an example, McKinsey mentions sewing machine operation, clock repair as professions that are easy to automate, whereas less possibilities exist to automate professions that are management based, lawmakers or psychiatrists. The survey establishes, that primarily “mechanical” jobs will be replaceable by new technologies, while interpersonal tasks and professions (e.g. teacher, doctor, nurse, psychologist etc.) will unlikely be automated based upon current know technologies (Chart 5).

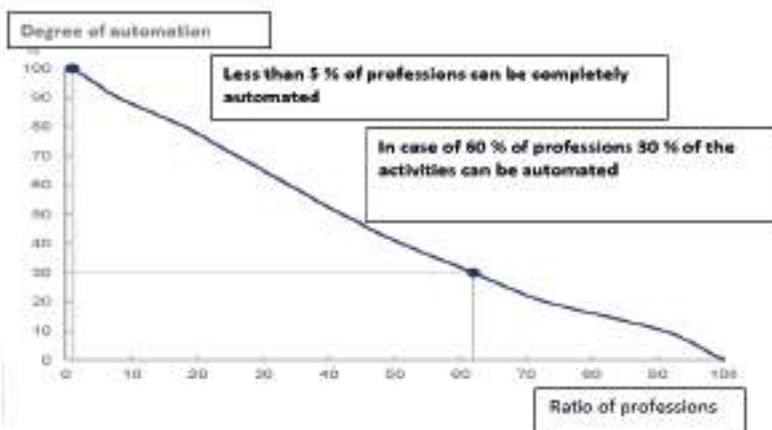


Chart 5: McKinsey’s results on the possibility to automate professions.

Source: McKinsey (2017)

The Economy and Business Research Institute (GVI) carried out a survey in 2016 on the potential impact of automation on the Hungarian job market. Based on their results in Hungary, a total of 513.000 jobs are potentially affected by automation. As we have shown with the findings of the McKinsey survey, this does not mean that 513.000 jobs will disappear in the coming years. In the case of so many jobs it can be expected that some activities will be automated. Automation will naturally be different when viewed by profession and also in terms of the specific processes that can be automated (Chart 6).

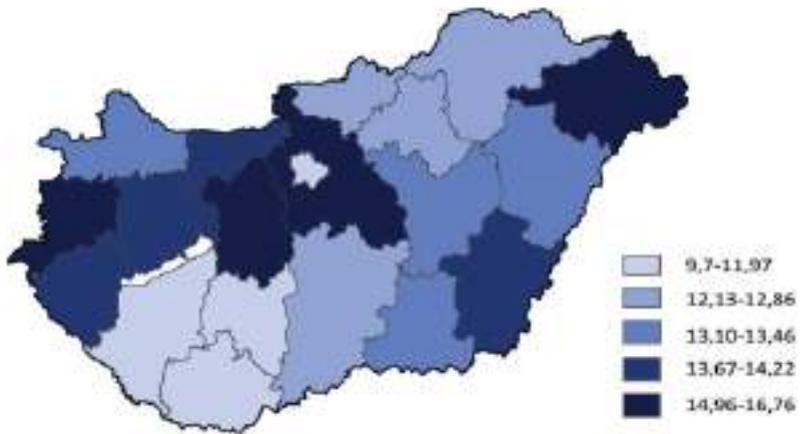


Chart 6: The impact of automation on the national job market
Source: GVI (2016)

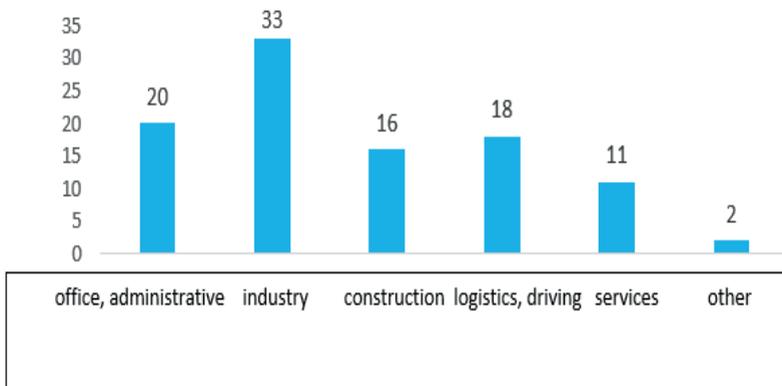


Chart 7: Distribution of automation potential between different sectors
Source: GVI (2016)

Automation will play the most significant role in the specific case of industrial jobs based on the results of GVI (33 percent), but it will also play a significant role in office and administrative professions, logistics, driving and construction. (Chart 7).

Based on the calculations of GVI in Bács-Kiskun county the number of professions that can be significantly automated shows an average of 12 percent. As a result of automation on the one hand, the shortage of skilled labour can be lessened, as positions that businesses cannot fill with unskilled workers may be filled with robots. However, it will increase the shortage of labour with new skills to operate new technologies unless relevant training systems and approaches are developed. In summary, as a consequence of automation – in the absence of appropriate training systems –businesses will experience a shortage of a skilled workforce who can operate new technologies and therefore there is the potential for unemployment to increase.

Based on the 2016 study by the World Economic Forum (WEF) competencies expected by employers are expected to change significantly by 2020 in parallel to the process of automation (Chart 8).

By 2020, according to the WEF forecast, the most important skill required of a workforce will continue to be complex problem solving, however this will be closely followed by critical thinking, creativity, management skills and emotional intelligence will also play a significant role.

TOP 10 Skills 2020.	TOP 10 Skills 2015.
1. Complex problem solving	1. Complex problem solving
2. Critical thinking	2. Cooperation with others
3. Creativity	3. Management
4. Management	4. Critical thinking
5. Cooperation with others	5. Negotiation
6. Emotional intelligence	6. Quality control
7. Judgement and decisiveness	7. Service-oriented
8. Service-oriented	8. Judgement and decisiveness
9. Negotiation	9. Active listening
10. Cognitive flexibility	10. Creativity

Chart 8: Skills expected by employers in 2015 and in 2020

Source: WEF (2016) <https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/>, own edit

VII. Potential solutions.

Based on our judgement, all the challenges faced by the job market: shortage of labour, unemployment and the potential effects of automation can be managed together with the establishment of a flexible vocational and adult training system,

that can react quickly to the new emerging labour market requirements and the training content meets the expectations of businesses.

Based on international best practices –after examining the professional and adult training systems of Finland, the Netherlands, Germany, and the Czech Republic – the main characteristic of any successful professional training system is that the content and structure of the training is defined by the business needs and that the system can react flexibly to the requirements of the new workforce needs, while quality control can be practiced by government through a graduate tracking system.

According to international best practises vocational and adult training system in Hungary can only be successful if it meets the following 4 priorities:

- Secures the appropriate structure of trainings. It is necessary to set-up the structure (contexture and length) so that they mirror the expectations of the labour market.

- The rate of students learning in professional and vocational training is increasing. Compared to the OECD countries, in Hungary 15 percentage points less young people obtain professional qualifications on the mid-level, while compared to leading economies (Germany, Austria, the Czech Republic from the Visegrad countries) 30-40 percentage points less. More and more young people should receive skills in order to catch up with the average of the OECD countries.

- Employers undertake an active role in vocational training. It is necessary for employers to go through a change. In the 21st century it cannot be expected that the state and the vocational and adult training system “deliver” well-trained, tailor made workforce. Businesses have to take part actively in both in the improvement of teachers working in vocational training and also in the development of the curriculum itself.

- The curriculum of vocational and adult training focuses on competencies necessary to get a job.

In order to achieve these goals, based on international best practices the following potential development areas can be defined.

1. Establishing a regional workforce demand forecast system
2. Establishing a graduate tracking system

The international best practices point out, that the establishment of a graduate tracking system is a priority for the coordination of quality control of trainings, career guidance and the job market supply and demand.

3. Periodic corporate training of vocational trainers

Based on the experience of field-related research and in-depth interviews, the basic challenge of the vocational training system is that trainers are not prepared, their knowledge is out-dated in many cases. It is worth considering the provision of compulsory periodic corporate training.

To combat the lack of well-prepared trainers the Teach for America program offers a best practice where they provide training for the teachers hired in the program and following that, the teachers teach in the existing education system for 1-2 years.

4. Promoting companies to participate in the vocational training system.

VIII. Summary.

Based on the findings of the study, all the challenges of the job market, shortage of labour, unemployment and the potential impact of automation can be managed together in the long run by incorporating a flexible vocational and adult training system, that can quickly react to any new labour market requirements, and where the training content meets the expectations of businesses. Aside of which, in the short and even mid-term, active government and council employment policies play a significant role alongside the modern recruitment processes of employers.

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ECONOMIC EXPLORATION AS A NATIONAL SECURITY FUNCTION: A THEORETICAL ASPECT

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Intelligence is one of the main areas of national security. Obtaining information on economic development, the state of critical infrastructure of individual countries, the introduction of new technologies, as well as the directions of major investment projects remains an extremely important area of activity of most national intelligence services.

Almost every leading national intelligence service has a significant arsenal of economic intelligence forms and methods. For example, the Parliament of the United Kingdom of Great Britain and Northern Ireland adopted the Intelligence Service Act in 1994, which gave the Secret Intelligence Service (SIS) fairly broad powers to obtain such information, extending it to «all areas relevant to the economic well-being of the United Kingdom» [1]. In March 1994, the Government of France obliged its own intelligence services to significantly expand the operations to obtain economic information, for which the Committee on Economic Competitiveness and Security was established next year [2]. Also in France, the École de Guerre Économique (EGE), a special educational institution is successfully operating today, where doctors of science of the relevant profile are trained.

The largest donor of economic intelligence today is the People's Republic of China. In the country, the Ministry of State Security of China, the special department of the General Staff of the Chinese People's Liberation Army, as well as the Department of Military Intelligence [3] mainly take care of this problem. The United States also pays considerable attention to economic intelligence - in addition to the CIA, the US National Security Agency is also responsible in this area, which has dramatically increased its ability to retrieve information through the introduction of the new ECHELON system, which can intercept millions of e-mails per minute worldwide [4].

Thus, the competitiveness of national economies in today's global markets determines the dilemma of choosing between national progress and security and poverty and instability. National governments are increasingly pressured to meet the growing needs of the country's population and are therefore forced to maintain the country's competitive advantage by any means available, among which the use of intelligence services is one of the leading places.

M. Păduraru proceeds from the fact that with the acceleration of globalization processes and the removal of trade barriers, the task of becoming more competitive on the world and national markets has become relevant for most organizations. In

this context, the role of economic intelligence is to provide decision-makers with up-to-date information of endogenous and exogenous nature. Powerful transnational corporations are the first to understand the potential of the latest information in improving production efficiency. The integration of these mechanisms into national technological development strategies has enabled a number of countries to achieve and maintain significant competitive advantages. The development of public-private partnerships makes it possible to ensure harmony between the interests of private institutions and national interests. At the same time, economic intelligence acts as an effective mechanism for increasing competitiveness [5, p. 91].

According to M. Taillard, economic intelligence is more accessible than other intelligence, since most relevant indicators of a country's development can be taken from open sources. Economic intelligence data are based on information on sales volumes, specific types of goods and their availability, as well as the distribution and changes in pricing of certain types of products, etc. By analyzing such information, you can determine the amount and types of resources used by another country and the time limits for their consumption. All this not only determines the effectiveness of state economic strategies, but also makes it possible to make estimates about the intentions of the leadership of other countries, as well as to develop appropriate response scenarios [6, p. 18].

The research by M. Bouchet, C. Fishkin, A. Goguel reveals the peculiarities of the influence of private companies on the growth of risks of inefficient forecasts, especially in cross-country comparisons, which subsequently form the basis for economic intelligence data. As a result of their use, erroneous government decisions are often made, which requires a clear understanding of the limits of using risk theory in this area [7, p. 154].

Over the last two decades, the economy has pushed aside the political factor in international relations and has become a dominant factor in the struggle for global leadership among states, which has forced world leaders to fundamentally rethink major national security priorities. One of these priorities was the creation of powerful, well-structured economic intelligence systems. Elements of this system are: individual state institutions (special services, diplomatic institutions, foreign trade agencies, etc.); transnational corporations; enterprises of various forms of ownership, as well as scientists and experts. A number of differences can be identified in the construction of national economic intelligence systems based on different traditions, cultures, structures and potentials of national economies. However, despite this, the primary purpose of the functioning of all economic intelligence structures is to support information and analytical decision-making in the area of national economic interests. It is also important to emphasize the importance of research projects undertaken in the interests of economic intelligence – these are, first of all: market competition, problems of scarcity of natural resources and the development of strategic sectors of the economy.

The term «economic intelligence» was introduced by M. Porter after the

publication of his monograph *Competitive strategy: techniques for analyzing industries and competitors* [8, p. 27]. The term is considered by the author as an activity of collecting and analyzing information aimed at enhancing the competitiveness of a firm or a branch. The term has become widespread thanks to the release of a special thematic report prepared by Henri Martr in 1994 for the French Government [9]. Based on the report, economic intelligence is a collection of coordinated activities to collect, process and disseminate information useful to economic entities. One of the significant results of the Report was the creation of a new state institution, the High Representative for Economic Affairs (in 2016, it was transformed into a Strategic Information and Economic Security Service – Service de l’information stratégique et sécurité économiques, SISSE).

Today, the most successful model of economic intelligence is considered Japanese. The system involves government agencies and private companies and operates in the following strategic rigid vertically constructed dimensions: a global and local approach to markets; trade strategies that are clearly adapted to each country’s economic and cultural context; long-term economic strategy; accurate and detailed information policies implemented by private companies with a daily reporting system; integration and coordination of economic centers; partial and selective distribution of information based on access levels; corporate training programs for young professionals aimed at providing and improving specific skills, including understanding of local culture and language, depending on the companies and their location [10].

The European model is characterized by much less rigidity of vertical links, but a common feature of the Japanese model is the existence of a clear coordination and integration of all activities carried out at national, corporate and individual (including academic) levels. Unlike the United States, in most European countries, government agencies play a leading role in coordinating the activities of all members of the system. Regarding special services, they perform, mainly, the most responsible and non-public tasks for obtaining important economic information.

The analysis shows that economic intelligence can fit into three basic algorithms:

- an algorithm for systematic, purposeful retrieval of strategic information on the economic development of a particular country, which allows the political leadership of the state to minimize uncertainty in decision-making, thereby significantly increasing the economic competitiveness of the country and domestic companies in the world arena;

- national security algorithm, which provides continuous monitoring of strategic sectors of the economy of a number of identified countries. It also envisages active measures to counteract the threats of negative external financial and economic impacts. Equally important is the function of participation in the fight against transnational organized crime and terrorism, which remains the prerogative of special intelligence services and law enforcement agencies;

- algorithm for active action by national special services. Their main purpose is

to strengthen the presence of the state and representatives of domestic business in the world markets, as well as in markets of strategic importance of other countries.

An important methodological caution to the study of the theoretical foundations of economic intelligence is the need to distinguish between economic intelligence and economic espionage [11]. The rapid development of new technologies leads to the fact that governments of many countries are beginning to become aware - the main condition for their competitiveness in the global economy is the need to invest huge capital investments in leading domestic industries, which does not always coincide with the real financial capabilities of the state. This is why political decisions often break the line between economic intelligence and economic espionage. For countries that can afford significant financial inflows to develop leading industries, economic intelligence and the avoidance of economic espionage are more typical, as they can lead to significant negative consequences in the relations with strategic partners. However, for some countries, such a strategy seems impossible, and they make decisions about stealing technology or secretly seizing important financial and economic information. These countries can run a legitimate business, they are full participants in the international division of labor, but they complement the potential for their own economic growth by benefiting from economic espionage. The benefits of such activities are quite clear and understandable. Thus, the illegal takeover of completed technological developments gives the opportunity to produce and sell products without wasting resources on its research and marketing.

Unlike industrial espionage, competitive intelligence is a legal activity and involves a continuous process of collecting, accumulating, structuring, analyzing data on the internal and external environment of the company and providing senior management with information that enables it to anticipate changes in the environment and make timely optimal decisions on risk management, implementation of changes in the company, as well as appropriate measures aimed at meeting future consumer demands and increasing the value of the company [12, p. 16].

Based on the results of the study, under the term «economic intelligence» it is advisable to understand the targeted activities of public and private entities aimed at obtaining information about the financial and economic policy of the state (including its technological aspects), as well as any other information that directly or indirectly will enhance the competitive advantages of the donor country in international global and national markets.

The vast majority of economic intelligence data is information collected from open source information. At the same time, for the customers of the intelligence product, the information obtained using non-public intelligence methods is of no less interest. These activities may include the retrieval of information through the creation of an agent network, the corruption of top management officials or representatives, theft of technological documentation, the use of counterfeit firms, the organization of cyberattacks, etc.

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IMPROVING STATE CAPACITY OF SECURITY: WHOLE-OF-GOVERNMENT APPROACH IN RESTRUCTURING TERRITORIAL PUBLIC ADMINISTRATION IN HUNGARY

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Recently more and more horizontal policy issue has gained importance leading the relevant actors have to recognize the need of finding answers to questions such as optimal territorial scope, the coordination of intersecting and overlapping initiatives and the elimination of parallelisms. This would include the creation of the necessary institutional and administrative capacities in the form of establishing coordination mechanisms and institutions between the administrative areas. Coordination involves the creation and running of appropriate organisational forms, a wide spectrum of problem solving and conflict management techniques as well as adaptation and learning. As a result, governance in a constantly changing environment exists within the framework of necessary “organisational consensus” for innovative forms of coordination and capacity building.

The starting point of the paper claims that a concepts of the „good state” and whole-of-government - featuring horizontal co-ordination and integration in policy design and implementation on the basis of a state-centric approach – focus on citizen- and business-oriented public service delivery across portfolio boundaries to achieve a shared goal and to provide an integrated government response to particular issues. The integrated development and implementation of policies requires co-ordination and collaboration not only across line ministries at the central level but also at the territorial and local level.

The paper examines the main elements of the reform process launched by the Hungarian Government in 2010 through the lens of the concepts of the “Good State” and the whole-of-government. It is argued that after ten years it is worth overviewing and evaluating the two phases of the reform relying on the main topics of whole-of-government: integrated provision of services, coordination, cooperation and collaboration, integrated government and supportive organisational culture.

The research relies on a desk research on key strategy documents, acts and government decrees in addition on in-depth interviews with OECD experts at the end of the first reform wave in September 2013 as well as with selected stakeholders in the beginning of the second wave in February 2015 within the framework of a preparatory training programme organized at Balatonöszöd in February 2015.

1. Theoretical framework: the concepts of “good state” and whole-of-government”. The developments of recent years, the financial and economic crisis,

the effects of climate change, the measures taken against terrorism and illegal immigration and other “wicked” or complex problems whose solutions require strategic thinking, and a horizontal and integrated approach spanning sectors and public policies. The efforts in tackling these new challenges have reinforced the paradigm according to which the state must take on a role of creating and protecting value in the process of political, economic and social changes in order to enforce the abstract system of ethical norms that serve the interests of the common good.

At the heart of the current debate about the role of the state are unanswered questions: where should the state’s role be strong and where should it be more moderate, what role the private sector should play in performing public functions and providing public services, what tools can the state use to promote economic growth, and how to create a balance between efficient operation, the rule of law and accountability [1]. All of this has made it necessary to rethink the extremely heterogeneous concept of “good government”, in the course of which the state-centric approach and practice of governance has both strengthened quite palpably and emerged into the foreground.

The concept of the “good state” necessitates a rethinking of the rather heterogeneous concept of “good governance”. A good basis for this is provided by previous research advocating the “taking back of the state”, on which basis the state-centric approach and practice of our own time became quite apparent. This implies neither etatism nor separation from society, but quite the contrary: an autonomous state, widely embedded across society, with dialogue conducted with the society’s various actors and organized interest groups as well as the authority arising from such [2].

This paradigm shift is expressed by the proliferation of research studies dealing with the complex measurability of governance capacities and capabilities, which use as their starting point the ever-increasing responsibility of the state and government, as well as the practice of an integrated approach necessary for performing increasingly multi-layered, often overlapping tasks requiring increasingly significant capacities and institutional and administrative capabilities, the creation, «maintenance» and continuous development of which can be regarded as integral to the exercise of day-to-day governance.

The state-centric approach, however, is still not yet a unified concept, but is much more of an “umbrella concept” as an interpretative and conceptual framework which consists of other emerging concepts. What can currently be considered its most important trends are those of the concept of whole-of-government (hereinafter: WoG) governance which common feature is that through strengthening the executable capacities and capabilities of the centre of government based on political governance, they aim to increase the state’s role and rationalise the agencies and background institutions that proliferated during the influence of the New Public Management (hereinafter: NPM) period, as well as to strengthen the horizontal coordination between governmental organs [3]. It has been fuelled by the fact that

establishing the single purpose organisations introduced under NPM and based on autonomous institutional functioning and distance from political governance precipitated such a degree of fragmentation that could not be counterbalanced by coordination among the organisations. This kind of “pillarisation” severely hampered the handling of those problems and challenges that, by nature, extend beyond the areas of influence and competences of the individual organisations. It is therefore no surprise that the so called post-NPM reforms – that took place in the late 1990s in those countries (Australia and New Zealand) which had been trailblazers in the introduction of NPM) – place special emphasis on the vertical and horizontal coordination between organisations, as well as on strengthening administrative control [4].

1. Restructuring public administration: a first reform wave (2010-2013).

In order to understand the essence of the long-lasting debates on the role and jurisdictions of the mezo-level it is necessary to state that Hungary has a long tradition of being a centralised state. The settlements had no self-governments and were subject to the redistributing decisions of the county councils both legally and financially. So it is not surprising that debates over public administration and local government focused on the future role of the county (corresponding to the NUTS III classification in the EU) when the change of the political system started in 1989. Act LXV of 1990 of Local Self-Governments focused on providing complete legal independence of self-governments of settlements. Thus the counties were given self-governments and some functions of public administration but they lost their funding-allocating rights regarding the lower tier along with their role in regional development. However, the towns with county rights were excluded from operating the county assembly, while they had to perform all county-tier public services (health care, secondary schooling etc.). This mixed up settlement structure lead to many conflicts between the actors concerned and as a consequence, coordination and cooperation were rare phenomena. Due to the weakness of the counties, shortly after the introduction of the new self-government system several organs of the central government started operating – and proliferating – on the meso-level. The sectoral logic of the se deconcentrated organs, the great number of shared competencies (construction, environmental protection and so forth) and a lack of coordination came often into conflict with the local and territorial actors an even disaggregated territorial administration.

However, the financial and economic crisis unfolding from autumn 2008 made it clear that to bolster Hungary’s competitive position the country’s fragmented public administration system was in urgent need of redefinition within the framework of the overall state reform, with special respect to the state administration, territorial and local self-government, and the developmental policy subsystems.

The second cabinet of Viktor Orbán which took office in the summer of 2010, immediately realized after its formation that the Hungarian system of public administration - with special regard to the operation of its territorial dimension -

needed a full revision and a comprehensive reorganization as one of the building blocks for revitalising the Hungarian state itself.

This was carried out as part of the so called Magyar Zoltán Public Administration Development Programme's "Good State" concept, which contained neo-Weberian elements [5]. In order to put the concept of „Good State” into practice, government offices in the counties and Budapest were established on 1 January 2011 which were followed the creation of the of the state administration system of districts on 1 January 2013. The flagship role of the overall and long lasting territorial reform was fulfilled by the government offices (hereinafter: GO), which were initially enshrined in law, then in the Fundamental Law of Hungary, with the declaration that these are not decentralised bodies among many, but territorial offices of the government.

The principal elements of the reform were the unification of the fragmented territorial system of public administration and the introduction of the “one-stop-shop” administration. Unlike previous governments, they both managed to set the main goals of the programme and implement the necessary measures of transformation due to possessing a two-third majority in the parliament.

As a first step the cabinet gave priority to the termination of an unconstitutional period resulting in the nonfunctioning of public administration offices and the intermittence of the legal supervision of local self-governments. Public Administration Offices in the counties and the capital restarted their operation on 1 September 2010 on a transitional basis restoring legal supervision besides rationalizing the placement of government functions from regional to the county level and that of Budapest.

Simultaneously the cabinet launched the process of setting up the capital and county GOs [6]. At the heart of the reform was horizontal and operating integration, as part of which 14 territorial state administration offices were integrated by incorporating more than thirty autonomous offices existing in the past on 1 January 2011. As a matter of the provision of human capacities, 23000 civil servants of 253 organs were affected [7].

The GOs operated according to a distributed structure: in addition to the functional and other (e.g. customer service, coordination) tasks performed by the central office and overseen by a government commissioner, who is the head of the GO, independent specialised administrative organs were formed primarily to perform official tasks, creating a single budgetary body.

The new structure was in keeping with the principle of single governance structure as it maintained the professional independence of the specialised administrative organs integrated as part of an unified organisation. On the contrary, this was established within the framework of “dual management pattern”, which meant that initially the Ministry of Public Administration and Justice and then, from June 2014, following the parliamentary elections, the Prime Minister's Office was responsible for organisational and functional management, while the line ministries – generally through central agencies – provided professional leadership. Thus, the

government commissioner – as a head and chief executive of the GO – was not in direct charge of the specialized administrative organs.

Overviewing the effectiveness and impacts of the GO's operation it can be stated that the single government system resulted in more efficient operation, including in the areas of utilisation of real estate, facility management, administration of public procurement processes, and human resources management. In doing so capital and county GOs gained wide jurisdiction, significant human capital, and a remarkable organizational and fiscal capacity. The government commissioners had initially the opportunity to be members of parliament as the representation of government decisions at territorial level required strong leaders. However, four years on, the position has become incompatible with the office of Member of the Hungarian Parliament. Since territorial state administration demands political decisions as well, political leaders are of uttermost importance to be in charge of government offices.

The activities of GOs continuously increased in scope. Effective as of 1 January 2012, as a result of the supervision of the system of defence committees, together with the formation of the integrated state organization of disaster management, government commissioners have become presidents of county defence commissions. In October 2012 the government authorized the government commissioners to coordinate high-priority national economic investments; thus they may request relevant data, may make contact, may call for forming task forces, may initiate supervision measures, may monitor, may make recommendations; in addition, they are obliged to inform the government and its members, and make proposals to the cabinet too.

After establishing and widening the complex system of the GOs, the administrative district offices („járás” in Hungarian, corresponding to the LAU-1 classification in the EU) within the counties and for the districts of Budapest were established on 1 January 2013 [8]. As a result of which half of the state administration tasks of the municipal governments were transferred to the remit of the capital and county government offices. A district is the lowest level of administrative division regarding both territory and structure. The main goal of the regulation was to clearly define the tasks of self-governments and those of state administration. That is why these set of measures have alleviated the burden on the lowest level of state administration, that is, on self-governments; besides, the administration process has become simpler and more effective thanks to Government Windows.

Based on this, 175 administrative district offices came into being in the counties and 23 in the capitals of 1 January 2013. While forming the districts, it had to be taken into account that the farthest settlement should not be more than 30 kilometers away from the district seat, that the jurisdiction of the state and the districts should be harmonized and that the already existing contact centers should be maintained if possible.

The most important task of administrative district offices will be the fulfilment of state administration duties that fall below the county level as document office

duties, certain guardianship and child protection cases, certain social, environmental and nature conservation administration cases, breaches, etc. Competences and regulations of the board of representatives - that need detailed local and area-specific knowledge - remained in the jurisdiction of the notary of the local authority.

This broadening of activities also increased staff numbers: while 23,000 people were employed in government offices on 1 January 2011, this figure had grown to 32,000 people by autumn 2014 (of which 10,000 were civil servants transferred from local authorities to districts offices [9]). District offices operate as subdivisions of the Budapest and county government offices. Their organisational structure also followed the model of the government offices. When establishing the district offices, it was important that the number of customer service windows was not reduced, and that citizens were not restricted to consulting district offices when it came to handling their affairs. For this reason, citizens also have access to branch offices which are overseen by local commissioners for managing official matters.

2. The second wave of the reform: external and internal integration of the government offices.

Based on experiences of the first wave of the reform, in the spring of 2015 the government decided to plan the creation of unified GOs as a result of external and internal integration. In preparing the reorganizing process the cabinet relied significantly on the expert opinions based on the framework cooperation agreement between the OECD and the Hungarian Government. However, the new reform wave formed part of the second phase of the overall state reform due to the victory of the middle-right party alliance in the national parliamentary election held in April 2014, enabling next legislative period of the Orbán cabinet.

The restructuring programme for territorial public administration identified two objectives, namely the integration of territorial public administration bodies into the GOs, and the restructuring of Budapest and county GOs. The concept of assigning all specialist areas of public administration to a single office is not unique. Similar solutions have been implemented in Polish, Slovenian and Italian territorial public administration, and earlier phases of Hungarian public administration have also seen territorial administrative bodies operating with a high degree of integration.

The new concept leans heavily on the recommendations of the OECD and the WoG approach [10]. Its aim is to create a much less polarised, consolidated and managed organisation. The contradictions of the previous dual management system were taken as a base. In practice, this meant that every specialist organisation operated independently within the GO under the specialist direction of the departmental ministries, while the remit of the heads of the GO only extended as far as making the necessary resources available to complete the given tasks. At the same time, the government commissioner was responsible for activities on the territorial level, and he was the representative of the work and operation of the GO to the outside world. It was an indication of the difficulties of everyday operation that there departments of five or six people were also in place to provide specialist management, while

large departments of 80 to 200 staff were responsible for performing functional activities [11].

The integration of territorial public administration therefore aimed partly to achieve quantitative (external integration) and partly qualitative (internal) changes. One of the main goals was for the operation of GOs to cover territorial public administration as far as possible. The other key objective, and a pre-condition for the first goal to be met, was for the GOs to be able to cope with integrated operation even with the growth in their responsibilities and employee numbers, and also to significantly develop the level of service provided to citizens.

Following this, the government discussed and signed off the Government Decree on the latest round of restructuring of the territorial public administration system. This decree defined in detail the territorial public administration organisations to be integrated into the capital and county government offices and the tasks to be transferred [12].

As part of an external integration, nearly 2,100 government representatives were relocated to the government offices. The specialist and administrative offices were abolished, and their responsibilities and areas of jurisdiction were transferred to the government commissioners and administrative district offices. This ended the system in which, in addition to the government appointees, the heads of 17 other specialised administrative organs had their own responsibilities and areas of jurisdiction at the state and county-level GOs, while, in addition to the heads of the administrative district offices, six specialised administration organs had the same responsibilities [13].

The concept of WoG was used as the basis for designing the leadership structure. The expanding jurisdiction of the Prime Minister's Office demonstrates the strengthening of political governance. The Minister of the Prime Minister's Office, who is also responsible for the management of the government offices, can now autonomously determine organisational and operational policies through normative directives. On the one hand, the Minister of the Prime Minister's Office exercises efficiency and financial oversight over the government offices, as well as monitoring their level of practical expertise. Paradoxically, the specialised ministers can only exercise oversight in matters of efficiency regarding their various areas of responsibility.

As a result of the reforms, all the GOs essentially fell under the jurisdiction of the government commissioners. This results in the decreased autonomy of specialised organs. The government commissioner manages employment rights may issue orders to the specialised organs operating as departments, as well as making discretionary decisions on appointments to the heads of departments.

The reforms have increased the jurisdiction and responsibility of the government commissioners, which is clearly political in nature. The Prime Minister nominates the delegates and from April 2015 they are inaugurated in the presence of the Prime Minister and not the President. The law does not specify any qualifications as a

prerequisite to holding this office. In terms of responsibilities, the government commissioner's role is set up similarly to the centralised, highly politicised French prefect system. This demonstrates that the heads of GOs are political agents representing both the political and expert positions of the government, while exercising a wide-range of administrative and managing authority over the decentralised branches of government. Their authority to provide legal supervision over the local governance system is another manifestation of the French prefect system. Government commissioners cannot be members of parliament, local representatives, mayors or heads of regional councils. This is to eliminate the possibility of dual mandates, meaning the government commissioner's role is interpreted solely within the bounds of government administration.

As a matter of the professional leadership and cooperation between the GOs, following the 1 April 2015 integration, fundamental changes were implemented in the specialized leadership system. The specialized work of the GOs is overseen directly by the ministers. Before the integration, most specialised leadership tasks were completed directly by the centralised agencies, however this jurisdiction was abolished after the integration. Following 1 April, specialised leadership was exercised in certain cases through ministries by including them in collaboration efforts with certain agencies.

In connection with capital and county GOs, the agencies may also exercise specialised leadership rights based on government directives but only in matters of government administration.

In order to provide the necessary human resource, workforce mobility between the municipal government offices and capital and county government offices was allowed and this is and furthered by the more flexible determination of required qualifications in various fields [14].

To sum up, due to the external and internal integration the unified government office model requires centralised management and administration on both the county and district levels. The government administrators and the heads of administrative district offices bear most of the specialized and functional responsibility as a result of the integration. Expert accountability also became more transparent. The government commissioner is responsible for the realisation of specialised tasks, as well as communication with authorities of specialised branches. A similar concentration can be observed on the district level as well. As a result of the integration, official proceedings are conducted more rapidly. Due to the elimination of procedures undertaken by specialised authorities, the administrative burden has been reduced along with processing times and procedure costs.

As it can be seen from the above, the restructuring of the territorial system of Hungary at the change of the system focused on the local level aiming to ensure complete legal independence of self-governments of settlements. However, due to the several reasons already discussed, much less attention was paid to the operational efficiency of the new system or to the integrating function that the meso-tier should

fulfil. One of the greatest deficiencies of the 1990 Act on Local Self-Governments was the lack of regulating the meso-tier, the weakening of the counties, which has deepened by the proliferating decentralized organs, and last but not least, the lack of institutionalized coordination between the relevant local and territorial actors.

Due to the unresolved problems and failure of reforms launched by the successive governments, one of the key objectives of the Hungarian government formed in 2010 was the revitalisation of the state, and a comprehensive reorganization of the whole system of public administration, with special regard to the operation of its territorial dimension. Regarding the basic bottlenecks which were untouched after the systemic change the principal elements of the reform were the unification and organisational integration of the fragmented territorial system of public administration in the form of government offices in the counties and the capital Budapest, and the establishment of the state administration system of districts as well as the introduction of the “one-stop-shop” administration. The key players in the process are the county GOs, clearly showing that these have been integrated into the Hungarian Fundamental Law, possess an overall sphere of authority, and exercise legitimate control over local governments. As a consequence, the positioning and regulation of districts, and to a certain extent local governments, is also tied to GOs as the focal point of coordination and collaboration. The first phase of the reform process began instantly after the change of government in spring 2010 and finished by the end of 2013 incorporating more than thirty then autonomous territorial state administration offices into the public administration system as specialized administrative organs. Attention was focused on horizontal and operational integration of governance at territorial level, which could guarantee the effective usage of institutional and human resources in a unified system and one single budget authority, while assuring expert leadership and the autonomy of professional decisions.

The second phase of the reform has started in March 2015 with the aim to eliminate the dual – functional and professional - management and control exercised over the GOs by the Prime Minister’s Office and the line ministries which was replaced with a unified, supportive organisational culture. In so doing the still autonomous (“non-integrated”) state administration institutions and specialized administrative organs are integrated into the GOs accompanied by the reshuffling of its inner organizational structure. These measures are expected to widen the scope of the integrated provision of services, as well as speed up the time-consuming procedures, reduce administrative burdens, bringing public services closer to the citizens

However the wide-ranging restructuring process has not come to an end with the introduction of a large degree of influence from government, the capital and county GOs form a base to integrate further services and organisations, expectedly in the near future.

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DETERMINANTS OF ENHANCING EXPORT ORIENTATION OF UKRAINE'S SERVICES SECTOR

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A key structural trend in the development of the global economy over the last decades is the advancing development of the service sector, which is a core feature of the post-industrial economy. Post-industrialization is the leader in economically developed countries, whose share of the services sector has reached almost 75 % of the value added generated in the economy, while in the least developed countries it is up to 50 %. For Ukraine, the shifts that have taken place in the GDP structure since the declaration of independence are also significant, as the share of the service sector in 1990 was 30 % compared to 59.2 % in 2018. However, despite its almost double increase, this level is still below the world average. In addition, by this indicator, Ukraine is close to developing countries with not the most dynamic economic development.

In the vast majority of countries in the world, the growth of the services sector is accompanied by decrease in the industrial sector. In this context, the results of a research conducted by the Razumkov Center scientists, who found that since the declaration of independence, the share of industry in Ukraine has decreased from 45% to 25.6 % of GDP (including manufacturing – 14 %). As a result, the process of post-industrialization in Ukraine is to a large extent not only a consequence of the advancing development of the services sector, but also of rapid de-industrialization under the influence of the loss of competitiveness in an open to foreign competition economy [4, p. 24].

According to the methodology of national accounting, the production of services is limited to activities that are carried out by one institutional unit to provide benefits to another unit [8].

Due to their nature, services do not have guaranteed quality standards, and therefore services have a high degree of uncertainty. This fact puts the consumer at a disadvantage because the result of the service, its beneficial effect he can evaluate only after its provision; and for manufacturers in these conditions it is difficult to promote services [8].

The last decade has identified a number of important trends in structural change in world trade identified by the World Trade Organization, i.e. [5, p.32]:

- anticipation of growth in trade in services: over the decade, trade in goods has increased by 32 %, services – by 64%;

- in the structure of world trade in services the highest growth rate of export of tourist and other commercial services (by 70%);
- the rapid growth of the computer services market, accounting for 72% of ICT services exports, reaching \$ 353 billion;
- expansion of telecommunication services due to the fact that mobile communication is accessible to almost everyone (99.7 mobile numbers per 100 inhabitants in 2016);
- in the field of transport services, which had the highest growth rate up to 2008, there has been a downward trend since 2014 due to the availability of excess transport capacity;
- further expansion of global value chains in order to optimize the conditions of production of goods and services (value added of final suppliers – 29.2%, suppliers of production components – 70.8 %, including service providers – 37.7%);
- introduction of new forms of organization of trade in services based on the use of digital technologies.

Table 1

Dynamics of foreign trade in services by groups of countries in the world 2010-2018

Group of countries	Years									
	2010		2012		2014		2016		2018	
	Value, billion USD	Share, %								
Export										
World	3918,7	100	4529,9	100	5153,5	100	4879,3	100	5845,1	100
Developed countries	2723,8	69,51	3085,2	68,11	3534,7	68,59	3336,6	68,38	3969,7	67,92
Developing countries	1096,8	27,99	1319,8	29,13	1491,9	28,95	1435,7	29,43	1738,1	29,74
Transition economies	98,1	2,50	125,0	2,76	126,9	2,46	106,9	2,19	137,2	2,35
Import										
World	3823,9	100	4440,4	100	5070,3	100	4797,4	100	5603,6	100,00
Developed countries	2379,4	62,22	2644,5	59,56	2966,5	58,51	2853,3	59,48	3327,3	59,38
Developing countries	1322,4	34,58	1628,2	36,67	1919,6	37,86	1817,7	37,89	2118,2	37,80
Transition economies	122,2	3,20	167,6	3,78	184,2	3,63	126,5	2,64	158,1	2,82

Source: conducted by the authors on the basis of United Nations Conference on Trade and Development data

While in 1980-1990, services accounted for about a fifth of world trade, then in the last decade of the twentieth century the rate of increase of their exports exceeded

the rate of growth of export of goods. During 2000-2016, world exports of services increased by 25%, and the dynamics of changes in the structure of the economy and the technologies indicate a further expansion of demand for services and an intensification of their exchange in the world.

The role of individual countries and regions in the international services market is evidenced by their share in the world trade in services. In particular, the share of developed countries in the international services market decreased from 75.51 % in 2000 to 67.92 % in 2018, while the share of developing countries and transition economies increased significantly during this period (table 1). Among the countries that have strengthened their position as exporters of commercial services, mainly Asian countries – China, Hong Kong, Republic of Korea, Singapore, Taiwan, India, Thailand. At the same time, imports of services to developing countries are increasing as well, especially by affordable and inexpensive financial, computer and information services that tend to increase industrial productivity.

It should also be noted that exports of services from developed countries outweigh imports, however, in countries with transition economies and developing countries, imports of services generally outperform. Although the international exchange of services is mainly between developed countries, developing countries and transition economies are gradually increasing their participation in world exports of services.

The participation of an individual country in international trade in services depends on the sectoral structure of the national economy, its scientific and technical potential, innovative activity and the effectiveness of the institutional mechanism for stimulating and supporting exports. Since export revenues should cover the costs of imports, a stable proportion of exports / imports is essential for the sustainable development of the national economy, as well as support for those service sectors that have a significant impact on the competitiveness of national economy [3, p. 509].

In the geographical structure of export of services in Ukraine during the period of 2005-2018 there was a decrease of the share of CIS countries from 43.7% to 31.80% (table 2).

The share of EU countries has increased substantially – from 27.44% to 40.09%, partly due to the signing of the Association Agreement between Ukraine and the EU, the trade part of which is reflected in the creation of a Deep and Comprehensive Free Trade Area with the EU – a large-scale trade content agreements aimed at including liberalization of access to the market for services. At the same time, the share of services exports to the America remains quite significant taking into account share indicators (11.5% in 2018).

The majority of services are exported by domestic companies to the Russian Federation (28.67%), the

USA (8.69%), Switzerland (7.69%), Germany (5.08%) and the United Kingdom (4.93%) (table 3).

Table 2

Geographical structure of export of services of Ukraine in 2005-2018, %

Year	CIS countries	Europe	EU countries	Asia	Africa	America	Australia
2005	43,70	29,03	27,44	9,21	1,12	7,40	0,11
2006	43,76	30,30	29,18	9,42	1,21	7,38	0,13
2007	38,86	33,43	31,62	9,95	1,33	8,41	0,17
2008	34,63	34,06	33,60	11,26	1,66	10,17	0,22
2009	37,78	28,99	29,86	11,48	1,62	11,03	0,31
2010	45,52	26,76	25,92	8,70	1,24	10,03	0,33
2010	45,60	27,19	26,16	8,49	1,14	9,69	0,31
2011	42,60	28,47	24,91	7,82	1,09	9,87	0,94
2012	41,22	27,99	26,60	8,91	1,17	10,13	1,64
2013	40,85	34,31	29,48	10,03	1,07	11,11	0,55
2014	35,02	38,46	34,65	11,72	1,14	10,79	0,62
2015	36,41	36,17	30,07	11,51	1,49	11,65	0,93
2016	37,78	35,46	30,45	11,70	1,27	11,48	0,38
2017	35,13	37,52	32,23	12,15	1,39	11,06	0,29
2018	31,80	40,09	34,20	12,73	1,39	11,50	0,24

Source: conducted by the authors on the basis of State Statistics Service of Ukraine

Table 3

Dynamics of geographical structure of export of services of Ukraine in 2010-2018, %

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018
Russian Federation	41,93	38,47	36,70	36,94	30,71	31,22	31,19	31,89	28,67
USA	4,93	5,00	5,12	5,09	5,97	6,84	7,27	7,92	8,69
Switzerland	3,57	5,77	3,80	7,15	7,23	7,91	6,86	7,07	7,69
Germany	2,79	2,90	3,24	4,78	5,84	4,64	4,95	5,03	5,08
United Kingdom	4,56	4,83	5,12	5,29	5,73	5,68	4,69	5,46	4,93
Poland	0,76	0,93	1,00	1,53	1,76	1,87	2,24	2,77	3,01
Cyprus	3,28	2,87	2,98	2,84	4,00	2,58	2,42	2,57	2,73
UAE	0,58	0,40	0,60	1,69	1,92	2,10	1,73	2,08	2,21
Israel	0,54	0,78	0,89	0,98	1,12	1,48	1,71	1,77	1,73
Hungary	1,87	0,59	0,54	1,29	0,86	0,95	1,15	1,37	1,71
Virgin Islands	1,48	1,73	2,02	2,02	1,43	1,80	1,77	1,26	1,29

Source: conducted by the authors on the basis of State Statistics Service of Ukraine.

The high share of exports of financial services to Cyprus and the Virgin Islands reflects the need for domestic businesses to optimize their economic activity by including local companies from countries with more liberal financial regulation in operating schemes, as well as the need for financing through attracting resources from international capital markets [1]. The major of the revenue from the export of services to Russia is formed by a profitable but highly specialized transportation segment related to the transit of hydrocarbons.

In terms of the structure of exported services (table 4), transport services accounted for the largest share (50.28%), while telecommunications, computer and information services accounted for a rather high share (18.17%); material processing services (14.6%) and business services (9.11%). State and government services account for the smallest share in the export structure.

Table 4

Dynamics of the structure of export and import of services in Ukraine in 2010-2018,%

Service	2010	2011	2012	2013	2014	2015	2016	2017	2018
Export									
Services in processing of material resources	8,63	10,20	11,19	12,10	11,58	11,08	11,41	13,25	14,60
Repair and maintenance services, not elsewhere classified	3,66	4,51	4,27	2,46	2,59	1,97	2,35	2,28	2,08
Transport services	64,20	62,40	58,79	56,08	52,96	54,06	53,71	54,71	50,28
Travel related services	2,12	2,13	2,78	2,52	1,98	2,06	2,08	2,27	2,57
Building services	1,13	1,42	1,55	1,58	2,01	3,00	3,94	0,95	1,29
Insurance services	0,58	0,79	0,81	0,61	0,39	0,47	0,54	0,37	0,39
Services related to financial activities	3,99	2,20	1,76	2,37	1,93	1,96	0,84	0,69	0,92
Royalty and other services related to the use of intellectual property	0,35	0,32	0,40	0,68	0,85	0,52	0,30	0,27	0,37
Telecommunications, computer and information services	5,63	6,07	7,90	10,38	14,54	16,28	16,66	16,43	18,17
Business services	9,45	9,69	10,07	10,85	10,85	8,39	8,01	8,60	9,11
Services for individuals, cultural and recreational services	0,23	0,25	0,43	0,25	0,27	0,16	0,11	0,14	0,16
Government and government services	0,02	0,03	0,03	0,12	0,04	0,04	0,04	0,04	0,04

Continuation of the Table 4

Import									
Services in processing of material resources	1,50	2,81	2,55	0,15	0,80	1,15	0,10	0,05	0,04
Repair and maintenance services, not elsewhere classified	0,87	0,71	0,70	1,63	1,67	1,55	1,71	1,31	1,33
Transport services	21,49	25,45	25,77	22,46	21,60	20,88	18,57	22,15	23,22
Travel related services	6,39	7,41	8,56	9,02	10,69	10,82	11,32	14,52	15,70
Building services	1,95	2,45	3,88	3,49	2,32	0,73	1,15	1,95	0,92
Insurance services	2,06	1,96	2,38	2,23	1,32	1,34	2,23	2,35	1,24
Services related to financial activities	20,02	15,37	14,31	13,42	12,56	15,84	10,53	7,75	7,56
Royalty and other services related to the use of intellectual property	8,03	6,62	6,28	11,16	7,07	5,46	6,07	7,42	7,82
Telecommunications, computer and information services	5,55	6,16	6,86	9,26	8,03	9,93	7,89	7,74	7,49
Business services	18,80	18,99	16,29	18,82	15,60	13,02	15,27	15,12	21,99
Services for individuals, cultural and recreational services	3,59	3,84	3,36	0,45	0,16	0,15	0,13	0,38	0,19
Government and government services	9,76	8,22	9,06	7,89	18,18	19,13	25,02	19,27	12,50

Source: conducted by the authors on the basis of State Statistics Service of Ukraine

The structure of imports is as follows: Ukraine has the greatest need for government and government services (12.5%), travel-related services (15.70%) and other countries' transport services (23.22%). The smallest share in the structure of imports is occupied by services for processing of material resources (0.04%) and services to individuals, cultural and recreational services (0.19 %). It is worth noting that, despite the significant excess of exports over imports of services, there are a number of services that the country imports more than exports, and therefore, these services are in high demand – these are services related to travel, insurance, financial activities and use intellectual property [6, p. 80]. To assess the impact of the service sector on the national economy, the structure of gross value added in 2010-2017 was calculated according to the system of national accounts (Table 5).

Table 5

**Dynamics of the structure of gross value added in Ukraine
at basic prices, %**

Type of economic activity	Code	2010	2011	2012	2013	2014	2015	2016	2017
Agriculture, forestry and fisheries	A	8,4	9,5	9,1	10,0	11,7	14,2	13,8	12,1
Mining and quarrying	B	6,7	7,6	6,7	6,3	5,7	5,6	6,5	7,0
Manufacturing industry	C	15,0	13,8	14,3	12,9	14,0	14,0	14,4	14,3
Supply of electricity, gas, steam and air conditioning	D	3,2	3,6	3,6	3,3	3,2	3,2	3,7	3,4
Water supply; sewerage, waste management	E	0,8	0,7	0,6	0,5	0,5	0,5	0,4	0,4
Construction	F	3,7	3,5	3,2	2,9	2,7	2,3	2,3	2,6
Wholesale and retail trade	G	16,2	17,2	16,6	16,5	16,9	16,2	15,7	16,3
Transport, warehousing, postal and courier activities	H	8,7	9,2	8,2	8,1	7,3	8,0	7,8	7,6
Temporary accommodation and catering	I	0,9	0,9	0,8	0,8	0,7	0,7	0,8	0,7
Information and Telecommunications	J	3,5	3,4	3,6	3,8	3,8	4,3	4,4	4,4
Financial and insurance activities	K	6,4	5,2	5,0	5,2	5,1	4,0	3,2	3,2
Real estate transactions	L	6,1	6,2	6,9	7,4	7,2	7,3	7,2	6,8
Professional, scientific and technical activities	M	2,9	2,7	3,5	3,7	3,4	3,3	3,4	3,4
Administrative and support service activities	N	1,2	1,3	1,3	1,4	1,3	1,3	1,5	1,4
Public administration and defense; compulsory social insurance	O	5,2	4,8	4,9	5,3	5,7	5,6	6,1	6,5
Education	P	5,6	5,3	5,9	6,1	5,5	4,9	4,4	5,3
Health care and social assistance	Q	4,0	3,7	4,1	3,8	3,3	3,1	2,9	3,0

Source: conducted by the authors on the basis of State Statistics Service of Ukraine

The results indicate the contribution of agriculture and processing industry to the formation of GVA at 12.1% and 14.3%, respectively. In the services sector, the largest importance is in wholesale and retail trade – 16.3%, transport – 7.6%, real estate transactions – 6.8%, public administration and defense – 6.5%.

The estimation of export orientation of the service sector of Ukraine revealed a very high level of it in the field of computer programming, consulting and information services (53.53% in 2017), transport services (47.78%), postal and courier activities (47.06%). In 2018, nearly 184,000 Ukrainian programmers secured the export of IT products for \$ 4.5 billion or 4% of GDP (for comparison in 2017 – \$ 3.6 billion or 3.4% of the country's GDP). 20% of the world's leading companies in the field of mobile platform software development have offices in Ukraine, and over the period 2014-2017, the amount of taxes paid by IT companies increased annually by 27% [9].

Given the constant technological and structural complication of production and intense competition in the global economy, it is expected that the demand for business services will continue to increase, contributing to its market expansion and increasing its competitiveness. The impact of STP on the development of the service sector remains high nowadays. New technologies, in particular information and communication, are most relevant to the specifics of the production of many services, and are therefore widespread in this field.

With the spread of the Internet, the market for services has gone beyond the real economy to the virtual space, a large volume of goods and services is being realized there, as well as contacts between producers and consumers.

In the future, the technological process is likely to keep a key role in expanding the service markets, differentiating their types, diffusing technological innovations. Diversification of services and improvement of their qualitative characteristics will be facilitated by a possible strengthening of the emphasis in the strategies of international companies on the restructuring of organizational and managerial models, improvement of labor force characteristics, since it is in the services sector that a particularly close dependence of the effect of new technologies and market success on quality and rational use of companies is observed.

The Association Agreement between Ukraine and the EU deals with Section IV «Trade and Trade-Related Issues» [8]. According to the provisions of the Agreement, there should be a gradual liberalization of trade in most services, except for the extraction and processing of nuclear materials, weapons and ammunition, international air transportation, audiovisual services [13, p.7].

Transport services are leading in the structure of Ukrainian exports to the EU in 2018, and virtually all groups of services showed an increase in value compared to the previous year. Thus, the value of exports of transport services in 2018 amounted to 1.118 billion euros, which is 2.2 % more than in 2017. The following types of services are also characterized by a significant share of Ukraine's exports:

- material resources processing services (26.5%);

- telecommunications, computer and information services (20.7%);
- business services (13.2%).

The provision of cross-border services under the terms of the Association Agreement will provide equal opportunities for access to national markets, leading to increased competition between providers of such services, which will benefit households by improving quality and reducing the cost to final user of a service.

In the context of Agreement between Ukraine and EU, Ukraine, by committing itself to the liberalization of the markets for computer services, postal and courier and telecommunication services, will be able to create a favorable competitive environment for the work of the providers of such services and to facilitate their cross-border movement. Compliance with the provisions of the Agreement will require the public sector to improve its regulatory policy in the markets for the above mentioned services. However, the state will be able to obtain some financial resources from the sale of radio frequency and number resources, as well as to benefit from the dynamic development of these sectors in the form of employment growth and tax revenues. At the same time, domestic regulatory authorities need to establish effective mechanisms and procedures for the interaction and exchange of experience with relevant European regulators. The provisions of the Agreement related to the regulation of temporary presence of individuals for commercial purposes are aimed at facilitating access to markets and facilitating the movement of hired personnel for companies having branches or representative offices in the territory of Ukraine or the EU.

The gradual liberalization of the markets for international maritime transport, as well as road, rail and inland waterway transport will create conditions for increasing the level of competition in these markets, which, under other unchanged conditions, will lead to an increase in the quality of provision of appropriate services and an increase in investments in the development of appropriate infrastructure. It is extremely relevant for Ukraine given the existence of a transport corridor connecting the EU and Asia [14, p. 52]

Thus, it can be noted that opening up the Ukrainian market for business services will increase competition and, at the same time, simplify entry into the markets of EU Member States. Cooperation on international trade regulation at national and international level is a prerequisite for the sustainable development of the service sector.

Despite the dynamic development of services in the world market, there are still numerous and higher regulatory barriers to trade in goods. Obviously, its prospects depend on the policy of liberalization of states and their associations. Particularly important is WTO activity, where the program of liberalization of service markets provides for the removal of barriers to cross-border trade, capital movements and other forms of exchange of services.

However, in our view, the long-term tendency for services to grow is significantly constrained, first of all, by achieving a very high share of services in the GDP of developed countries with fairly stable proportions of their economies within the three-sector model: the agrarian, industrial and services sectors. According to the

OECD data, the share of the services sector in the G7 is 72 %.

In order to strengthen Ukraine's presence on the international market for services, it is necessary to activate the export potential of those sectors that are most in line with current trends in the service economy. In this case, it is primarily about high-tech services, one of the promising areas of development of which is outsourcing. At the same time, the low level of R&D funding (0.17 % in 2018) indicates an increasing threat to the state's innovation security. IT industry with a turnover of \$ 4.5 billion USD ranked 2nd in exports of services and 3rd in exports of goods and services after agriculture and transportation sectors. Currently, offices of a number of foreign corporations, including Aricent, SAP, Boeing, Huawei, Ericsson Oracle, Siemens and Teleperformance, etc. are also located in Ukraine. The national transport system is relevant as well, which needs further integration into the European space, since the existing transit potential (except mainly pipeline transport) is not used to full extent, especially in the field of air and sea transport.

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FISCAL SECURITY AND INFORMATION AND ANALYTICAL SUPPORT: THEORETICAL ASPECT

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The effective formation and implementation of fiscal security in the context of European integration significantly depends on information and analytical support. Information and analytical support are searching for analytical tools that take into account peculiarities of fiscal policy-making and implementation. In addition to this, significant theoretical, methodological and applied developments regarding the issue which is being considered.

To the questions of information and analytical support of management processes, formation and realization of economic components, financial, including fiscal security dedicated their scientific developments such researchers as: Aronova V.V., Bazhal Y.M., Busygina N.V., Gnylianska L.Y., Dodonov O.G., Zianko V.V., Lazaryshyna I.D., Mykhailova E.V., Prykhodko S.V., Chechetova N.F., Chergenets E.V. At the same time, these issues were not widely discussed in the context of the country's access to the European integration processes and, in particular, support for the development of fiscal security in these conditions.

One of the components of information and analytical support is the information block. The scholars' views on the definition of information support essence are quite diverse, which is presented in the table 1.

Taking into account the variety of definitions regarding the essence of the concept «information support», it is necessary to define its main functions in the process of formation and fiscal security implementation (table 2).

Based on the above mentioned, the main functions of information support in the process of forming and implementing fiscal security, it is necessary to determine the structure of the information support system of this process.

Scholar' views determining the information support essence

Author	Information support essence
Zianko V. V. [1, p. 260]	In general understanding, information support means the availability of information necessary to manage economic processes, which are contained in databases of information systems.
Gnylianska L. Y. [2, p. 2-15]	Consider IT support as management information service and as the measures to create the information management environment.
Bazhal Y. M. [3, c. 14]	They interpret information support as a set of actions to provide necessary information for management activities to a specified place on the basis of certain procedures with a set periodicity.
Chechetova N. F. [4]	It is a properly formed set of information, organizational, technological, software-target elements and parts, which ensures high efficiency of the decisions made through practical and appropriate use of information data. Information and analytical support is a specific area of information activity connected with the identification, processing, storage and dissemination of information mainly in the field of management, political and economic activities.
Prykhodko S. V. [5]	Information and analytical support is the enterprise provision (institutions – author's) with high-quality analytical information and protection of its information environment by collecting and analyzing external and internal information, developing plans and forecasts for its development.
Lazaryshyna I. D. [6]	Information and analytical support should objectively reflect the state of the enterprise, industry (economy of the state – author's.) At any moment of time and with any level of detail, and also take into account possible threats from the external environment.
Aronova V. V. [7]	Information and analytical support are built on the basis of providing necessary information of administrative management work, which is carried out when administering the implementation of a complex of aggregated work as for changes in marketing activity (or other activity – author).
Chergenets E. V. [8]	Informational and analytical support of an enterprise (or the project, state target program, etc.) means purposeful interaction of human intelligence (analytics) and available source information (open and / or confidential) in order to provide consumers with new inferior knowledge that promotes making optimal management decisions.
Mykhailova E. V., Busygina N. V. and others [9]	Management information and analytical support (or implementation of a specific event – author) is a set of organizational, methodological and intellectual activities for collecting, systematizing, analyzing, storing, using and disseminating information on various aspects of the system functioning.
Dodonov O. G. [10]	Analytical processing of information is necessary for optimization of management decisions, scientific analysis of events as a holistic phenomenon, development of strategy and tactics of management at the appropriate level of management, determination of effectiveness of applied management measures, making proposals for their improvement, etc.

Source: generalization was based on the publications in the table

Table 2

**Main functions of information support in the process of formation
and fiscal security implementation**

Type of function	Function essence
Information communication function at all stages of fiscal security making and implementation with the environment.	It ensures a constant correlation of external factors with the stages of fiscal security formation and implementation, in order to filter relevant information for enhancing the effectiveness and efficiency of fiscal innovations, because, by its specificity, the fiscal sphere requires a large amount of diverse information for its successful implementation.
The function for maintaining information communication between different subsystems and components of fiscal policy.	Provides processing of the necessary information for subsystems and components of fiscal security for the purpose of its effective formation and implementation.
Analytical and prognostic function.	Ensures the analysis, effectiveness assessment and feasibility of introducing fiscal innovations, is carried out to monitor constantly the results of implementation of certain fiscal measures.

Source: generalization was made based on research results

The composite (key) subsystems of the information support unit include external and internal information resources, information array and information technologies through which there is an access to the information array and the possibility of receiving and transmitting information sources.

External information sources are legal acts, statistics, expert opinions, information networks, including the Internet, economic, political publications of scientists and practitioners. Internal information sources include data from various departments, structural units, fiscal services and taxpayers – individuals and legal entities.

Aggregate research results suggest that almost ninety percent of the information can be obtained from public information resources. The latter include data from statistical services (states, regions, districts, cities); mass media, reports of enterprises, institutions, public services, ministries, etc.; expert opinions of departmental institutions; conferences, colleges, symposia, results of roundtable meetings and more. Information technologies in the block of information support for the formation and implementation of fiscal security in the context of European integration are positioned in the form of technical means, information networks, software products, communication channels, as well as methodological approaches to the construction, processing, accounting, accumulation and use of information flows.

At present, it is possible to achieve effective formation and implementation of fiscal security in the condition that relevant information flows are available in the information environment. Hence, the reasoned separation, systematization of information resources makes it possible to determine their importance and expediency in obtaining, accumulating, transmitting and processing information flows.

As it was already mentioned, information technologies also act as one of the

central subsystems of information support for fiscal security modification in the context of European integration. Adapting to the subject of research the statement of Prygozhyna O. [11, p. 84], it should be noted that the availability of quality information support, built on the basis of a comprehensive information system and the introduction of modern information technologies by fifty percent simplifies the implementation of organizational measures in the processes of fiscal security formation and implementation and the control functions of fiscal innovation implementation, and seventy percent simplifies accounting records. Hence, information technologies increase the ability to make fiscal modifications, and information flows are their active resources.

Accordingly, information and analytical support for fiscal security formulation and implementation in the context of European integration is based on technological chains of searching, collecting, processing, accumulating and transferring information flows to achieve the goal: providing with necessary timely information to the executors to formulate fiscal modification measures for their adoption and mechanisms for their implementation.

The study results of the information environment regarding changes in fiscal security indicate that information support does not always create the necessary prerequisites for obtaining the desired result, considering that the channels of the environment information flows are not always systematic and stable; internal communications for information flows are unstructured and incorrect, which is explained by asymmetric data operated by the statistical services, poor preparation of documents, low content, etc. – so they cannot timely and objectively track the real flow of fiscal innovations in the country.

Considering that the decision-making process on the implementation of fiscal innovations is a collective result of the legislative power and executive services, objectivity and activity of communication circuits between them, it is necessary to improve the local computer network points, which will facilitate the execution of the specified fiscal security objectives, the vector of which sent to the European integration environment. It should also be noted that these LANs should be based on the use of methodological approaches based on competencies, a high level of staff professionalism involved in performing the defined tasks in terms of defined problems.

Please note that in addition to the main functions of fiscal security formulation and implementation, it is important to focus on developing strategic plans and controlling them. We agree with O. Korneyeva that «the degree of communication channels perfection, communication and IT – technologies making a direct influence on the organizational structure, which determines today the evolution of organizational structures from linear hierarchical to network, adaptive with complex configuration» [12]. An urgent need to address this problem is that the organizational structures involved in the process of study do not create the conditions for obtaining effective results from fiscal security modernization in the context of European integration.

The metamorphosis of fiscal innovation activities organization will have a greater effect when modifying simultaneously the information technologies, communication tools and organizational structures of the institutions involved in the development and implementation of fiscal policy.

At the same time, the results of a number of institutions show not only modern management systems, but generally well-known traditional organizational hierarchies. As a result, the institutions' needs to improve the fiscal system in the context of European integration do not meet the needs of the society. Also, it should be noted that changes in the formation and implementation of fiscal security occur when using a linear-functional organizational structure of governance, which hampers adaptation to the turbulence of the current financial and economic environment. Therefore, in addition to the stated problems in the fiscal security modification, it is worth considering the construction and implementation of the organization mechanism of design in the aspect of information and analytical support of institutions involved in the process of establishing effective domestic fiscal security in the context of European integration.

The scholar Chechetova N. F. quite rightly states that «the need for information and analytical research is caused not only by the presence of information barriers that hinder the receipt of the required information, but also by lack of time in the activity of the information consumer» [4].

Synthesizing the above substantive content of the information and analytical support definitions for the formation and implementation of fiscal security (see table 1), the above mentioned remarks by Chechetova N. F., and guided by the results of our own research, we believe that information and analytical support for the modernization of fiscal security should be considered in the following aspects:

1) it is a complex important part of the process of formation and implementation of fiscal policy, whose function is to collect, process, accumulate, store, analyze information resources for the effective development of measures for fiscal innovation. It should be noted that the analytical data is implemented through the information array, where, as already mentioned, there is a need for modern information technologies and communication tools in order to accelerate the adoption of certain decisions regarding fiscal changes and their further implementation;

2) it is a purposeful hierarchical integrated influence of the institutions management structures, which is involved in the process of fiscal security modification on the input and output of information sources to obtain information on the state, trends of indicators characterizing the effectiveness of fiscal policy;

3) it is a systematic multi-vector process of accumulation, formation, processing and presentation of analytical information in order to develop and make reasoned decisions for obtaining certain results.

Adapting to the subject of our study the experience of the scholar Chechetova N. F., it should be noted that information and analytical support includes elements and chains of the stages sequence [4]: «informational (methods of assessing the

effectiveness of fiscal innovation implementation, economic and financial analysis of indicators of fiscal security measures quality, methods of making strategic decisions to achieve a certain economic level in the implementation of the planned fiscal modifications, methods of processed information data presentation); methodological (application of economic and mathematical models, methods of economic and financial analysis, etc.)».

Based on the study results, we propose the stages (phases) of information and analytical support implementation for the formation and implementation of fiscal security in the context of European integration (table 3).

Table 3

Stages of information and analytical support implementation for the formation and implementation of fiscal security in the context of European integration

Sequence of stages	Essence of the stages
Pre-organizational stage	Search, collection, accumulation, systematization of storage of necessary information regarding the status, tendencies, possibilities of applying certain measures for fiscal security modification.
Main stage	Generalization of collected information data, calculation of performance indicators of current fiscal security and updated fiscal policy, development of plans and forecasts, analysis of data obtained, identification of trends.
Analytical and forecasting stage	Analysis results generalization, plans and forecasts, drawing conclusions, developing recommendations, controlling.

Source: Generalized by the author based on research findings

In addition, information and analytical support involves not only determining the results of fiscal innovation measures implementation, but also diagnostics of the impact of European integration processes on the economy of the country as a whole. This is the basis for plans development, forecasts and programs for fiscal security formulation and implementation in the light of these changes. Accordingly, information and analytical support should be provided in the mode of continuous accumulation, processing of information resources data, checking of information validity.

Making the tasks that are correlated with the purpose of information and analytical support of fiscal security modification should be based on objective data of the information array, which will facilitate effective management decisions in the process of implementation in practical life of fiscal measures. Information and analytical support for the formation and implementation of fiscal security is not only the collection and processing of a large amount of information, but also requires modern software, communication circuits necessary for the transmission of information to participants of a certain process and its storage.

We are also inclined to believe that the most widespread information technologies used to build systems for the development of intellectual capital in enterprises, such as [13, p. 110-115]:

- decision support systems, which, in turn, involves building a decision support system based on the ability to share models of management with specific users;
- MIS-management information system;
- structured system analyses and method;
- computer aided system engineering;
- computer aided design specification technology
- system-functional technology;
- process technology»;
- SAP / R3;
- Oracle E-Business Suite;
- Baan I;
- Microsoft Business Solutions – Axapta, it can be adapted to fulfill the tasks related to the intelligence of the situation in the fiscal sphere of the country and to use the latter in developing new approaches in defining fiscal security vectors in the perspective of the country’s accession to the European integration processes.

Summarizing the study results of information and analytical support for the introduction of fiscal innovations, it is necessary to determine its specific components in the field of information accumulation and processing, the definition of communication measures, the definition of marketing research of the national economy and finances, the choosing the organization system of the planned measures implementation, positioning of the developed programs.

Relying on the scholar Golyachuk N. V. experience [14] we are offering an extended composition of benchmarks for information and analytical support for fiscal security formulation and implementation in the context of European integration: studying the performance of a particular industry or the country’s economy as a whole from changes in fiscal security:

- related to the country’s accession to the European integration process;
- studying the experience of the countries that have undergone these processes;
- choosing the type of fiscal innovation;
- planning fiscal security
- measures in terms of selected areas;
- analysis of financial and economic status and financial capabilities in the implementation of certain fiscal measures;
- indicators calculation of implementation effectiveness of security;
- fiscal modifications;
- development of options for formation and implementation of fiscal in security order to achieve positive effect;
- monitoring the state of implementation of fiscal measures;
- obtaining information from foreign sources for the purpose of adaptation to domestic fiscal practice.

The above intentions (benchmarks) of information and analytical support for fiscal modification measures are based on concreteness, the use of multimetric

information models and the construction of a logical chain of information, depending on the level of structure involved in the executive process.

The identified intentions of information and analytical support for the formation and implementation of fiscal security in the context of European integration contribute to:

- objective outlining the purpose and tasks of fiscal modifications;
- determining the stages of development and implementation of fiscal innovation developments;
- outlining the period for which fiscal measures are being implemented or the fiscal strategy is being developed;
- defining indicators by which the effectiveness of the implementation of fiscal reforms in the country’s economy will be determined;
- providing information from foreign sources to adapt the experience of the world to solve the tasks;
- modeling alternative options for formation and implementation of fiscal security in the context of European integration in the changing situation on the world financial market;
- developing methodological recommendations for the formation of the information array in view of the fiscal transformation society needs.

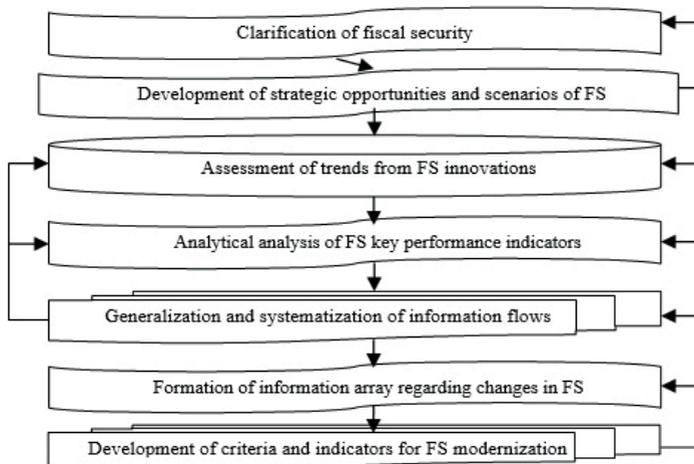


Fig. 1. The chain of information and analytical support for the formation and implementation of financial security(FS) in the context of European integration

Accordingly, the effectiveness of fiscal policy-making and implementation depends on how well the analytical results of information resources are interpreted congruently (adequately). It will also contribute to a more objective implementation of forecasting positive claims from the introduction of fiscal modifications.

The fig. 1 presents the chain of implementation of information and analytical support for the implementation of innovative fiscal measures in practical life in the context of European integration.

It should be noted that, taking into consideration the economic environment turbulence, the peculiarities of fiscal security, as well as generalizing the results of the study of currently known methodological approaches to determining the effectiveness of fiscal measures, we can make conclusions about the purpose, task, order of conducting information and analytical support to address the issue under consideration.

Determining effective approaches to modernizing information and analytical support will serve to increase the effectiveness of resolving issues raised by employees of institutions involved in the implementation of fiscal innovations into the national economy. The latter will also help to reduce the time for data processing, the preparation of objective control reports on the status of the situation being investigated, the timely receipt of responses to requests.

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TRANSNATIONAL CORPORATIONS BEHAVIOUR IN THE CONTEXT OF GLOBAL TRENDS, CHALLENGES AND THREATS IN THE WORLD INVESTMENT ENVIRONMENT

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Formulation of a scientific problem. In recent years, global economic processes, including investment process, have been constantly influenced by powerful new factors. They are not merely ambivalent or behavioural in nature, but are often latent in nature, thus correcting the usual behaviour of international business players.

Transnational corporations (TNCs), as the main actors in the global economic space, are trying to modify their investment behaviour in accordance with the latest global trends and modern technological innovations, strengthening the requirements of international organizations, strengthening competitors.

Therefore, the search for objective, substantive and cause-and-effect relationships that create the need to use the scientific concept of «investment behaviour» requires the transition to new methodological schemas and the use of new analytical research tools that provide a holistic and systematic view. The need for them becomes especially acute in the face of the threatening challenges of globalization and the inefficiency of the systemic transformation of the Ukrainian economy, when scenario analysis, a clear definition of strategic prospects and construction of a new register of threats and opportunities for economic development of domestic

business structures become necessary. In essence, it is about «restoring the rights» of the system standard of thinking and using the cognitive potential of the «great theories», and first of all, the theory of economic development [15].

Many foreign and domestic scientists, starting with F. Kene, A. Smith, D. Ricardo, K. Marx, J. Schumpeter and L. J. Gitman, D. Lukianenko, O. Mozgovyi, are engaged in research of problems of modern investment activities of TNCs. These studies are based on theoretical and practical knowledge that is important for future study and research. However, as a result of various changes in the global economic space, the need to further study current investment trends remains relevant, which also makes the need for a broader generalization of investment behavioural problems in the economic space, given the need to ensure national and corporate investment security.

1. The concept of investment behaviour of TNCs.

Corporate transnationalization as the most mature and complete stage in the process of internationalization of entrepreneurial activity of subjects of any form of ownership, is characterized by a high level of geographical diversification of the system of resource support (material and production resource, intellectual and human resource, financial, information resource); flexible organizational architecture with the compulsory allocation of one major (or more) leading ideological and strategic core, producing a single business ideology with a synthesis of the philosophy of voluntarism, pragmatism and liberalism; the priority use of foreign direct investment as a tool for foreign economic expansion; an unstoppable desire of corporate top management for global domination based on systematic targeted use of financial power, information, superinnovation-oriented information and political influence, coalition power with governments, and means of force and covert pressure [15].

Directions of strategic management of TNCs based on certain types of investment behaviour show how each TNC enters the foreign market, choosing the most favorable conditions for its prosperity. Obviously, international investors are encouraged to act by certain actions that are reflected in their behaviour.

In general, TNCs' behaviour determines as a particular style of interaction in an environment, which is created by the ability to change their actions under the influence of internal and external factors. Relying on the chaotic management system, the search for the «blue ocean», the symbiosis of organic growth with «jump» tactics, etc., TNC's business system, through the implementation of clear and timely precautionary measures, can mobilize its investment activity for successful counteraction and turbulence. Targeting corporate leaders in a new type of thinking is, on the one hand, minimizing the use of traditional growth and recession-oriented investment strategies, and on the other hand, the continuous generation of new strategies, or, in the circumstances, even abandoning them [5; 10]. Therefore, the substantive characterization of TNCs' investment behaviour can be presented as a flexible socialized operational system for promoting sustainable business development and obtaining positive financial and social outcomes related to the choice of the most

viable alternative in the long run, regardless of successful economic transition process.

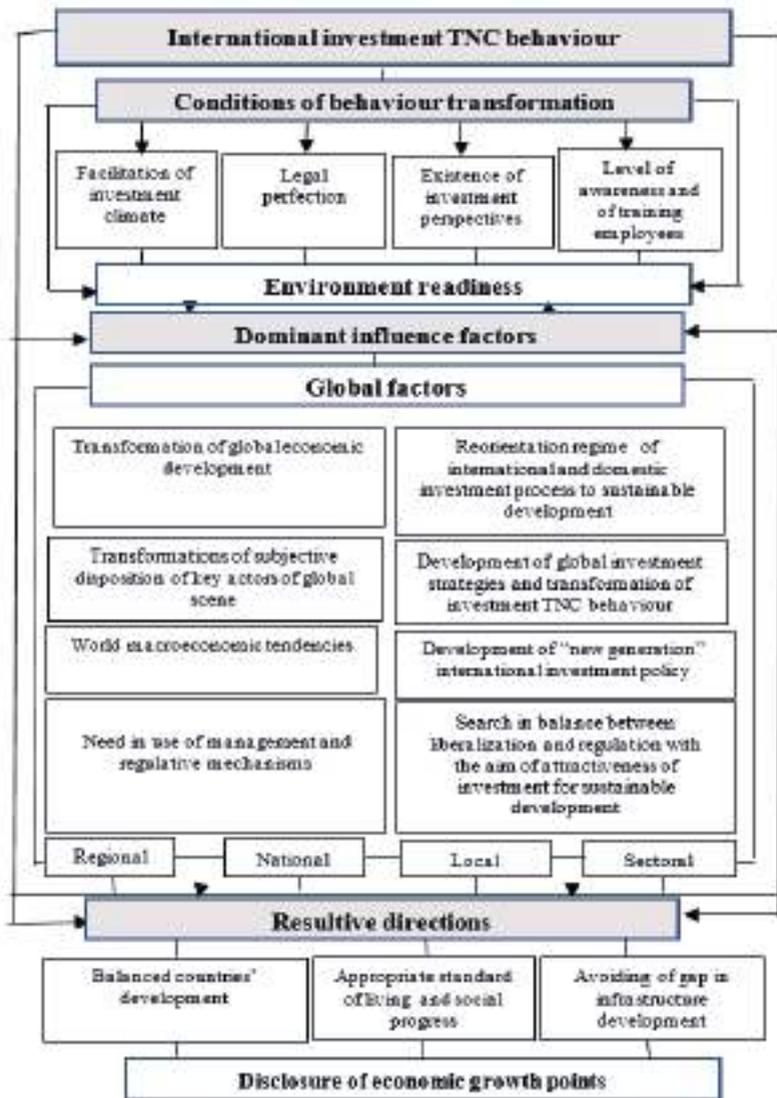


Fig. 1. Conditions, factors and results of expected transformation of TNCs' international investment behaviour (supplemented on the basis of [12])

2. Identification and characteristics of modern factors of transformation of international companies' investment behaviour.

As for any complex phenomenon or process, the conditions of transformation of TNCs' international investment behaviour to a state of tolerance towards the host country are not automatically formed, but are created under the influence of a number of various factors (fig. 1), which reach practical expression at the global, regional, national and local levels.

Undoubtedly, global factors of modern economic development transformations that shape the fundamentally new conditions of international investment development have the greatest influence in the world. Theoretical analysis of individual studies shows their identification: transformation of global economic development and subjective disposition of key actors of the global stage; global macroeconomic trends and new generation investment policy trends; development of new global investment strategies and transformation of TNCs investment behaviour [13].

In addition, it determines the willingness to reorient national and international investment to sustainable development; the need in a symbiosis of multivector governance-regulatory global mechanisms against the backdrop of finding a balance between liberalization and regulation to encourage investment for sustainable development (table 1).

Table 1

Basic characteristics of modern global factors of transformation of international TNCs investment behavior

Global factors and their characteristics
<p align="center">1. Transformations of global economic development</p> <p>The emergence of permanent turbulence state in the global economy with characteristics of the narrowing of the «crisis mid-season» and the effect of «accelerating historical time»;</p> <p>The need to change the extensive path of development of civilization through a form of intense development, which would be characterized by a constant or slow pace of development with transformations from «production economy» to «consumption economy» and further to «creation economy»;</p> <p>The change in configuration of global power centres in the format of the European Union, the American Common Market, APEC due to regional character, high level of internal integration, free movement of capital, goods and services within each block, existence of significant barriers between blocks against the backdrop of intra-block economic liberalization; Formation of a new era of «open world» with specific positive, negative and behavioural features</p>
<p align="center">2. The subjective disposition transformation of key actors in the global scene</p> <p>Positioning in the turbulent TNCs global economic environment, along with national states and civil society actors, will determine the scenario nature not only of investment behaviour but also of the political and economic landscape of the world: the sovereignty of TNCs; «equilateral triangle»; TNC hierarchy.</p> <p>Prediction of the benefits of a likely scenario, characterized, firstly, by the balanced positions of key actors, secondly, opportunities for developing transnational businesses without excessive investment expansion, and thirdly, by reducing the level of national and global lobbying. Such a scenario would balance the interests of the most influential investors and regulators in the global arena and neutralize the source of instability in the global economic system;</p>

3. World macroeconomic trends

Current technological changes and digital economy; offshore; growing urbanization; predictable mega groups;

Slowdown of global GDP growth and dynamics of macroeconomic growth; increase in economic risks in many parts of the world due to the continued decline in oil prices; exchange rate volatility, debt problems in emerging markets; weak growth prospects of many commodity exporting countries;

High geopolitical uncertainty and risks; regional tensions; debt problems; terrorism, cyber threats, climate and weather shocks;

Decelerating in the rate of return of the largest 5,000 TNCs;

Transformation of transnational capital to a new level. Capital becomes a catalyst for financial singularity, which is reflected in the uninterrupted system of investment decisions in algorithmic computer programs, accelerating the institutionalization of noneconomy with the corresponding formation of online network (virtual) Internet economy, economy of signs - «cybernetic economy with electronic nervous system, AR and VR technologies, virtualization of financial resources, instruments, institutional architecture, increasing financial instability.

4. Development of the latest global investment strategies and transformation of TNCs investment priorities

Development of next generation investment policy.

Separation among the investment priorities of transnational corporations certain sectoral scientific and technological guidelines (breakthrough energy technologies, artificial intelligence, robotics, genetics and genetic engineering, nanotechnologies, relevant education, fintech); new geo-economic vectors that take into account the strategic investment interests of global business leaders.

Further sectoral-geographical priorities of TNCs international investment will enhance their scientific and technological dominance, realization of great creative and at the same time destructive potential, orientation on sustainable development as a new level of investment.

Relying on the chaotic management system, the search for the «blue ocean», the symbiosis of organic growth with «jump» tactics, etc., TNC's business system, through the implementation of clear and timely precautionary measures, can mobilize its investment activity for successful counteraction and turbulence.

Targets of corporate leaders in a new type of thinking are to minimize the use of traditional growth and recession-oriented investment strategies, and to continuously generate new strategies or, in the circumstances, even abandon them.

5. Willingness to reorient national and international investment towards sustainable development

The need in implementation of the global sustainable development concept by 2030, the Paris Agreement on Climate Change, the Addis Ababa Action Program; The Roadmap for Reforming International Investment Agreements, the Global Set of Action to Facilitate Investment Procedures and the Fundamentals of Investment Policy developed by UNCTAD in 2015.

In 2015, the UNCTAD Report presented the Roadmap for Reforming International Investment Agreements, outlined six guiding principles, examined five areas of reform and outlined options for action at the four policy levels. The fundamentals of UNCTAD's investment policy and its Reform Roadmaps identify key reform measures.

6. The need in symbiosis of multi-vector governance and regulatory global mechanisms against the backdrop of finding a balance between liberalization and regulation to encourage investment for sustainable development

Direction of the national and international investment regime in sustainable development; taking into account in the investment policies of the countries the rules of ownership and control over companies, seeking a balance between liberalization and regulation in order to encourage investment for sustainable development;

Using of the latest multi-vector management-regulatory global mechanisms based on the application of: not only regulatory supranational and state instruments for adequate crisis management and financial turbulence, while eliminating their destructive consequences; state and international regulation of international investment processes; but also the improvement of the corporate system of capital management by the subjects of international investment activity.

UNCTAD's global set of investment facilitation actions includes 10 lines of directions that provide more than 40 investment policy decisions: 1) Promoting the accessibility and transparency of the development of investment policies, regulations and procedures relating to investors;

2) Increasing predictability and consistency in the application of investment policy; 3) Improving the efficiency and effectiveness of administrative investment procedures; 4) Creation of constructive interested relations in the practice of investment policy; 5) Appointment of a leading agency or entity to facilitate investment procedures with a specific mandate to prevent disputes and mediation; 6) Creation of monitoring and control mechanisms to facilitate investment procedures; 7) Intensification of international cooperation to facilitate investment procedures; 8) Increasing efforts to simplify investment procedures in developing partner countries through the provision of technical assistance; 9) Improving investment policy and actively attracting investment in developing partner countries; 10) Intensification of international cooperation in the field of investment for the purpose of socio-economic development.

We have identified the multidimensionality and complexity of the factors that have a global impact on international investment activity in general and with regard to the transformation of TNCs' international investment behaviour into a state of tolerance towards the host country, in particular, requires more consideration and specific refinement.

Analyzing the current factors of transformation of global economic development, we should agree that the most controversial manifestation is the threat of permanent turbulence in the global economy with the characteristics of narrowing «crisis off-season» and «accelerating historical time» the effect [8].

We determine that burdened current stage of economic development by the factors of turbulence, differs markedly from the previous economic cycles, as the expectation of large-scale shocks and increasing risks of uncertainty at the macro and microeconomic levels becomes identifiable.

3. Current challenges and threats that will transform the transnational corporations behaviour.

It considers that one of the ways of economic development instead of cyclical is chaos threat or permanent state of turbulence [6].

Irreversible changes in the world economy creates the basis for a «new reality» and, as J. Caslione argues, in the foreseeable future, the economic development schedule will no longer resemble a smoothed sine wave – it will be directed forward by zigzags of disorderly vibrations. Due to I. Chervits, we have entered a new era

of increasingly frequent and intense periods of turbulence in the global economy. We believe that permanent turbulence in the global economy can be considered a new economic reality [11]. The horizon and stability of the inertial forecast in the turbulent environment are small. Today's time-tested strategic analysis and planning algorithms do not work or work properly.

Additional but obviously original adjustments to the understanding of modern economic development make the phenomenon of technological singularity which are expected by the futurists, casts doubt on the fatigue of the existing economic system. V. Vinge introduced that on the basis of the extrapolation of Moore's well-known law, the concept of «technological singularity» is characterized as the limit beyond which a powerful variety is expected for humanity, compared to the significance of the appearance of life on Earth – a somewhat inhuman, artificial arrogance, and corresponding fears of artificiality.

A. Panov, R. Kurtzweil, A. Nazaretian, D. Snooks gave reason to assume that a number of singular solutions arising from the extrapolation of trends in the development of the planet, society, digital technology, indicates the completion of the next (social) evolutionary stage in the global history of the planet and the beginning of a new post-social [1; 2; 3; 4; 7; 9; 16; 17].

The achievements of such researchers as V. Vinge, L.Suedrow, A.Berkin, S. Grossman, J. Stiglitz give a possibility to conclude that the approach to financial singularity is an algorithmized computer program of uninterrupted system of investment decisions.

The papers of R. Snooks, V.Dyakonova, S. Kapitsa, A. Panov, which are concerning the «acceleration of historical time», the attractor of evolution, large-scale invariant planetary history, the idea of accelerating evolution and singularity, Halytska warns against a simplified understanding of the «stabilization» of civilization in the post-singular stage are the most modern.

A post-singular society cannot be a society of general well-being. An alternative to the intensive path of development, according to A. Panov, is either the disintegration of civilization or the path of development, which is now appropriate to call paradoxical, that is, the path associated with a very significant step beyond the modern scientific paradigm.

At the end of the century, many leading researchers of the social perspective expressed themselves about the contours of the new civilization and their own vision of the future such as: E. Toffler, J. Gelbright, W. Wallerstein, M. Castels, S. Huntington, J. Nesbitt, Z. Brzezinski, A. Turen, E. Luttwack, L. Tourow, A. Etzioni, P. Drucker, F. Fukuyama, E. Giddens, R. Kissinger, P. Buchanan and others. Among the debating issues are such key phenomena as globalization, social postmodernity, new world order, economic transformation of the world, intensive development of information economy (or as it is now defined, knowledge economy), systemic terrorism. In this context, there are many predictions of the situation. P.Sappho, American scientist, former head of the Institute of the Future, considers the crisis

of 2008 as the date of birth of a new economy – the «economy of creation», which will replace the modern «consumption economy», which in the twentieth century has replaced the place of «production economy» [8].

At the same time, it follows the formation of a new era of «open world» with its specific characteristics of a positive signs (based on the principles of global cooperation, transparency, peer-to-peer networks, cloud technologies, social production, transhumanism, the emergence of many societies, negative or even sincerity) systemic terrorism, increasing dispersion of power and political destruction); and behavioural features (intensive development of the information economy, the creation of a complementary space for the industrial civilization of the New East and the trans-regional archipelago of the Deep South, typologization of the future system as a social postmodern, creation of state-city and other localities) [13].

Formation of effective corporate investment behaviour in turbulent times is based on a flexible operational system of strategic management and priority with positive financial and social results in the long run, regardless of sharp changes in political and economic conditions. The global transformation of TNCs' investment priorities is correlated with their accelerated and deepened expansion, increasing their weight in global economic processes, both constructive and destructive.

The instability and uncertainty of the political and economic landscape of the world, accompanied by permanent turbulence in the global economy with the characteristic manifestations of narrowing the «crisis off-season», as well as the transformation of TNCs investment behaviour, are obviously prerequisites for the use of new, multifactorial regulatory mechanisms and government instruments for adequate crisis response and financial turbulence while eliminating their destructive consequences; state and international regulation of international investment processes; but also the improvement of the corporate system of capital management by the subjects of international investment.

The main qualitative characters of the global environment are: flexibility, complexity, dynamism, emergence, stochastic nature, mobility and turbulence. But, in our opinion, such property as turbulence is a significant characteristic of the environment, because it causes unpredictability to such phenomenon as crises including financial ones. It is also necessary to highlight the modern and predictive properties of the global environment such as: prudence, cohesion, network and digital nature, local nature, informatization and technological development, environmental friendliness of economic processes, emphasis on social dimension, virtuality.

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INSURANCE MARKET SAFETY REALITIES AND PROBLEMS OF TODAY

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Formation of the Ukrainian insurance market is happening in a difficult economic and political situation. The process of demonopolization of insurance business and formation of non-governmental insurance companies is accompanied by inflation, falling volumes of intangible production and is carried out on the background of controversial legal legislation and low insurance culture of the population. The peculiarity of insurance as a guarantor of social production stability is the need for careful scientific research and study of the insurance market development, its level of security, its place in the system of economic relations, ensuring the stability of insurance companies functioning and creating conditions for financial security. The line of the state behavior in the insurance market in Ukraine has not been finally formed. At the same time, there is system functioning instability of state influence on this market segment. This is caused not only by the internal factors of its development in Ukraine, but also by a direct consequence of the macroeconomic processes observed in the country's economy. Current socio-economic conditions require the creation of a coherent scientific system that ensures the further insurance development, taking into account the requirements of international regulation standards of the insurance market and hence the formation of insurance market security.

Theoretical aspects of insurance, its functions, as well as the issues of becoming an insurance market have been investigated in the scientific works of such domestic authors: V. D. Basylevych, O. O. Gamankova, O. A. Gvozdenko, N. B. Gryshchenko, S. G. Zhuravin, O. V. Kozmenko, G. I. Maynlaeva, S. S. Osadets, R. V. Pikus, V. M. Furman, V. V. Shahov, R. T. Yuldashev and others. In our view, insufficiently have been investigated questions on the assessment of the insurance market state, a unified system of statistical reporting has not been developed, which allows to give a quantitative and qualitative assessment of the insurance market, the problems of the regional insurance markets formation and formation of insurance market security.

The risky nature of social production is a major cause of concern for every property owner and producer for their material well-being. From the earliest times on this soil the idea of compensation for material loss by joint reimbursement

it between the interested owners of the property has naturally arisen. In today's society, insurance has become a general universal means of insurance protection for all forms of property, income and other interests of enterprises, organizations and citizens, including their life and health.

The need for insurance protection is general in its nature, it covers all phases of social reproduction, all parts of the socio-economic system of society, all economic entities and the entire population. The insurance market not only contributes to the development of social reproduction, but also actively influences the financial flows in the national economy through the insurance fund on the financial security of the country. The place of the insurance market in the financial system of the society is conditioned both by the role of various financial institutions in financing insurance protection and by their importance as placement objects of investment resources of insurance organizations and servicing of insurance, investment and other types of activity (Fig. 1).

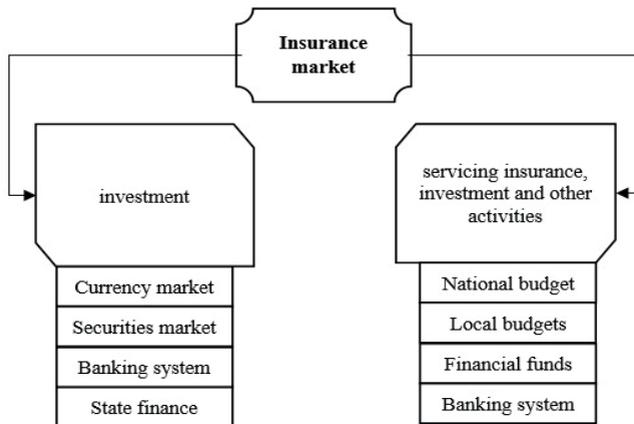


Fig. 1. The place of the insurance market in the financial system of the country

Source: Developed by the author.

Insurance relations assume the presence of subjects with relevant interests. Firstly, since insurance is one of the areas of business activity, they are the organizations (insurers) that are directly involved in insurance. Secondly, they are individuals and legal entities who are ready to pay insurance premiums and thus provide themselves with insurance protection when an insured event occurs. Thirdly, a group of persons interested in providing insurance for their benefit (insurers). Fourthly, the state is interested in insurance, the global interest of which is to maintain an adequate level of social reproduction and the possibility of attracting insurance resources without government involvement to compensate enterprises and individuals [7].

In addition, the development of insurance is providing the state with an additional influx of tax revenues into the budget (fiscal interest) due to the quantitative growth

of job insurers. The state is also interested in the development of insurance, because the insurance mechanism accumulates considerable cash resources that can be used for the implementation of large investment projects without the involvement of the state budget. Another area of interest of the state in insurance is social protection of the population. With the formation of market relations, the state social protection of the population becomes less significant and additional social guarantees (in the case of accidents, loss of a breadwinner, retirement, etc.) can provide only insurance. It should also be noted that the development of insurance allows to divert free cash resources, which reduces aggregate demand and gives the opportunity to reduce inflation (Fig. 2).

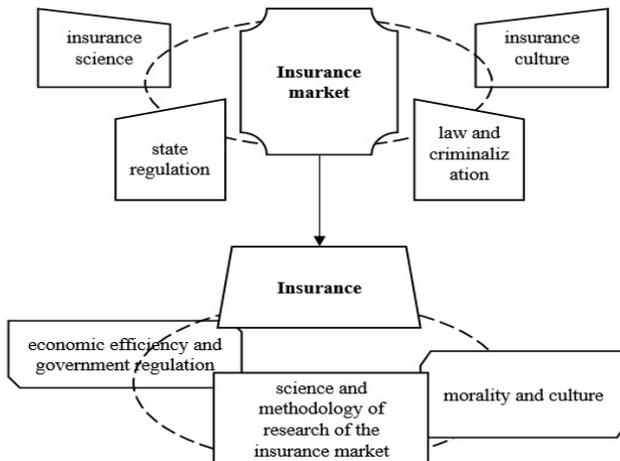


Fig. 2. Model of insurance market formation
 Source: Developed by the author.

The functional aspect of the insurance market requires the study of relationships that arise in the process of market functioning. In this regard, it was reviewed necessary features of the economic category of insurance, such as the presence of insurance risk, the distributive nature of insurance relations, the return of insurance payments. The institutional aspect of the insurance market is revealed by considering the totality of insurance institutions and mechanisms [7].

Insurance institutions as a market entity can function in various forms: direct insurers, reinsurers, intermediaries (brokers, agents), lawyers, auditors, actuaries. Participants of the established insurance mechanism, as a system, accumulated resources by investing in risk compensation, through reducing risks and increasing profits, solve the main task – to increase the efficiency of socio-economic processes in society, its security [3; 4].

Thus, in our opinion, we can speak of a concept where the insurance mechanism

turns the market of insurance services into a freely functioning system of preserving society (human) in its natural interconnectedness in the conditions of economy and globalization of life processes on Earth.

The problems of the insurance market are being considered to date within the concept of market equilibrium. At the same time, economic theory views economics as a complex, nonlinear system capable for self-organization that evolves not through a transition from one state of equilibrium to another, but through evolution. Hierarchically, the insurance market as an element of the insurance market is also included in a higher order system – the market for risk management services (formation of insurance market security). Each of these systems has its own priorities and logic for development – ability to withstand negative factors affecting the insurance market. In Ukraine, the risk situation is shaped by the influence of two groups of factors: global-level factors, which reflect global trends, and factors specific to Ukraine.

The first group of factors include: the increase in the frequency and severity of natural disasters and other adverse events. Damage from natural disasters has increased 9-fold in the last 10 years and now stands at \$150 billion for a year. The total volume of losses over the last decade of the 20th century amounted to \$676 billion. Damage from natural disasters is estimated at \$300 billion by 2050 per year [1, p. 146].

The industrial and technological revolution is accompanied by an increase in the number and severity of technical accidents, as well as a general burden on the risk situation. New, complex risks – from explosions and fires in the introduction of new technologies to risks associated with new information technologies, genetics, etc. is giving rise to scientific and technological progress. It is important to note that these are new risks that management experience has not been developed. The process of urbanization is proceeding at a high rate. If the population of the Earth increases by an average of 1.7% per year, then the population of cities – by 4%. Already, the level of urbanization in Western Europe is 80%, in Eastern – 74% [1, p. 148]. The density of production facilities, housing, cultural and historical values dramatically increases the likelihood of risk accumulation while increasing the value of one facility. Taken together, these two phenomena increase the risk of catastrophic damage. An increase in technogenic impact leads to degradation of the natural environment. Anthropogenic impact on it can be compared with geological processes.

Natural and man-made risks are mutually burdensome: man-made effects lead to degradation of the natural environment, exacerbating natural disasters, the effects of which are aggravated by man-made effects.

The global sustainability of the modern economy overall is rated low. In addition, economic development raises many new business risks, especially in the financial market (stock exchange, banking). For all advanced economies, there is a common problem of aging population, which exacerbates the need for human protection.

It is important to note the criminalization of society. In Ukraine, the risk situation is aggravated by the high level of deterioration of production fixed assets; the use of

outdated technologies, which is a danger to production participants as well as to the environment; certain socio-economic instability and other factors.

Of course, all these risk groups have not appeared today or even yesterday, but literally in recent years their synergistic effect has become apparent. The risk situation has worsened not only in quantitative terms. It has changed qualitatively, that is, there is such an increase in the number of dangers with the possibility of simultaneous implementation and potential mutual reinforcement, which can very quickly lead to the destruction of the economy of the subject and hence the decrease in financial security.

The current state of risky environment puts new demands for safety insurance market formation. The analysis of the situation on the insurance market from the insurance market security in the financial security system for the following reasons.

1. The process of convergence of insurance and non-insurance risk management concepts goes towards the emergence of a new type of financial intermediaries specializing in the formation of risk portfolios, their securitization and transfer of securities to investors. This process cannot but affect the institutional composition of the insurance market, the demand for insurance, etc.

2. The general worsening of the risk situation, instability of the economy, is increasing the requirements for sustainability not only of insurance companies as market entities, but also of the national insurance market as a whole. From these positions, it is productive to analyze the stability of the Ukrainian insurance market as a system, and to study the mechanisms for ensuring its stability.

3. Insurance is included in the globalization process through the financial market. At the same time, the formation of new risk management tools is emphasized as one of the main factors of increased dynamism in the financial component of the globalization process in economic theory.

In domestic literature, risk management issues are mainly addressed at the corporate level. The situation in the market of risk management services and the place in this market of insurance services is not given necessary attention, while the influence of this factor on the insurance market is increasing, that is, the safety level of the insurance market is reduced.

For the most part, a developed system of risk identification, assessment and management for Ukraine remains foreign experience. Paradoxically, but fact, despite the fact that domestic economy, the social sphere is suffering considerable losses from various catastrophes and unforeseen events, conscious risk management has not become a standard management activity, an element of everyday life of Ukrainians. Forming a reliable, effective insurance protection mechanism is not only a matter of expanding the activities of insurance organizations. This is a problem for the society as a whole, one of the attributes of a market economy. The need to obtain insurance protection is not formed immediately, and everyone has the right to choose whether to protect himself or herself from certain risks and how. But everyone must be aware of the need to identify and assess risks, and to understand

that guaranteed free state aid may or may not be available [2].

Unfortunately, the realities are far from this. It has already been noted that public authorities pay insufficient attention to the development of a risk assessment and management system at all levels. Today, no state educational standard is providing training of specialists in this field. The specialist literature and management textbooks contain sections on strategic, operational, financial, innovation management, personnel management, but sections on risk management or individual monographs on this subject are extremely rare. The owners of many domestic companies have not fully understood the norm of the Civil Code of Ukraine on the burden of maintaining their property. As a result, these companies have practically no risk assessment work. Own risk management units are only available in some large companies that seek to approach Western management standards, and the practice of engaging independent professional risk managers is virtually absent. In these circumstances, many businesses put themselves at unreasonable risk, incurring significant, sometimes catastrophic losses, instead of small planned insurance costs and other risk management measures.

The experience of domestic companies with the highest standards of management is demonstrating the need to develop a comprehensive risk management program. This program can be developed both by our own experts (in this case it is necessary to create a risk management unit) and by independent professionals (most often they are insurance brokers). Moreover, both domestic and international practice show that the existence and work of risk managers are appropriate and effective even in the presence of a subsidiary insurance company. Risk management professionals can professionally:

- identify the system of risks to which the enterprise is exposed;
- to develop a set of risk management measures, not only through insurance;
- to classify the needs of the insurance company, as well as the tasks that can be solved with the help of insurance;
- help to get the lowest possible cost of quality insurance services;
- select insurers, evaluate their offers and opportunities, diversify insurance contracts.

According to the Ukrainian legislation, namely: the order of the National Financial Services Commission «On Approval of Requirements for the Organization and Functioning of the Risk Management System of the Insurer» No. 295, dated February 02, 2014, each insurance company must develop and approve the Company's Risk Management Strategy, one of the important points of which is the development of an insurer's risk map (ie, an insurer's list of risks, indicating the likelihood of occurrence of risk events and the insurer's sensitivity to risks) [6].

Even in today's economic environment, a qualified risk management executive can achieve serious results at extremely high costs. Thus, businesses reduce losses and increase resource efficiency, and insurers gain a market with real demand for their services [5, p. 143]. Business with individuals is not going better. They

are also not accustomed to systematic analysis of their risks, involving the same insurance brokers as a kind of risk managers. There is virtually nowhere to obtain comprehensive information about the risks that surround a person in everyday life and how to manage them. All this leads to the absence of significant demand in the insurance market of individuals.

All of the above makes it possible to conclude that the main lever for the development of insurance in Ukraine – increasing demand for insurance services. This demand can only be amplified by creating and developing a comprehensive risk management system. The state, insurance unions and potential insurers should devote the main efforts to this task. The specific measures contributing to this are quite diverse and have not yet been well elaborated. Their formation requires serious work of state bodies representatives of science and practitioners, which create conditions for the security of insurance market.

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KEY ASPECTS OF INTERNATIONAL ECONOMIC SECURITY MANAGEMENT IN THE XXI CENTURY

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In the modern world, open-ended military, and not only, conflicts with a country which has a well-developed military-industrial complex is not rational. In world markets, actions aimed at destroying the national economy is becoming relevant. The main ones are the ban on the export of goods from a certain country, the ban on the supply energy to the country, raw materials and other goods, equipment, the provision of certain services, as well as the ban on various financial transactions. These and other enforcement actions aimed at destroying the socio-economic system can lead to the loss of state independence, which emphasizes the extremely important place of the economic component in the structure of national security.

For the first time, the world community was able to formulate principles and general approaches to collective economic security only in the second half of the twentieth century in the Brazilian concept of collective economic security (1974), as well as in the acts of the United Nations General Assembly, in particular: the Charter of Economic Rights and Duties of States (1974), the Declaration on the New Economic Order (1974) and the Program of Action for the Establishment of International Economic Law (1974). For the first time, these documents proclaimed non-discriminatory mutually beneficial basis of economic cooperation. That time corresponded to its political and economic world order, its level of economic and social development. There were two systems in opposition – the countries of the capitalist camp and the countries of the socialist bloc, which had their collective unions and structures, whose task was to organize and ensure collective security (military, economic, etc.). On this basis, the basic principles were defined: sovereignty; territorial integrity and political independence of states; sovereign equality of all states; non-aggression and non-interference in internal affairs; mutual and equitable benefit; peaceful coexistence; equality and self-determination of peoples; peaceful settlement of disputes; the elimination of the injustice that results from the use of force and deprives the nation of the means for its normal development; honest fulfillment of international obligations; respect for human rights and fundamental freedoms; lack of desire for hegemony in spheres of influence; promotion of international social justice; international development cooperation; free access to the seas for countries that do not have them.

At the end of the twentieth century global changes took place. The former Soviet Union split into independent countries, and the countries of the former socialist

camp eventually became full members of the European Union. These processes undoubtedly further influenced the development of the world economy in the twentieth century. The active development of the world economic complex, trade, industrial and financial relations is continuing. National economies intertwine and complement each other and, accordingly, depend on each other. Thereby, it is now possible to conditionally classify and divide economic security threats into those related to, and independent of, the globalization of the economy.

Economic security indicators are the most important parameters that give an overview of the state of the economic system as a whole, its stability and mobility. There are economic, social and financial indicators. They include: the growth of gross domestic product; the level, duration and quality of life of the population; inflation rate; economic growth; unemployment rate; volume of money supply; structure of economy; budget deficit; internal and external debt of the state; balance of export-import; property stratification of the population; competitiveness of the economy in the domestic and foreign markets; open economy; the size of foreign exchange reserves; energy dependence; the size of the shadow economy.

At that, special significance has not the criterion indicators themselves, but their threshold requirements, otherwise – limit values, the excess of which threatens economic security.

The history of economic development in the world shows us some threshold requirements:

1. GDP decline – 30 %. Exceeding its value leads to irreversible losses [1].
2. Inflation 5 – 6 %. The average annual inflation rate of more than 6-10 % requires special restrictive measures.
3. Unemployment rate of 10%. In the period of reforms it can reach 15-20 %, but its duration can not exceed 3-5 years.
4. The income gap of 10% of the richest and 10% of the poorest segments of the population should not exceed 6 - 8 times. If this figure exceeds 10 times or more, society is at risk of instability. The income concentration indicator (Gini coefficient) in developed countries is 0.15 ÷ 0.17.
5. The presence of a fraction of the population with incomes below the subsistence level of 8-10% leads to a crisis and stagnation of the economy [2].

Threats to the economic security of a country are a set of conditions and factors that create a danger to the vital interests of the individual, society, state, complicate or prevent the realization of national economic interests. There are internal and external threats.

External threats to the country's economic security include: economic dependency on imports, negative foreign trade balance, national export structure – excessive export of raw materials; excessive openness of the economy; loss of positions in foreign markets; divergence of goals of foreign capital present in the country and interests of economic development of the country; increase in external debt, irrational use of foreign loans; displacement of domestic products from the

domestic market by foreign goods; uncontrolled outflow of foreign exchange resources abroad, placement of them in foreign banks.

Let us try to summarize the basic scientific approaches to define the concept of economic security.

In our opinion, the following key directions can be distinguished from the wide variety of approaches to define the concept under study:

- economic security is the ability to implement the necessary measures to ensure the constant and balanced development of the national economy and counteract internal and external threats;

- economic security as a set of conditions and factors that are the key to independence, stability, the ability to further enhance national security and ensure production by the most efficient methods of maximizing per capita resources;

- economic security of the state is a complex concept, since its components are energy, scientific and technical security, financial and food security, information security and intellectual property security, etc. The size of the shadow economy and the level of corruption have an extremely significant impact on the economic security of the country.

International security is understood as the economic interaction of countries that eliminates the deliberate task of damaging the economic interests of a country. This implies the creation of an appropriate international legal mechanism.

The world experience and foreign policy practice of some developed countries of the world in the last decades of the twentieth century has offered time-tested rather influential means, mechanisms and ways of avoiding threatening international conflicts. First of all, they should include:

- the usage of various means of economic, financial, political and other pressure and influence, including, as appropriate, a pre-emptive character against the offender, the initiator of the conflict at the level of individual countries – world leaders, or groups of states. If necessary, this option may provide, in accordance with the rules and within the framework of international law, the use of coercive restraint and the initiation of a political process aimed at resolving or eliminating the causes of problems or grounds for threatening international conflicts. All this has led to a real path, but it is possible for the use of economically developed countries in the world;

- creation, organization of international or regional systems, economic blocks, etc.

Numerous economic, customs and trade unions create a mutually beneficial economic equilibrium for the participating countries, which in turn ensures in large part avoidance of breach of relations between states.

The orientation of the foreign and domestic political activity of each state is connected with the objective national interests, the presence of a threat to those interests and the need to counter such a threat. The interconnectedness and interdependence of this triad (interests, threats, counteraction) is the foundation of national security.

The existing practice of several (over 80) dozens of the most influential international

regional systems, first of all, economic security, confirms the feasibility and effectiveness of their existence. They all have a diverse internal structure, their charters and agreements, rights and obligations, control and protective mechanisms, etc.

At the same time, it should be acknowledged that the most effective and influential international security system, voluntarily created by the entire world community, is the United Nations (UN), with its official structures, first and foremost, the United Nations Security Council.

In its creation, the first article of the UN Charter outlined its main task and outlined the concept of international security, and outlined ways to achieve it: «To support international peace and security and to take effective collective action to prevent and eliminate the threat of peace and suppression acts of aggression or other disturbance of the peace and conduct by peaceful means, in accordance with the principles of justice and international law, settlement of international disputes or situations that may lead to violations peace».

The UN can be regarded as an organization with a rigid internal structure in the international legal boundaries, and controls all its resolutions (including the use of force sanctions).

All other international security systems with specific reservations can be classified as regional. Regional security systems are various organizations of states based on ethno-cultural proximity, similarity of economic, environmental interests, etc. Such systems of international security support are very mosaic in their internal structure and international legal form [3]. The leading role here belongs to the blocs of states united by a relative commonality of interests, which imply tight coordination of political, economic and military activities.

According to most scientists, globalization, as an evolutionary tendency for the development of society, on the one hand, poses threats and, on the other, creates new opportunities for economic security. Economic security (international and national) has a global reach and affects the interests of all states in varying degrees.

But we must finally understand: the end of globalization is not at all a wonderful and not a viable prospect for either industrialized countries or developing countries. First, the processes of globalization in the 21st century are sudden, unpredictable, and beyond control. The information revolution has changed the world too much to be able to get back it by any tariffs.

It should be noted that world economic science does not offer a single understanding of economic security or the economic aspects of national security. The main objective of a developed country in this concept is in most cases recognized as the stability of economic growth. The most important elements of economic security include such concepts as security of supply of the most important raw materials and energy resources, openness of foreign markets, national control over «strategic industries», protection of commercial and technical information, competitiveness in the world market and «economic sovereignty» under which independence in decision making is understood. All these elements are aimed at protecting the economy from external

threats. Internal issues such as security factors have not been generally addressed until recently. However, the global crisis of 2008 made adjustments. It should be noted that there is a contradiction between «openness of markets» and «economic sovereignty». Not surprisingly, the first of these elements is always present in the US policy, and the second is always in Chinese policy.

It is interesting to review the US National Security Strategy, which is updated periodically.

All editions highlight the three main goals of the US domestic and foreign policy: strengthening military security; economic prosperity; promoting democracy in other countries.

The Bush administration's (2006) strategy clearly had the advantage of «promoting democracy in the countries of the world, «which was intended to contribute directly to the US security. The US economic boom was associated with «a new era of global economic growth through free markets and free trade». This was to be facilitated by three main conditions – openness of foreign markets; energy independence; stability of the world financial system. Thereby, the US policy was aimed at world markets, commodity markets and pursued an «open door policy». The main «challenges» in the economic sphere were identified: protectionism, lack of openness and ineffective governance «in some countries», the dependence of many countries on foreign oil imported from «fragile parts of the world», restriction of the free capital market by «some governments». The openness of the markets was directly linked to the spread of democracy, with a view that China's economic policies were aimed at «managing markets instead of opening them», as well as supporting the rich resources of countries, despite the «bad» behavior of the governing regimes there.

The Obama administration's (2010) strategy emphasis are somewhat different, in particular: democracy support has taken a modest place, but more space is given to «international order» and «rule of law». The main goal of the strategy is the idea of the need for cooperation with foreign partners. In economic matters, the central idea of the document is overcoming the crisis. At the same time, much attention was paid to internal factors – stability of the financial system, restraint on the growth of public debt. The crisis has forced the administration to consider internal economic problems from a security standpoint that was not typical earlier. Foreign economic policy reiterated the previous strategy – the fight against protectionism in the name of free and fair trade, while emphasizing the need to develop domestic demand in other countries in order to prevent cycles of ups and downs. And most importantly, in the US, «an open investment climate compatible with our national security goals will be supported».

Even though, while the notion of «protectionism» had a negative orientation in all editions of the strategy, some scholars expressed their concerns that excessive disturbance about the «economic security» of the US would lead it to protectionist policies. Indeed, in practice, the US economic policy has not seldom used clearly

defined features, if not «protectionism», but economic nationalism (restriction of foreign investment in strategically important areas of the US economy, the prohibition of participation in one or another degree in the execution of government procurement and public procurement, etc.). By the way, an interagency Foreign Investment Committee in the United States (CFIUS, 1975) was created to control these activities in the country, with fairly broad powers, which were strengthened in 2007 with the passage of the Foreign Investment and Homeland Security Act.

In countries that do not claim to be a world leader, the economic dimension of the concept of «security» has its own specificity. Japan was the first to discuss national economic security. In 1982, its Ministry of Foreign Trade and Industry prepared a special report, defining «economic security as a state of the economy in which it is protected primarily by economic means from serious threats (challenges) to its security arising from the influence of international factors». Such factors have determined the availability of energy and mineral resources, food, safety of maritime transport. The Japanese concept, like the American one, is considered only in terms of external threats. In other developed countries, increasing attention is paid to the information aspect of economic security, in particular:

1. Canada is one of the major threats to the country's economic security – economic espionage.

2. France is one of the main elements of economic security –protecting the commercial and technical information of national companies.

Incidentally, France's stance on the US policy on these issues, identified back in 2004, is interesting. Considering the US as the model for pursuing its concept of economic security, at the same time, it criticizes the numerous hostile actions of the US in the desire for full global domination of French companies and points to the need for a concerted effort by the EU to counter economic threats from the ocean. EU countries «must jointly take their global security independently of the Americans and get free from dependence on technology and standards, which impedes their shared fate». At the same time, such a strategy should not be directed against the United States, but aimed at strengthening a «united Europe» in a multipolar world. It may be largely used in the development of a strategy to restore public confidence in the EU following the Brexit shock under the task of developing the Bratislava Roadmap.

On September 16, 2016, at an informal meeting of 27 EU leaders, who met for the first time in 43 years without the UK, it was agreed to develop a Strategy for restoring public confidence in the EU following the shock of Brexit [4]. This so-called «Bratislava Roadmap», proposed by the European Commission and President of the European Council Donald Tusk, contains the following points:

- a) migration and external borders (giving young people hope for the future);
- b) internal and external security (counter-terrorism and defense cooperation);
- c) economic and social development (job creation, digital development).

The deadline for preparation of the detailed plan has been set – March 2017 (has already expired).

As A. Merkel said: «... Europe is in a critical situation after the referendum in the UK... and because of other problems that we have... we must agree on an agenda together... we must have a working schedule... We need compromises, a sense of solidarity, cooperation» [5].

Thereby, summarizing the economic policies of the largest countries in the world, no matter what, we must say that the US economy is the most comprehensive and self-sufficient economy in the world, which determines the state and direction of growth of the world economy due to the fact that about 25 percent of the world the United States accounts for GDP. The economies of most countries are oriented toward the US market and its smallest fluctuations directly or indirectly affect the welfare of entire countries, and such integration and globalization of economies has both positive and negative aspects, which are clearly reflected in the economic security of the world economy.

The new US President D. Trump has pledged to cut (reduce) taxes and weaken economic regulation. BCG Digital Ventures chief executive Jeff Schumacher says that even if he does not like some of Trump's policy principles, he is optimistic about business prospects. If the US capital inflows happen and lead to economic growth, then by virtue of the size of the US markets and economy, it will lead to global economic growth.

Therefore, the United States can be both the engine of the world economy, provide its economic security, and become its brake. Without certain balances, protectionism can create extreme economic problems, as can the build-up of the US government debt (approximately \$ 21-22 trillion) and the country's budget deficit.

It should be noted that, according to most experts, a global agreement under the auspices of the World Trade Organization (WTO) would be the best option, a form of foreign trade liberalization, as the engine of global economic growth. But negotiations have been going on for over 15 years without the hope of a swift and positive conclusion.

From the foregoing, the international community urgently needs fair trade rules, rather than unwinding a spiral of protectionist measures. Even bilateral trade agreements, by the way, are always unfair to third parties.

International economic security is a set of international conditions for coexistence and institutional structures, whereby each member state of the world community is given the opportunity to freely choose and pursue its socio-economic development strategy without external pressure and interference in an environment of mutual understanding and cooperation. Legal guarantees of international economic security – in recognition of the principles of equality of states in solving both their national problems and global problems of the whole world.

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UKRAINIAN FOOD SECURITY: SOCIO-ECONOMIC COMPONENTS

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Food security is a global challenge. In modern conditions, the importance of foreign economic factors in supplying the population with necessary foodstuffs is increasing. This is due to the deepening of the international division of labour and the development of international trade in agricultural products and food. Many countries in the world are still unable to provide adequate food for their people. The provision of food is a basic element of economic, social and political security, and this is what all governments seek. Food security is essential for balanced and sustainable development of countries and the world. Food security is important in the light of the global community's achievement of the «Sustainable Development Goals» for the period until 2030, as set out in the UN resolution [1].

Food security issues are not overlooked by many scientists in Ukraine. Well-known P.T. Sabluk, V.V. Yurchishin and others are among these researchers. Their researches are devoted to the problems of priority directions of development of agrarian sector, connected with food supply. They also study the issues of reforming economic relations in agriculture. The subject of study is the dynamics of crop and livestock production, especially during the transformation of the Ukrainian economy. There is also a lot of research attention devoted to the problems of export and import of agricultural products.

This research is devoted to the identification of socio-economic factors that allow to reveal the essence of food security. It also aims to identify the nature of the impact of these factors on the food security of the country, to determine the most promising ways to solve the problems arising in this case.

In the world food security rating, which is calculated beginning with 2012 at the suggestion of DowDuPont Agricultural Unit and The Economist Intelligence Unit (EIU) in 2019 Ukraine ranked 76th out of 113 countries, while in Europe Ukraine was on the last 26th place (Table 1).

Table 1

Performance of countries based on their 2019 food security score. Europe

Regional ranking	Country	Overall score	Affordability	Availability	Quality & Safety
1st	Ireland	84.0	90.5	76.8	87.7
2nd	Switzerland	83.1	83.8	84.3	78.2
3rd	Finland	82.9	84.1	78.6	91.8
3rd	Norway	82.9	81.9	81.0	90.5
5th	Sweden	82.7	85.0	78.1	89.4
6th	Netherlands	82.0	85.6	76.2	88.9
7th	Austria	81.7	85.4	78.6	81.1
8th	Germany	81.5	84.9	79.1	79.8
9th	Denmark	81.0	85.4	74.8	87.2
10th	Belgium	80.7	84.4	76.2	83.9
11th	France	80.4	83.8	74.8	87.1
12th	United Kingdom	79.1	83.6	74.4	80.9
13th	Portugal	77.8	81.3	70.9	88.0
14th	Italy	75.8	82.5	68.3	79.7
15th	Poland	75.6	81.1	69.3	79.5
16th	Spain	75.5	82.3	65.9	84.7
17th	Greece	73.4	77.8	64.9	86.0
18th	Czech Republic	73.1	82.6	66.3	68.1
19th	Hungary	72.7	80.8	66.1	70.5
20th	Belarus	70.9	76.0	62.9	80.2
21st	Romania	70.2	79.3	64.3	64.1
22nd	Russia	69.7	79.8	60.1	70.9
23rd	Slovakia	68.3	78.6	62.1	59.4
24th	Bulgaria	66.2	79.0	54.2	66.8
25th	Serbia	62.8	73.9	53.0	61.8
26th	Ukraine	57.1	63.9	50.0	59.6

Source: compiled by author based on [2]

The Global Food Security Index considers the core issues of affordability (measures the ability of consumers to purchase food, their vulnerability to price shocks and the presence of programmes and policies to support customers when shocks occur), availability (measures the sufficiency of the national food supply, the risk of supply disruption, national capacity to disseminate food and research efforts to expand agricultural output), Quality & safety (measures the variety and nutritional quality of average diets, as well as the safety of food), Natural Resources and adjustment (assesses a country's exposure to the impacts of climate change; its susceptibility to natural resource risks; and how the country is adapting to these risks).

The index is a dynamic quantitative and qualitative benchmarking model, constructed from 34 unique indicators, that measures these drivers of food security across both developing and developed countries [2].

Some indicators of Ukraine have such a form in this rating:

Table 2

Strengths and challenges of Ukraine in food supply

Strengths (close score / 100)	Challenges (close score / 100) «Challenges» are defined as any indicator score below 25.0
99.9 -Proportion of population under global poverty line	99.9 -Proportion of population under global poverty line
95.7-Food safety	95.7-Food safety
94.5-Change in average food costs	94.5-Change in average food costs
90.4-Food loss	90.4-Food loss
90.1-Urban absorption capacity	90.1-Urban absorption capacity
85.5 -Agricultural import tariffs	85.5 -Agricultural import tariffs

Source: compiled by author based on [2]

This country situation makes the study of this problem relevant. What is the reason why Ukraine, which has excellent fertile black soil, is very far from the top three rating leaders: Singapore, Ireland, United States. The rating draws attention to the high level of corruption, inconsistency of real consumption of food products with scientific-based standards, low gross domestic product per capita, risks of political instability. The problematic areas of food supply in Ukraine include insufficient funding for research and new developments in the agricultural sector, problems with the availability of cheap loans for agricultural producers. Thus, the biggest negative impact on the low food security in Ukraine is caused by factors that do not belong to the purely agrarian problems.

The importance of socio-economic factors is due to the complexity of the concept of food security. In order to create a better understanding of food security, it is useful to trace the history of the concept. The scientific understanding of this concept is based on the ideas of T. Malthus. In his book «Experience on the Law of Population» (1798), Malthus was looking for the answers to two questions: 1) what causes have delayed the development of mankind up to now or the increase of its welfare? 2) what is the likelihood of eliminating, fully or partially, these causes that

have impeded human development?

The Law of Population was formulated by Malthus as an answer to these questions. Under the Law of Population, population growth is geometric and food growth is arithmetic. This meant that population growth was undermining the basis for its existence. [3].

Today, under the influence of new views on the system of interaction of countries of the world in overcoming malnutrition and hunger, the failure of this idea has been proved. But production-to-consumption per capita ratios are used in modern economic analysis of food security.

Researchers distinguish several stages in the development of the concept of food security. The number of stages varies in different researchers from 4 (Revenko L.S.) to 7 (Kardash O. L.). The selection of four stages is based on a transformation of views on the system of economic relations of countries around the world regarding the fight against malnutrition and hunger [4]. The main criterion for selecting the stages is the ratio of national and international causes of food problem and ways to solve them. The first stage is the 1950 -1960 of the last century before the green revolution. In this phase, food security was treated as a national problem of food supply regardless of external factors. In the second phase, which can be called the period of the green revolution – the 1970 and early 1990 – the concept of «world food security» emerged. Providing food to the world's population and fighting hunger was proclaimed one of humanity's global problems. From the mid-1990s until the beginning of the modern agri-food crisis (2004), the third phase stands out. At this stage, the concept of food security is viewed as a socio-economic problem. The World Food Forum, held in Rome under the auspices of the United Nations in 1996, adopted a special declaration on world food security. The Rome Declaration for the first time identified poverty rather than demographic and resource imbalances as the main cause of food shortages and a threat to food security in the world and in individual countries. The countries participating in the Rome Forum developed principles for international food aid to countries affected by natural disasters. During this period, significant changes are taking place in the social and political structure of the world. The collapse of the world socialist system had a negative impact on the food supply of those countries and the world as a whole. One of the results of the collapse of the socialist system was the collapse of the agricultural sector of those countries and a sharp decline in food security. The problems of domestic and international food trade intensified during this period. Negative processes in food supply affected not only former socialist countries, but also other countries of the world. Many countries during this period are forced to overcome the negative impact of under-consumption of food on human health, productivity and intellectual development. The fourth stage is connected with the beginning of the world food crisis in 2004 and lasts till now. This phase is characterized by a growing relationship between food problems and energy, financial and economic problems. For example, the production of liquid automotive fuels – bioethanol and

biodiesel – requires agricultural raw materials, which in many countries are used for food purposes. As a result, the supply of food and animal feed on the market is declining and the prices of meat and dairy products are rising. Biofuel production is destabilizing the global food system. This reinforces the need for comprehensive international efforts to address food security issues.

Table 3

**Consumption of main food-stuffs, 2010-2018
per capita in year, kilograms**

Food Products	Consumption standards		Actual consumption		Consumption sufficiency indicators	
	Physiological minimum	Scientific-Reasoned standard	2010	2018	2010	2018
Meat and meat products	52	80	52,0	52,8	0,650	0,660
Milk and milk products	341	380	206,4	197,7	0,543	0,520
Eggs, pcs	231	290	290	275	1,00	0,948
Bread-stuff products (bread and macaroni counted as flour; cereals, flour, leguminous)	94	101	111,3	99,5	1,102	0,985
Potatoes	96	124	128,9	139,4	1,040	1,124
Vegetables, water-melons, melons and gourds	105	161	143,5	163,9	0,891	1,018
Fruits, berries and grapes (without processed for wine)	68	90	48,0	57,8	0,533	0,642
Fish and fish products	12	20	14,5	11,8	0,725	0,590
Sugar	32	38	37,1	29,8	0,976	0,784
Oil	8	13	14,8	11,9	1,138	0,915

Source: compiled by author based on [6, p.12]

Identification of seven historical stages of development of the concept of food security (Kardash O. L.) [5] is based on deepening of ideas about the essence and

completeness of food security and ways to achieve it. Based on this criterion of tracking the stages of concept development of food security, it is possible to further define the complexity of this concept. In the first stage, the content of food security was considered by researchers as simple availability of food; in the second stage – as adequacy of food and the right to food. The next stages focused on the global nature of the food problem (stage three), which has evolved over time into world food security (stage four). The fifth phase was based on an understanding of food security based on adequacy, stability, physical and economic accessibility of food. In the sixth phase, the requirement of food security and nutritional adequacy was added to the previous components of the concept. The modern, seventh phase adds the requirement of food being sustainable. Different authors put emphasis on defining the stages of development of the concept in their own way. Another thing is important. The understanding of scientists, politicians, national and international communities about the essence of food security is deepening.

A definition of food security can be derived from a review of its history. In this definition, a form of manifestation, an essential component and a supporting, supportive system can be distinguished (see fig. 1). Food security is defined as the stable, secure and reliable economic and physical accessibility of food for all groups of the population. Accessibility and safety concerns all groups of the population in quantity and quality that meet the standards of consumption and taste preferences necessary for an active and healthy life. This definition makes it possible to study the dynamics, the level of food security and the ratio of national food production to imports. By comparing actual consumption with scientifically based norms, it is possible to analyze, study and identify food supply problems and develop solutions.

Table 2 shows per capita consumption of basic foodstuffs in Ukraine. The optimal situation is one in which the actual food consumption of one person per year meets the rational norm. In other words, the consumption adequacy ratio is calculated as the ratio between actual and scientifically based consumption equals 1.

The analysis of average annual consumption of basic foodstuffs for the last 8 years shows the violation of the food structure through insufficient actual consumption of high-calorie foodstuffs by the population - milk and dairy products, meat and meat products, fruit and fish products, the average annual consumption of which by one person is much lower from scientifically based physiological norms.

The calculated consumption adequacy indicators for these foodstuffs are rather low and their dynamics over these years is a matter of concern: in 2018, compared to 2010, the fish and fish products adequacy ratio decreased by 0.135 points; milk and dairy products - by 0.023 points. Some increase in the consumption adequacy ratio occurred for meat and meat products (by 0.010 points); fruits, berries and grapes (by 0.109 points). But in general, the physiological norms of consumption were not achieved for almost all food products.

Consumption of food does not depend only on its availability and quality, but also on prices, the level of income of citizens, the economic development of the country,

the policy of import procurement, etc. Consequently, food security depends on the state of the country's economy, foreign economic policy and many other conditions.

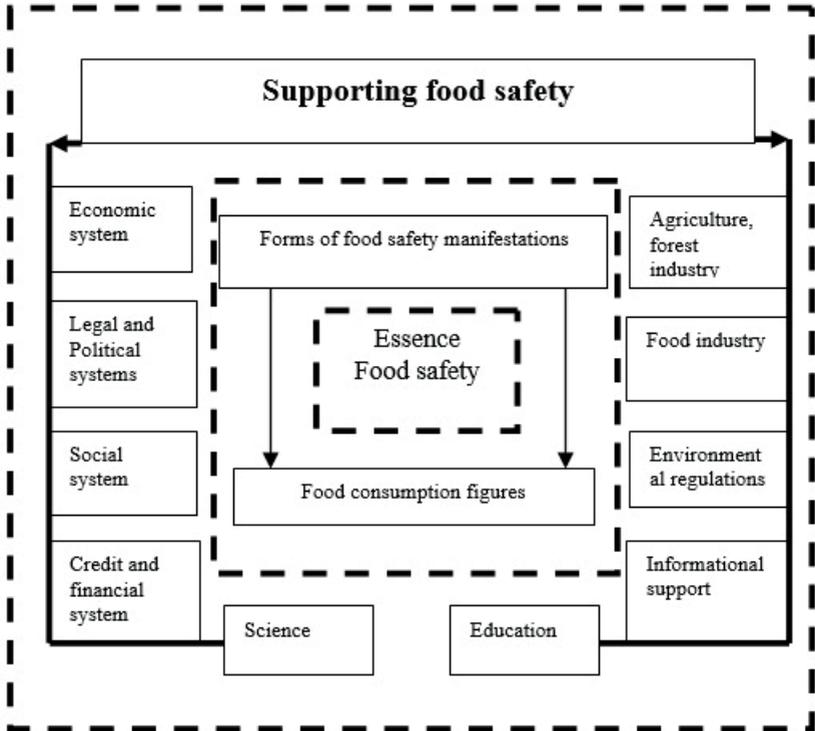


Fig. 1. Components of the concept of food security [composed by the authors]

Physical food supply is only a form of food security. The essence of food security is the formation and development of an economic system, social and political relations between the state and economic entities associated with the creation of conditions to meet the needs of the population for food, taking into account the norms that ensure the full life of the population with the optimal use of the resource potential of the country and the opportunities of national and international markets.

The multidimensional nature of food security in this socio-economic phenomenon characterizes the ability of the State to provide the population with balanced and nutritious food of good quality and safety, with adequate physical and economic access to it. This should take into account not only the domestic food sovereignty of the State. In today's environment, the provision of adequate food depends on the State's ability to mobilize domestic resources to fill the country's food market and

take advantage of international trade opportunities. Thus, food security, in addition to its substance and form, also includes a system for its provision.

An important place in ensuring security is given to the socio-economic conditions of the country, as noted in the Rome Declaration on World Food Security (Rome, 16-18 November 2009) [7]. It notes that poverty is the main cause of food insecurity, and sustainable progress in poverty eradication is crucial to improving access to food. Conflicts, terrorism, corruption and environmental degradation also have a significant negative impact on food security.

The economic subsystem of supply means that without a high level of development of the country's economy, including the agro-industrial sector, it is impossible to achieve food supply for all segments of the population. The low level of gross domestic product per capita and high food prices relative to average wages predetermine the low purchasing power of the population.

Guaranteeing the right to quality food is based on political aspects. Forced military actions divert considerable funds, which are very much needed to support farms and other important issues in the development of the Ukrainian agro-industrial complex. In today's conditions, it is important to achieve environmental standards of food cultivation and production.

Safety and completeness, observance of rational norms of food consumption are connected with social aspects. With the development of globalization processes in the modern world and the interweaving of various global political, financial and energy crises, food security includes international aspects.

The development of science is also important for agriculture. This is especially true for agrarian science. Agriculture needs innovative developments related to new crop varieties, breeding of new breeds of animals, new techniques, new resource-saving technologies. The result of scientific developments should be a stable high yield based on the use of high-performance crop varieties, plant protection products.

Information provision of food security in the country today looks more like a problem to be solved than a subsystem. Complete and reliable information on prices, industry environmental standards and norms are important for timely and informed decision-making by representatives of the agro-industrial sector. But the information supply system still needs to be built, although first steps are being taken.

The multidimensionality and complexity of the concept of food security explains to some extent the unresolved problems. However, recognizing that all problems cannot be solved at once, a system of priorities for overcoming obstacles must be established. Among these priorities is the need to adopt the Food Security Act. It has not yet been adopted after it was returned to the Verkhovna Rada with comments from the President. The negative impact of unresolved political and legal issues is also exacerbated by the fact that the adoption of the Law on the Land Market has been delayed.

Almost the only official comprehensive document on food security in the country is the Concept of the State Target Programme for Development of the Agricultural

Sector of the Economy until 2022, approved by the Cabinet of Ministers. [8]. The document provides a brief assessment of the quality of food supply to the population. In particular, it is noted that the level of consumption of milk, meat, fish, fruits, grapes per person is considerably lower than the scientifically substantiated norms. Insufficient is the volume of production in the country of high-protein canned products based on meat and fish, as well as products for therapeutic and preventive nutrition of children. The limited solvency of domestic consumers and the high risk of excessive dependence of many agricultural and food products on exports have a negative impact on food supply.

The problems also include the following processes: unfinished adaptation of food quality and safety to European requirements; weak competitive position of domestic agricultural products in the foreign market; low rates of scientific and technological progress in agriculture, which leads to high dependence of production on natural and climatic conditions; difficulties in crediting farms and complication of their work in conditions of seasonal nature of production. The forms and methods of state support for small farms are imperfect, the introduction of domestic products to the world agricultural markets are imperfect as well; military operations in the East of the country, the temporary occupation of the Autonomous Republic of Crimea and the city of Sevastopol, part of Donetsk and Lugansk regions complicate the work.

The Concept pays great attention to agriculture, which development is important for solving food problems in our country. The Concept proposes directions for addressing the challenges faced by agriculture. These proposals go far beyond the development of the agro-industrial sector. They include, for example, proposals to bring Ukrainian legislation closer to that of the EU; to improve the taxation system on the principles of publicity and transparency in the use of public finance to support the agricultural sector; to develop the exchange market and the introduction of financial instruments in the agricultural market, and much more. The implementation of the proposals contributes to strengthening the country's food security.

Modern food security also relies on foreign trade opportunities. The economy of our country is open. An important part of the country's foreign trade turnover is agricultural products. Export of agricultural products occupies a leading position in the total volume of commodity exports of Ukraine, currently accounting for 42% of its total value (in 2010 this part was 19.4 %). In 2018, agricultural nettle export reached a record level of \$18.6 billion, while imports remained at \$5 billion. The basis of Ukraine's agri-food exports is crop production, which accounts for 53 % of the structure (mainly corn and wheat), the second largest category is fats and oils – 24 %, another 16 % falls on finished products (soybean oil cake and sunflower cake), the remaining 7 % - animal products (poultry meat, dairy products and honey). This trend is continuing. In the first quarter of 2019, Ukraine's foreign trade turnover amounted to \$25.9 billion, of which \$6.9 billion (26.6 %) are the products of the agro-industrial complex [9].

Ukraine's agricultural sector is integrated into the world economic space. The

volume of agricultural production is laid down in the forecasts of the dynamics of world prices for food resources and requires monitoring of foreign trade in agricultural and industrial products in order to timely identify threats to food security, especially in our country. Unfortunately, agrarian exports are perimuscularly of raw material nature. Over the past 10 years, there has been no improvement in the structure of the export. Decrease in prices on world markets for cereals, oils and fats is tangible for the domestic agriculture and economy as a whole. Threats are growing due to the fact that Ukrainian products do not meet European standards.

The food security of Ukraine is also affected by its import dependence on certain groups of goods. The most vulnerable positions are fish and fish products, fruits, berries, grapes and vegetable oils.

In view of these circumstances, an important direction in strengthening the country's food security is to increase the competitiveness of the agricultural sector's products and to increase agricultural exports of value-added products, finished and semi-finished foodstuffs, which will also make it possible to use the production capacity of enterprises, processing enterprises and to increase the number of working places in Ukraine.

The state has an important role to play in this direction. It is necessary to create conditions for expanding the integration and technological links between agriculture and the food industry in order to establish complexes that combine the production of grain, feed, pigs and other farm animals into a single technological chain and process raw materials into high quality food products for export.

In order to improve the country's food security, the State needs to implement a fundamentally new economic policy. The basis of the new paradigm of food supply in Ukraine should be the perception of agriculture as a sphere with high potential for competitiveness, oriented to international standards of product quality and as a driver of the economy of the whole country in the direction of increasing its role in the world food markets. Agriculture in the post-industrial economy retains its strategic importance, but all the more so as a guarantee of food security. For our country, given its important role in the world food supply, it is important to realize that it is impossible to achieve high competitiveness of agricultural products without transformation, reforming the economy of the whole country. In other words, improving the efficiency of agricultural sector contributes to the successful development of the economy of the whole country, many of its branches. In turn, improving the level of development of the economy as a whole will contribute to strengthening food security.

The results of the study show that the necessary level of food security has not yet been achieved in Ukraine. Food security systems do not meet the current level of requirements to them. This leads to an imbalance in the nutritional status of the population. Inadequate social and economic living standards - low incomes and rising food prices - pose a threat to food security. In the context of ensuring food security in the country, the priority areas of the state economic and social

policy are improvement of legislation and judicial reform, which will help eradicate corruption in the country. In the agricultural sector it is important to carry out land reform and introduce a land market, create a system of direct state support for small and medium farms. Creating a business climate in the country that promotes the investment attractiveness of the agro-industrial complex is also very important. Much more attention and financial support is required for the development of agrarian science in the country, improving the quality of education of specialists.

Food security is a multidimensional socio-economic concept of concern to the world community as a whole and has its own characteristics in each individual country at different stages of its development. Its solution depends on many factors that go beyond agriculture and agro-industrial complex. It is linked to other development problems of the country, without solving which it is impossible to maintain food security at an adequate level separately.

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PROSPECTIVE DEVELOPMENT TRENDS IT-TECHNOLOGIES AND INFORMATION PROTECTION TECHNOLOGIES

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Today, information technology plays an important role in the modern world. They occupy a unique place in society, not only affecting its economic and social institutions, but are also the engine of global economic growth, penetrating into all spheres of production activity and allowing to build effective management systems. At the same time, information technology is a much-changing element of the electronic society.

Red Hat experts present forecasts for nine industry-leading IT technologies that will underpin the IT-industry in 2020 (fig. 1) [7].

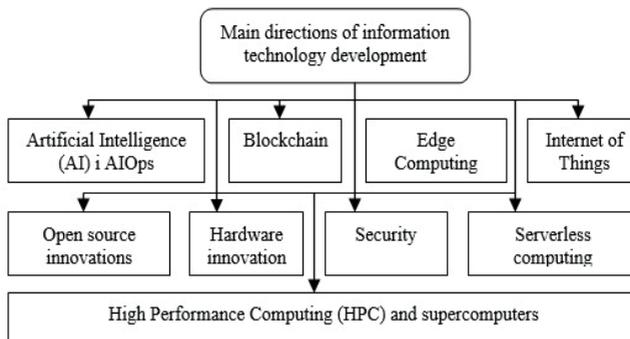


Fig. 1. Trends in information technology development [created by the author on 3, 7]

Artificial Intelligence (AI) and AIOps. According to the experts next year, the tendency to abandon integrated AI-platforms in favor of building platforms and processes of AI and Data Science based on Kubernetes will increase. Kubeflow standardization (Red Hat’s Open Data Hub version) will make Kubernetes the primary AI platform. Big data and small data will become independent destinations. In many scenarios, shallow learning methods (linear models, tree models, clustering, time series analysis) and specialized analytics will be applied, for example, based on queuing theory or discrete optimization. In real AI-applications there will be

problems of trust, there will be an increase in attempts to regulate AI (fig. 2).



Fig. 2. Model of functioning of artificial intelligence [7]

The increasing popularity of AI in Ops and DevOps will lead to the emergence of corresponding «unicorn companies». Manufacturers of popular platforms will focus on standalone Kubernetes-based hybrid clouds.

Blockchain. Tokenization will continue to attract investment at the expense of considerable interest from the financial sector. The rise in interest in cryptocurrencies in the wake of government concerns gives impetus to the idea of issuing digital currencies by central banks.

The open source nature of the blockchain ecosystem (both technology and culture) is an important factor in ensuring interoperability of blockchains and creates the prerequisites for shaping the future with many private and public blockchains that support the mutual exchange of values that implies the emergence of the Internet of Value.

In the future, blockchain will be able to act as one of the levels of the decision, acting as a framework on which other elements build relationships of trust. Other promising areas for using blockchain as a framework – the Internet of Things and AI [1, 7].

Edge Computing. Cloud providers will continue to expand beyond the traditional cloud. With the advent of pay-as-you-go platform-to-service solutions, public times will be difficult for public cloud services. The suppliers of data center-oriented platforms will create integrated architectures for peripheral computing and release platforms and development tools to accelerate the introduction of new edge services with connection to the ecosystem of services while maintaining control over corporate infrastructure and business processes (fig. 3).

The launch of 5G networks will boost edge innovation in the telecom and corporate sectors. The new functionality of 5G network applications will require

more flexibility from mobile operators, resulting in the transition from virtual network functions to container network functions.

Internet of Things (IoT). Stacks of IoT applications for the corporate sector should be more component-based. By standardizing open source components, the coming years will bring more consistency in IoT application architectures at all levels, from cloud and edge gateways to peripherals.

Hardware innovations. In 2020-2021, interest in heterogeneous equipment, FPGAs, hardware accelerators and ASICs is expected to increase. A new programming and deployment model can now be launched, focusing on the heterogeneity of computing and hardware variability.



Fig. 3. The pyramid of functioning Edge Computing [7]

The first swallow was the Intel one API. Proprietary tools and processes will not keep up with innovation, which is why open source counterparts will benefit (fig. 4).

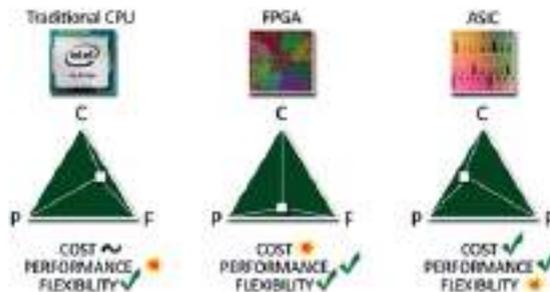


Fig. 4. Types of hardware depending on «cost-performance-flexibility» criteria [7]

HPC and supercomputers. ARM and RISC-V will skyrocket in HPC. Standardization of the ARM platform together with efficiency will ensure

disproportionate growth of the ARM in the market. An open and free RISC-V architecture will also be of increased interest.

Open source innovations. Diversity and open source software projects are expected to increase. More venture-backed venture capitalists (or new entrants) will appear to look for legal strategies to address the free-rider problem of cloud vendor resource consumption. More and more young open source companies with an aggressive intellectual property protection strategy will be stepping up as software owners, although in reality they are only the original creators of such software [2, 4].

TEE (trusted execution environment) technology offers a solution, and the industry is gradually adapting it to expand the scope of an open hybrid cloud.

Serverless computing. PaaS Service Providers will increasingly offer server less developers for day-to-day work when building cloud-based applications. In addition, the server less approach simplifies the transition to the cloud, helping to abstract from the features of the IT-infrastructure and focus on solving business problems.

Security. Right now, legal and regulatory requirements are forcing the idea of hosting sensitive information into the cloud. The solutions available today provide encryption for data storage and transmission over the network, but not for use, because sometimes workloads contain algorithms that are inherently sensitive in terms of security.

The development of information technologies in these areas leads to the analysis of the newest directions of providing IT-technologies, among which a special place is occupied by:

- security of critical assets. Critical object – an object that has a significant effect on national security, the suspension or disruption of which leads to an emergency or significant adverse effects on the defense, security, international relations, economy, other economic or infrastructure of the country, or for the life of the population living in the respective territory for a long period of time. The specified direction includes the development and implementation of critical systems security systems;
- development of cyber weapons. Unlike, the first direction, it is the creation and implementation of «attack» systems, including addressing infrastructure, staffing, legislative and other tasks. These include developments similar to those of Ntrepid (the essence of their solution is to manipulate discussions on social networks);
- cloud security. In this area there are many unresolved issues in the field, among them: regulatory regulation, technical support, development of new information security, organizational interaction. Regulation of information security in the cloud and ensuring data security should become one of the most important areas of information security development for the corporate sector in the near future;
- voluntary certification in the field of information security and new tools of «trust» Existing certification systems do not meet current market needs. An alternative certification system is required. New tools of trust can be included here. Corporate market experts point out that the state certification system does not solve all the tasks of the business. Engineering and technical protection of companies'

information networks requires the use of other software than recommended ones, and their evaluation system is not within the competence of state institutions. The development of voluntary certification systems is needed;

- counteracting financial fraud. Security of electronic money is in general. Phishing and other fraudulent methods of debiting payment cards have become a daily reality. Banking information systems constantly suffer from hacking attacks. The development of information security in the financial sphere is relevant for both banks and companies wishing to further secure the assets and arrays of confidential information containing the archive of financial transactions. The same measures, hardware can be used to protect e-commerce. Threats include: protection of remote access channels, traffic of financial confidential information transmission; create a trusted environment on client hardware using TrustScreen or Mac tokens developing and implementing anti-theft fraud processes; monitoring of all transactions that among hundreds of thousands go through the banking system of transactions can detect fraudulent;

- information security of cryptocurrencies, tokens and smart contracts. Cryptocurrency mining is a daily occurrence. Tokens are produced by both farms and game projects. At the same time, there is no national regulation of the sphere. The broad development of this area requires parallel development and remedies. While most electronic wallets are abroad, but with the development of a national infrastructure, protecting information in the field of electronic assets will become an essential need;

- protection of personal data. Recently, gadgets, applications and services are increasingly involved in everyday human life. This, in turn, leads to the fact that more and more personal data is being managed by these applications and services. And the most important trend right now is protecting this data. Experience shows that even large companies have serious problems with ensuring adequate data security for users. Given that the smartphone and tablet for humans have almost completely replaced the desktop computer, more attention should be paid to the protection and security of mobile applications;

- information security management automation systems. The development of automation tools for risk management, documentation management, in other words, the development of software products that will facilitate the operation of the management system. Market for automation of information security management systems. Experts studying the market for SIEM and DLP systems often note that their archives and systems themselves are protected from external attack rather poorly, especially if some of their components are hosted in a virtual environment. This raises the need for security systems to be developed for automated information security systems, their archives, workflows and traffic. In addition to software protection, the market needs products that will simplify information security management;

- comprehensive security of medical systems. Actively develops in the West,

within medical systems development companies;

- mobile security. Although applied, it is necessary to highlight it as a trend;

- virtualization protection. A new direction, but there is virtually no market for virtualization protection in Ukraine;

- ensuring the reliability of information in global information systems. This trend is only developing, but in a situation where most of the information in the analysis of various objects and phenomena is taken from the Internet, the question of their reliability becomes relevant. It is necessary to put into practice the widespread display of such a property of safety as failure-free, and to use the capabilities of electronic intelligence to verify the reliability of the data. Regular monitoring of new directions of development of the electronic world and economy gives rise to new directions for the development of technologies in the field of information security, with the protection of the interests of the individual, society and the state should be at the heart of all developments;

- the tendency to use E2E encryption (when even the development company cannot decrypt user data) is now visible not only in messengers. Now it is used in cloud file repositories, backup systems, etc;

- protecting and enhancing application reliability have always been a trend. Now even new ways to build a user interface, such as SwiftUI and Jetpack Compose, will be relevant, as these solutions reduce the number of errors and therefore make the application more reliable [2, 5, 6, 7, 8, 9, 10 11].

Regular monitoring of new directions in the development of the electronic world, and the economy also gives rise to new directions for the development of technologies in the field of information security technology, while all developments should be based on the protection of the interests of individuals, society and the state.

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PROSPECTS FOR THE DEVELOPMENT OF WIND ENERGY AND WAYS OF SOLVING THE PROBLEMS OF FINANCIAL SUPPORT OF THE INDUSTRY IN UKRAINE

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Despite the prospects for the development of the world economy and business, in recent years the demand for electricity has been growing and the search for affordable and cheaper sources of energy necessary for the use in various sectors of the economy remains an acute problem.

The exacerbation of the problem of using traditional energy sources necessitates the development of energy through the introduction of financially sound, energy efficient and environmentally friendly technologies.

An important criterion for the sustainable development of the world energy industry has recently been the search for new and improved existing technologies, bringing them to a cost-effective level and expanding their use. Therefore, the introduction of so-called alternative, unconventional and renewable energy sources can change the structure of energy production and consumption, create environmentally friendly energy systems. One of the sources of energy saving is wind power. It is an alternative energy industry that specializes in converting wind kinetic energy into electrical energy. It is a high-tech, cost-effective and environmentally-friendly energy industry based on the use of renewable energy to address one of the most critical human problems - the abiding struggle for energy and at the same time reducing the negative impact on the environment. The prospects for wind power as a business are, in addition to the high return on capital expenditures, the enormous potential wind energy potential in certain territories.

As wind power is based on the conversion of the kinetic energy of the air mass into the atmosphere into electrical, mechanical, thermal or other usable types of energy, modern scientists are increasingly focusing their efforts on solving the problems associated with the widespread use of wind energy.

The total wind energy potential of the Earth is enormous: according to authoritative expert estimates, it is about 1200 GW. However, the real exploitation of this potential faces a number of difficulties caused by the uneven distribution of it in different regions of the globe, as well as by the large losses in its transformation into other types of energy. The Global Wind Energy Council (GWEC) reports that over 54.6 GW of wind power has been built in the world in recent years. Today, the known capacity of wind-based objects is 486.7 GW [1].

Basic countries at the market of world wind energy is China, USA, Germany and India, that totally produce 72% of world power of wind electric energy. China attained considerable general power of wind energy and crossed for today a mark in 100 GW. In the USA the wind energy objects on general power constitute over 8,2 GW. It is though not a record, but is ponderable enough index. In the EU over 12,5 GW of powers was put into an operation. Here from 2012 there is approximately an identical level of annual connections of new wind energy objects. It is said in the report of GWEC that India set a national record, entering 3612 GW, and total power of windy power-stations in a country attained 28,7 GW (fourth in the world of wind energetics). In 2022 it is planned to achieve 60 GW of power of wind energy [2].

Wind energetics is growing into the key power sector in Europe. During many years it occupies the first place in the EU according to the sizes of net increase of generating powers. From data of the European association of wind energetics (European Wind Energy Association – EWEA) part of wind energetics presented greater power, than any other form of production of alternative electric power in

the EU in 2018 and constitutes 48%. Wind power presents 18,8% in the EU from the total power production of electricity. At the same time, in Ukraine part of wind energy presents only 0,57% from the general amount of electric power that is produced in a country (fig.1).

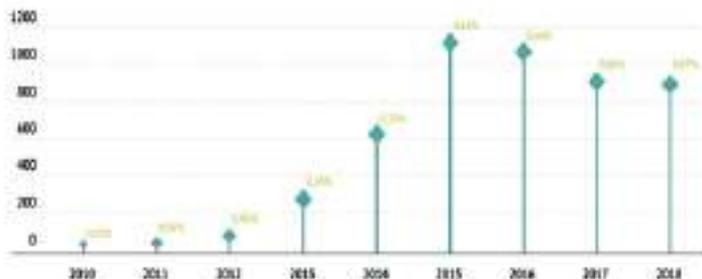


Fig. 1. Electricity production by wind power plants in Ukraine.
Share in total electricity production, Million kWh

This fact testifies to enormous potential of industry and perspective direction for attracting investments.

In fact, in Europe 2018 became a record year for financing of new capacities. On the whole projects have attracted investments on a production 16,7 GW of electric power. Financing has grown in comparison with 2017 on 20% to 26,7 billion Euro and on 45% in comparison with 2017 and on 62% in comparison with 2016.

Ukraine is able to use effectively wind power in definite zones at average annual speed of wind over 4-5 m/sec. Such speeds are sufficient for building wind electric stations (WES).

At the same time, there are also the positives in wind energetics in Ukraine. For the last 3 years in the Kherson area, due to the successive actions of Government and perfection of legislative base, about 700 million euro is attracted in the Ukrainian «green» projects. Almost 400 million euro is inlaid in introduction 1670 MW of new thermal powers which use alternative energy sources. About 300 million euro is directed by business on establishment of 278 GW of powers of the renewable electric energy objects. As for January, 1, 2019 the capacity of alternative energy objects, that work on a green tariff, in the Kherson area exceeded 105 MW. 40 GW from them were put into operation in 2017. In a prospect power of BEC must grow to 140 MW. Company Windcraft – Ukraine already exploits three wind power-stations on Kherson with the total power 70 GW [5].

The Chinese company TBEA (Tebian Electric Apparatus) is planning to build the wind power station in the Mykolaiv region. The project will cost \$ 500 mln. and the station will be able to produce 500 GW [6].

The Old Sambir-1 project, the most powerful wind power station (13.2 MW) on the territory of the Ukrainian Carpathians is being implemented jointly with the

European Bank for Reconstruction and Development and the World Bank's Clean Technology Fund. The cost of the project is \$ 20.5 million. [7].

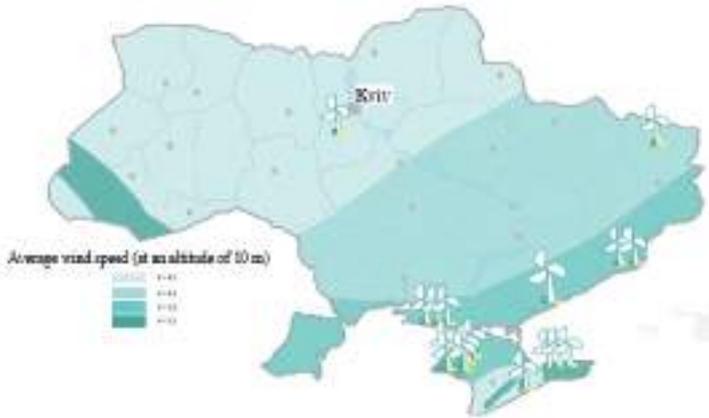


Fig.2. General description of wind streams on territory of Ukraine

The problem with wind power is competition with conventional sources of cost-based generation. Depending on how much the wind energy is, a wind farm may not be competitive in value. Despite the fact that the cost of wind power has fallen sharply over the last 10 years, the technology requires higher initial investment than fossil fuel generators [8, p. 45-46]. Good wind areas are often located in remote locations, far from cities where electricity is needed. Power lines must be built to bring electricity from the wind farm to the city. However, the construction of several of the proposed transmission lines can significantly reduce the cost of wind power expansion.

Wind resource development may not be the most beneficial use of land. A site suitable for installing wind turbines should compete with alternative land uses that may be more highly valued than electricity generation. Turbines can cause noise and aesthetic pollution. Although wind power plants have relatively little environmental impact compared to conventional power plants, there is concern about the noise generated by the turbine blades and the visual effects on the landscape. Turbine blades can damage local wildlife. The birds die when they get into the turbine blades. Most of these problems have been solved or significantly reduced due to technological development and the proper placement of wind installations.

The important feature of wind energetics is pointlessness of connection of wind power plants to the single power system, as such connection promotes the risks of destabilization of the single power system [9, p. 40]. As energy from wind power-stations is for sale at fixed price during the protracted period of time (for example, more than 20 years), and wind fuel is free of charge, wind power reduces a vagueness in a price, connected with the fact that charges on a fuel add energies to

the traditional sources [10, p.150-152].

It is much more expensive to produce electric power with the use of wind, than electric power from ordinary sources, such as nuclear and thermal energy. It means that a subsidy must be given to the production of wind power in the form of favorable tariff rates. Power of wind is unstable, because winds are unforeseeable and out-of-control. It can result in large vibrations on an exit and can even stop wind turbines. However, for the decision of fragmentation problem of the renewable energy sources network operators are used, connected with other sources, such as sun energy [11, p. 15-17].

Not only does wind power affect the local structure of energy supply and reduce environmental pollution, it also makes a real contribution to economic development and increased job creation. Currently, wind energy technology includes increasing autonomous power, changes in the blade, increasing tower height, direct drive and hybrid drive technology, control and monitoring technology that continue to improve [13, p. 325-326].

It should be noted that during the implementation of energy efficiency measures, barriers may arise which cause difficulties in implementing the above measures. Barriers to energy efficiency projects are divided into three groups [12]: structural barriers; financial barriers; behavioral barriers.

Let's consider existing financing programs in the field of alternative energy. The main financial institutions, organizations and funds that provide loans and finance energy-saving projects in Ukraine include national and foreign sources of funding such as Ukrainian banks, the World Bank, the European Bank for Reconstruction and Development; foreign financial corporations, foundations and agencies of international cooperation and development.

1. Ukraine's Alternative Energy Financing Program.

The Alternative Energy Financing Program in Ukraine (USELF) is a credit facility of up to EUR 50 million opened by the European Bank for Reconstruction and Development (EBRD) to facilitate the implementation of renewable energy projects in Ukraine. The USELF provides loans and assistance in the development of projects that meet the financial, technical and environmental criteria of the program. In addition, Clean Technology Fund, part of Climate Investment Funds, is providing additional funding of € 20 million. The USELF structure provides financing for small and medium-sized projects directly from the EBRD under a simplified and accelerated loan facility that reduces operating costs. The program provides financing for all forms of electricity production from renewable sources, such as: water, wind, biomass and solar energy.

2. Program of Innovative vouchers.

Innovative vouchers are a financial instrument that allows to the Ukrainian companies to finance introduction of climatic innovations. Innovative vouchers can be used by different companies - from the developers of climatic technologies to those, who want them to use for reduction of influence an environment or reduction

of consumption of energy. This money is not a loan or credit. In 2019-2020 within the framework of the program of the Innovative vouchers a 1 million euro will be used. On the whole within the framework of the program it is planned to support 50 Ukrainian companies. The program will be realized in Ukraine by the European Bank of Reconstruction and Development.

The vouchers of two categories are offered:

- voucher up to 20000 euro (most companies that will win in a competition will get the Innovative vouchers with the average sum of sponsorship from the side of EBRD in a size up to 20000 euro);
- mega - voucher up to 50000 euro (for companies with projects, that have potential to become a breakthrough, 5 mega-vouchers are offered in a size up to 50000 euro).

3. Government credit programs.

Amount of the Ukrainian banks that work on the national credit programs in the sphere of energy efficiency and credit products offer for Association of co-owners of apartment building and other legal entities is not big.

It is possible to take the following banks: Ukrgasbank, Privatbank, Oshchadbank. UkreEximBank Raiffeisen Bank Aval.

4. The program of crediting of Ukraine is in priority branch directions from the German-Ukrainian fund (GUF).

Priority industries for investment credits on the program is agriculture, processing industry, projects in the sphere of energy efficiency and renewable energy and others. Enterprises with the number of workers not more than 250 persons and by annual earnings not more than 10 million euros in an equivalent will be able to take advantage of credit on the program for the physical entities, businessmen, that conduct activity not less than 3 years, have profit for the last 4 quarters in succession and positive credit history in a bank not less than 12 months, and also not belong to the large companies. Maximal term of investment credit – 6 years, and to the credit on 6, and to the credit on addition to the turnover means – 2 years. A maximal size of credit is 100000 euros.

5. Grant support of projects of energy efficiency (E5P fund).

Grant support is the projects realization of energy efficiency stimulation instrument. E5P is the multilateral donor fund founded in Sweden in 2009. The general budget of fund presents a 168 million euro, besides up to the 65% of budget is allocated on projects that will be realized in Ukraine. Other parts are divided among Georgia, Armenia and Moldova. In 2020 according to the program will allocated 60 million euro on realization of projects energy efficiency in Ukraine.

6. Sponsorship of State Finance Institution for Innovations.

This establishment was created according to resolution of Cabinet of Ministers of Ukraine from 13.04.2000 № 654. The aim of activity of State Finance Institution for Innovations is realization of sponsorship of different objects with different forms of property ownership within the framework of public innovative policy. The main

directions of financing are:

- IT technologies;
- bio developments;
- transport;
- aviation;
- energetics;
- innovations.

The most actual in Ukraine is bringing in of money from outsourcing, conditioned by actual absence of the free personal funds at enterprises and organizations. Possibilities of introduction of the main programs of wind energetics development and mechanisms of attracting money are defined by us in energy efficient projects that presently function in Ukraine and have the opportunity to be carried out in the future. The main condition of successful realization of projects on an energy-savings are a timeliness and sufficiency of bringing in money of investors, in fact development and further activity of wind energy of Ukraine need considerable financial inflowing. Each of the analyzed financial instruments is working and already implemented on the territory of Ukraine and can be used for bringing in financial resources for introduction of wind energetics projects.

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NATURAL SELF-SUFFICIENCY SECTOR AS AN ELEMENT OF THE SHADOW ECONOMY OF UKRAINE

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In the context of the global financial and economic crisis, the issue of the shadow economy is one of the most important for Ukraine as well as for other countries today. Such types of shadow activity as corruption, financial fraud (fraud), terrorist financing can be unequivocally attributed to the world's problems.

Corruption is the use by persons, named and listed in the relevant normative act, of the given authorities or related opportunities for the purpose of obtaining an undue benefit or accepting such benefit or accepting a promise/ offer of such benefit to themselves or other persons or a promise/ offer accordingly or the provision of the illegal benefit to such person or at their request to another natural or legal person with a view to persuading that person to abuse their authority or related possibilities [1].

Fraud is the seizure of the other people's property or the acquisition of the right to property by fraud or abuse of trust. Fraud is a criminal offense punishable by the Criminal Code of Ukraine [2].

Terrorist financing is providing or collecting assets of any kind with the knowledge that they will be used in whole or in part by a terrorist or a terrorist organization for the organization, preparation and commission of a terrorist act, designated by the Criminal Code of Ukraine (2341-14), engaging in a terrorist act, public calls for an act of terrorism, creation of a terrorist group or a terrorist

organization, promotion of an act of terrorism, any other terrorist activities, as well as the attempts to implement such actions [3].

For Ukraine, the question of the formation of a shadow economy is quite relevant. In economics, the problem of assessing the level of the shadow (informal) sector of the state and industry is also very acute.

In order to assess the level of the shadow economy in the national economy as a whole, and by individual types of the economic activity, the calculation is carried out on the basis of the Methodological recommendations for the calculation of the level of the shadow economy on 18.02.2009, No. 123 [4].

According to the abovementioned Methodological Recommendations, the calculation of the level of the shadow economy is carried out by the methods of direct and indirect assessment (at micro and macro levels).

We apply one of the direct methods of calculating the level of the shadow economy of Ukraine, such as the method of “expenditures of the population – retail turnover».

The calculation of the level of the illegal economy according to the method of «expenditures of the population – retail turnover» implies establishing the fact of the predominance of consumer spending of monetary nature, which is connected to the purchase of goods over the total sales of goods to the population of all economic entities in the legal sector of the economy.

This method is direct and is used to calculate the macroeconomic parameters of the shadow economy, which influence the macroeconomic indicators of the country's development (GDP, GDP index, resident population, consumer price index (inflation rate), unemployment rate and others).

In the Methodological recommendations mentioned, the activities of households to produce goods of their own production for their own needs or the needs of their family members (the natural self-sufficiency sector) are not considered a shadow economy.

Household is a subject of economic activity related to housekeeping, i.e. mainly to consumption [5].

However, this is not the case, since it is the households (natural self-sufficiency sector) that generate significant income from their activities (an example is that of poultry farming through the creation of incubators).

This method of poultry farming is hardly calculated anywhere. Raising poultry reaches about 1000 birds (and in season, this number from one farm can be bigger).

If you calculate the amount of income from the sale of the mentioned number of birds, it appears to be approximately 300,000 UAH in 2019. Similar households do not pay taxes, and therefore the state receives less income than due.

The magnitude of tax losses from personal household income for the budget can only be determined expertly.

Household expenditure data are obtained through an elective survey of household living conditions on a voluntary basis, and data on total sales of goods produced by all economic entities – through statistical reporting (mandatory data).

Consumer household monetary expenditures on the purchase of goods and

services in the period under review ($E_{cons\ month}$) are defined as the product of the sum of consumer monetary expenditures on average per household per month for the purchase of goods ($E_{mon\ goods\ 1\ house\ /\ month\ t}$) and the purchase of services ($E_{mon\ serv\ 1\ house\ /\ month\ t}$), the number of households ($N_{house\ t}$) and the number of months in the period under review.

As a result of applying different methods to obtain input for calculating the shadow economy using the “expenditures of the population – retail turnover” method, household consumer monetary expenditures on the purchase of goods in the analyzed period ($E_{mon\ goods\ t}$) are adjusted by a coefficient ($C_{adj\ t}$) determined by the following formula:

$$C_{adj\ t} = \frac{EP_t - Tr_{soc\ t} - CP_{self-prod\ t}}{E_{cons\ month}}$$

where EP_t – expenditures of the population on the purchase of goods and services in the period under review (mln. hrn);

$Tr_{soc\ t}$ – social transfers in the period under review (mln. hrn);

$CP_{self-prod\ t}$ – value of consumed products obtained from the personal subsidiary plot and self-production during the analyzed period (mln. hrn).

The adjusted consumer monetary expenditures of households on the purchase of goods in the analyzed period ($E_{mon\ goods\ adj\ t}$) are determined by the following formula:

$$E_{mon\ goods\ adj\ t} = E_{mon\ goods\ t} \times C_{adj\ t}$$

where $E_{mon\ goods\ t}$ – consumer monetary expenditures of households to purchase goods in the period under review (mln. hrn).

The total sales of goods to the population by all economic entities in the legal sector of economy ($S_{ent\ l.s.t}$) are determined by the following formula:

$$S_{ent\ l.s.t} = RT_{enter\ t} + RT_{ind\ t}$$

where $RT_{enter\ t}$ – volume of the retail turnover of enterprises engaged in retail trade and restaurant business in the analyzed period (mln. hrn);

$RT_{ind\ t}$ – sales volume (of work, services) in current prices of individual entrepreneurs in the analyzed period (mln. hrn).

The level of the shadow economy according to the method of «expenditures of population – retail turnover» in the period under review ($SE_{EP_RT t}$) is determined by the following formula:

$$SE_{EP_RT t} = \frac{E_{mon\ goods\ adj\ t} - S_{ent\ l.s.t}}{S_{ent\ l.s.t}} \times 100$$

where $E_{mon\ goods\ adj\ t}$ – adjusted consumer monetary expenditures of households to purchase goods during the analyzed period (mln. hrn);

$\Pi_{ent\ l.s.t}$ – total sales of goods to the population by all types of economic entities in the legal sector of economy during the analyzed period (mln. hrn).

Table 1

Calculation of the level of shadow economy of Ukraine in 2018.

Figures	2018
Number of households ($N_{house\ t}$), thous.	14934,9
Consumer monetary expenditures on purchasing goods for an average of 1 household per month ($E_{t\ mon\ goods\ 1\ house / month}$), hrn	7643.91
Consumer monetary expenditures on purchasing services for an average of 1 household per month ($E_{t\ mon\ serv\ 1\ house / month}$), hrn	664.69
Value of the consumed products, obtained from a personal subsidiary plot and from self-procurement per 1 household per month ($CP_{t\ self - prod\ 1\ house / month}$), hrn	376,36
Value of the consumed products, obtained from a personal subsidiary plot and self-procurement, cumulatively ($CP_{self - prod\ t}$), hrn	67450034,85
Social transfers in kind ($Tr_{soc\ t}$)	439142
Expenditures of the population on the purchase of goods and services according to the balance of income of the population (EP_t)	2870156
Volume of the retail turnover of enterprises operating with retail and restaurant sector ($RT_{enter\ t}$), mln. hrn	668,4
Sales volume (of works, services) in current prices of individual entrepreneurs ($RT_{ind.t}$)	760755,0

Figures and calculation of the level of the shadow economy of Ukraine by the method of «expenditures of the population – retail turnover» are given in table 1.

Let's calculate the level of the shadow economy of Ukraine.

The level of the shadow economy according to the method of «expenditures of the population – retail turnover» in the analyzed period is determined by the following formula:

$$SEEP_RT2018 = 64029464.83 - 761424.4 / 761424.4 = 83.1 \%$$

Having calculated the level of the shadow economy by the method of «expenditures of the population – retail turnover» it can be stated that its level is 83.1 %.

Therefore, the nature of relations between society and government can be judged on the level of the shadow economy.

If taxes are not paid by the few, it is a deviation, but if it is a mass phenomenon, it is a manifestation of systemic problems. Therefore, measuring the shadow economy can indicate in what areas urgent solutions are needed to get business out of the shadow. That means, it is necessary to create a climate (political, economic, social, etc.) in the country to legalize the shadow sector of the economy, in particular, to ensure the elimination of state corrupt structures at all levels of government; simplifying the procedures for agreeing on the implementation of entrepreneurial activities in all areas etc.

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POPULATION SAFETY AND SUSTAINABLE DEVELOPMENT OF URBAN AND SUBURBAN TERRITORIES OF UKRAINE UNDER CLIMATE CHANGE

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The territory of Ukraine is characterized by moderate continental climate. In the western and north-western parts of Ukraine the climate is mild, with excessive moisture and moderate temperature conditions, in the eastern and southeastern deficiency of precipitation and somewhat elevated temperature background can be observed. Continentality of the climate increases from west to east. The narrow coastal zone of the Southern coast of Crimea is characterized by subtropical climate of the Mediterranean type. The climate of Ukraine is characterized by considerable variations due to the great range from north to south and from west to east, stretching from the areas under the influence of the north-western Atlantic to the interior of the continent. This means that the air temperature decreases not only from north to south but also from west to east [1].

Modern changes in the climate differ from region to region in the world. For Ukraine and its neighboring countries from north to south higher temperatures in summer and the shift in extremum temperatures have been fixed last decades [2, 3].

It is known that temperature fluctuations at different time periods are superimposed on centuries-old fluctuations in the climate. The share of current changes in temperature characteristics in the thermal regime of the Earth is from 0.17% (in the southern hemisphere) to 0.35% (in the northern hemisphere) [4]. The Earth's climate system is susceptible to small current changes in the thermal regime. The main causes of these changes are probably determined by changes in the Sun's activity, the greenhouse effect, heat exchange mechanisms and positive and negative feedbacks in the climate system. The main part of thermal energy (the basic part of the thermal regime) of the Earth's climatic system (from 99.65 % in the northern hemisphere, to 99.83 % in the southern hemisphere) is determined by the insolation and the greenhouse effect of the planet [4]. The characteristic of the basic component of the thermal regime is the insolation rate of near-surface air temperature (NSAT). The current changes in the NSAT (NSAT anomaly) in the interval covered by meteorological measurements differ a little from the climatic norm; however, the reasons for the NSAT anomaly need to be studied because of the sensitivity of the Earth's climate system to them.

Ukrainian scientists study the problem of climate changes in such aspects:

models for climate change prediction, reaction of agriculture on climate change, adaptation of water resources management to climate change etc.

Natural meteorological phenomena are the most dangerous manifestation of climate instability. Spontaneous meteorological phenomena (SMP) include very heavy rain, very strong snow, large hail, strong wind, floods, tornadoes, strong dust storms, strong blizzards, strong fog, heavy ice, strong sticking of wet snow, etc. According to the conclusions of the Fourth Assessment Report on Climate Change [6], Ukraine is not among the most vulnerable to the global warming of our planet's regions, however, as the results of the research show, the manifestation of climate change in Ukraine has already been observed and may continue over the next decades.

Significant place among the SMP in Ukraine holds strong wind (19 %) and the phenomena associated with it (flurry, tornado, dust storm). 398 strong winds happen during 1986-2010. Given all the wind activities in the complex (flurry, tornado, dust storm, strong blizzard (during the cold period)), during this period 830 cases were associated with a strong wind (27 % of the total number of natural phenomena) [7].

In winter heavy snowfall is often observed in Ukraine, which can lead to a malfunctioning of the communal economy, road and rail transport, breakdowns of transmission lines and communications, and the rhythm of work on construction sites.

Of course, there is a third scenario, which allows mitigating climate change and its negative consequences. This scenario requires a transition to 100% renewable energy, radical reduction in greenhouse gas emissions, the use of organic farming and reduction of livestock, forest and stepp ecosystem conservation, changes in the transportation system. Fossil fuel free Ukraine is possible on certain degree. Ukraine has a high potential in solar and wind energy sectors, as well as biomass of the second generation, which is enough to partially replace fossil fuels. Of course, we can not deny that by some business communities nuclear power is also regarded as a kind of alternative energy source that contributes to the reduction of greenhouse gas emissions (Ukraine has four operating nuclear power plants).

In Ukraine, there is now a concept for managing the risks of man-made and natural emergencies [10]. Climate change is not formally mentioned in it, but there are provisions that may well be applied in case of further changes:

- the principle of preventive action, which provides the maximum possible and timely detection of dangerous values of indicators of a state or a dangerous process that poses a threat of emergencies, and taking concrete measures aimed at neutralizing such a threat and minimizing its consequences:

- consideration of all factors influencing the amount of risks associated with the placement, construction and operation of potentially hazardous facilities, the creation of new equipment, technologies and materials;

- periodic adjustments to risk standards:

- priority is given to international cooperation in the field of risk management in

order to increase the effectiveness of preventing major emergencies and emerging threats. Combining the work of the civil protection systems of Ukraine and other states in order to solve the tasks of risk management is caused by the global nature of individual emergencies.

Effects of current climate change on agriculture, urban life and water supply in Ukraine.

Ukrainian agriculture has been evolving since the country became independent in 1991, with more than two thirds of the land now being used for farming. Winter wheat is the largest crop in terms of area, dominating 95 % of the agricultural land, with central and southern Ukraine being the key production zones. Roughly 5 % of grains and 10 % of potatoes, vegetables and forage crops in Ukraine are irrigated [11]. As summer temperatures rise and rainfall decreases, the need for irrigation may increase. One of the most serious problems of the impact of climate change on agricultural production will be the change in the length of the growing season of agricultural crops. With decreases in frost days predicted, winter wheat crops, which are particularly susceptible to frost damage, are more likely to survive in to spring.

It is projected that climate change, coupled with the benefits from new crop varieties and better technology, could increase crop yields in Ukraine. Still the potential for gain in Ukraine due to more favourable conditions for crops could be counterweighted by increased variability and extreme events. The increase of the length of the growing season will be effective for the agriculture of the northern part of Ukraine, whereas in the southern regions, due to an increase in the average annual temperature of 1-2°C, arid phenomena can increase considerably [2, 11].

The use of niche crops, especially with crop rotation, will help restore soil, damaged by adverse weather conditions and other environmental factors, and at the same time bring economic returns. Now for Ukraine it can be mustard, some varieties of flax, buckwheat, etc. Some crops may lose their niche as a result of popularizing, while reducing the level of marginality and vice versa. For the last fifty years, for example, rye and peas have evolved from widespread niche, while other crops, with a change in area of 2-25 times, have not lost their niche. Although the marginality, for example, of buckwheat, is constantly changing due to market demand and, accordingly, the area under such crops changes [12].

While Turkey and Belarus (Ukraine's neighbors in longitude) are less concerned about coming droughts for now [8, 9], it threatens to be one of the most negative affects of the rising average temperature for the south of Ukraine. It is likely that the country will suffer increased water stress over the 21st century as severe droughts, classified today as one in 100 year events, are projected to become more frequent. Given the increase in temperature and the virtually unchanged rainfall until 2030, the southern part of the country may become unfit for agriculture; in this case it will be appropriate to reorient these lands for industrial sites in the future.

There are 5 factors that primarily shape the climate of Ukraine:

- general circulation of the atmosphere;
- the latitudinal location;
- topography;
- distance to moisture sources (mainly to the North Atlantic);
- the seas in the South of Ukraine.

All these factors are static except for the general circulation of the atmosphere. Thus, changes in the climate are primarily caused by shifts in the circulation of the atmosphere, which depends from all the countries in the world, so it can't be controlled only by the local authorities.

Both for the stable functioning of agriculture and for the safety of cities will be important to be prepared for the increase in natural disasters. The manifestation of spontaneous meteorological phenomena can lead to interruptions in the normal operation of the city infrastructure, destruction and other negative consequences. Severe downpours or storms may cause damage to industrial facilities, which may result in accidental releases or discharges of pollutants into the environment, human casualties, or malfunctioning of urban infrastructure. The closer the company is to densely populated areas of the city, the more potentially dangerous can be the consequences of their destruction or damage to natural hydrometeorological phenomena. In addition, a strong wind can cause breakdowns of power lines and interruptions in electrical supply, damage to trees in the area (which, in turn, also leads to negative consequences) [2].

Potable water supply in Ukraine is 80 % secured from surface sources not protected from industrial pollution, and in some regions by almost 100 % [11]. The use of water from surface sources increases the probability of deterioration of its quality (discharges of sewage of enterprises, spread of infections) and/or reduction of the amount due to changes in the thermal regime of the air, reduction of rainfall, and, respectively, and river runoff. In conditions of prolonged droughts the runoff of rivers with surface water supply decreases.

The development of risk management plans and action plans for territories and individual settlements is now generally accepted [10]. The action plan may be developed by a working group consisting of representatives of the city administration, specialists of relevant services and non-governmental organizations. The largest number of measures should be aimed at minimizing those negative impacts of climate change to which city is most vulnerable. For each point of the plan of adaptation, the following must be specified: a responsible person from the working group (who implements this event, organizes its implementation or controls it), and an organization that is involved, if necessary, in cooperation (units of the Department of Hydrometeorology, organization of the health care system, municipal services of the city, rescue service of the sanitary service, units of the State Water Agency of Ukraine, etc.), also indicating the responsible person – the representative of the organization.

Green areas with tree plantations create shading of the territory and prevent

additional heating of the underlying surface and buildings. Open water and water objects – the so-called blue areas are important for balancing temperature in the city. Part of the cities and settlements in the south of Ukraine are next to the sea, the estuary or the river, which reduces the need for creating additional blue areas. However, it should be borne in mind that the combination of high temperature and humidity is also harmful to people's health, for which the hospitals should be prepared.

Measures to adapt the city or settlement to reduce the quantity and deterioration of drinking water quality must be thought out in advance, such as creating a system of emergency water supply for the population and strategic objects, establishing a strategic plan for drought and water distribution among consumers in a limited number, use of the plants adapted to arid conditions, etc. [14]. Active popularization of the adaptive measures to climate changes and water resources management is carried out by Global Water Partnership – Ukraine and Ukrainian Centre of Environmental and Water Projects.

Climate change adaptation can be perceived as a way to manage the risks presented by a changing climate. These risks can be treated similarly to other risks (engineering, financial, demographic political and such). Many managers and municipal decision-makers are accustomed with risk management. Risk management helps understand about risks. Vulnerability assessments help identify potential risks.

Trucking firms also are conducting weather monitoring, in some cases creating full-time positions for real-time monitoring of weather events throughout a firm's network. This increases the ability of transport companies to quickly redirect traffic in response to traffic problems. Local governments also provide monitoring services to study traffic flow. What else may be relevant for borrowing in the south of Ukraine – Canadian transport experience, when truckers adapt to more frequent high winds by choosing single trailer loads rather than doubles more often to reduce the potential for blow-over. The Government of Manitoba is also reviewing its approach to water control on roadways to maintain traffic flow during extreme rainfall. Adaptation strategies under consideration include: the use of larger drains and culverts; larger bridges capable of withstanding intense precipitation; the use of more appropriate erosion-control mechanisms; and, installing devices capable of monitoring bridge scour in real time during significant floods [12].

Climate change is inevitable in nature conservation areas. Local governments of such territories should take active measures to minimize the negative impact on the climate right now. Since many coastal areas are densely populated, such measures should be taken in close cooperation with people who live inside or close to conservation areas, including communities of fishermen and tour operators.

As a result of changes in temperature and precipitation, diseases that were previously not characteristic of these ecosystems may become habitual. In addition to threatening people and wildlife, the spread of disease destabilizes trade and

causes significant economic damage. The best defense against these diseases is to study how these diseases spread, so that professionals can prepare to fight them, because now there is no doubt that increasing temperatures and changing rainfall will contribute to changing the spread of dangerous pathogens. The health of wild animals is closely related to the state of the ecosystems of which they are a part; therefore, monitoring the health of wild animals will help prevent outbreaks of dangerous diseases and prepare for the possibility of their occurrence.

To prepare for climate change, it is important to involve scientists. Current projects of the Ministry of Education and Science of Ukraine show this trend. Thus, within the framework of the «Joint Scientific Projects» competition of the Ministry of Education and Science of Ukraine and the US Civilian Research and Development Foundation, four Ukrainian-American projects will be funded in 2018-2019 [18]. The winners will conduct fundamental and applied research in the field of agrarian sciences and biotechnology. Thus a project was adopted for winter cover crops, which was jointly conducted by the Institute of Bioenergetic Cultures and Sugar Beet of the National Academy of Sciences of Ukraine and the Virginia Polytechnic Institute and the State University; the project on the utilization of pesticides of the Kiev National University named after Shevchenko and Syracuse University; The project on genome editing, implemented by the Institute of Food Biotechnology and Genomics of the National Academy of Sciences of Ukraine and the University of Nebraska-Lincoln, and a project on soil quality and productivity of agricultural crops of the Institute of Water Problems and Melioration of the National Academy of Sciences of Ukraine and the University of Ohio.

Conclusion and suggestions. 1. Changes that will be observed on the territory of Ukraine during the current century can be very significant and will affect all areas of human life and the state of the environment. Taking appropriate immediate measures as well as farther monitoring local climate factors will help to prevent climate change, which is important as it will particularly affect the most vulnerable regions, in particular, the southern region. Plans to protect the population of cities and villages should be thought out in advance.

2. In order to minimize the impact of climate change on agricultural production, the focus should be on adaptation measures such as: development of agricultural systems with increased soil protection and moisture-saving qualities, the use of resource-saving technologies and mechanisms; the use of varieties of agricultural crops with a short vegetative period, resistant to diseases, pests and droughts, weather fluctuations and zonal specialization; carrying out measures to preserve the soil fertility, protect them from processes of water and wind erosion, salinization, flooding and other degradation processes; development and implementation of integrated plant protection systems from pests, weeds, frosts, droughts, etc.; development and implementation of energy, water and resource-saving technologies for integrated land reclamation, restoration and expansion of irrigation in accordance with predicted climate change.

3. Development and improvement of mechanisms of functioning of insurance, seed, and feed and food funds as a basis for minimizing losses from natural phenomena; development and implementation of insurance policies against adverse natural conditions will help reduce economic risks in agriculture. The use of niche crops, especially with crop rotation, will help restore soil, and at the same time bring economic returns. Simultaneously with the work to prevent the negative consequences of the climate of the rural economy it is necessary to use positive changes. Thus, in central Ukraine, it may become possible to grow crops and fruits, which were previously considered exclusively southern.

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AGRARIAN SECTOR AS A FACTOR OF ENSURING NATIONAL FOOD SECURITY

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Food is the first human vital need. It can be considered as one of country's production resources. Therefore, quality and quantity of food products determine the state of the population health or capacity of human resources to become more efficient. If effective agricultural policy is not conducted the population health deteriorates, absolute number of active population decreases, productivity in all sectors of the economy reduces. The first effect, profit or loss from pursuing agrarian policy is supporting health as a basis of functioning national economy [7].

Today the issues of forming up the system of agricultural products' quality and safety and creating high efficient agrarian market infrastructure, which can create conditions for reliable resource supply and marketing of agricultural products, are important for the agrarian sector [2, p. 31].

However, the question, concerning the possibility of satisfying the requirements of constantly increasing population in food and other agricultural goods having available resources and the present level of technological development is still open [3, p. 136].

The analysis of scientific studies devoted to the problems of food security enabled to determine its levels (fig. 1).

The identification of real or potential threats must become the basis for determining priorities in the system of ensuring country's food security, which must also not be stable, but have to be reviewed and changed depending on a particular situation.

However, during the present time a complex of new phenomena, which

previously had not been taken into account and which is now identifying modern tendencies in food production and consumption, became apparent, along with traditional factors.

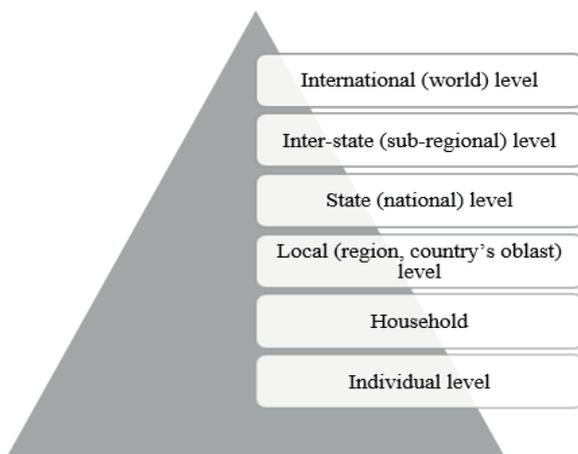


Fig. 1. The hierarchy of food security levels
Source: 1 and supplemented by the author

These factors are diverse in nature, posing threat to food security, or, on the contrary, creating new opportunities to overcome it (fig. 2).

Strengthening land concentration in the hands of single owner, which aggravates the problem of monopolizing separate segments of agrarian market, creates the risks of artificial deficit, deteriorates the state of the market and causes «price deal» on food markets, is significant challenge to food security of Ukraine. Such land concentration also creates prerequisites for violating fundamental bases of fair competition and increases the risks of uncontrolled using agricultural lands [5].

Taking into account the world tendencies and directions of the Common agrarian policy of the EU, it is evident that organic products' manufacturing is topical for Ukraine. It is especially important for small agrarian enterprises, which cannot compete with large integrated structures in highly profitable areas of agrarian production. A low share of organic products' manufacturing by small agrarian enterprises and private farms is stipulated by limited financial resources for certification, insufficient information for manufacturers concerning production technology and certification process, the absence of access to selling channels, in particular, organic products' export. Manufacturing organic products of labor-intensive agricultural sectors, including livestock farming, vegetable, berry growing products is almost absent in Ukraine [6].

Thus, the formation of competitive agrarian sector is extremely essential

and priority task for the country's Government. The importance of competitive advantages of the national agrarian enterprises increases with the development of European integration processes.

Food security	strengthening the effect of climatic changes and natural disasters
	increasing global demand on food as the average level of food consumption per capita continues to grow
	changing diet in quickly developing countries
	increasing the number of people suffering from obesity, the percentage of whom on all continents, except Africa, exceeds the number of starving persons
	reconsidering approaches to healthy nutrition
	rapid spreading diseases connected with food
	increasing requirements to food products' safety
	considerable decreasing the share of agriculture's contribution to final food products
	increasing the volumes of organic products' manufacturing
	developing infrastructure and logistics in agriculture
	rapid developing and introducing innovative technologies in agrarian production

Fig. 2. Factors affecting food security of the national economy
Source 4

An important indicator of food security formation of any country is its index. The index includes 34 quantitative and qualitative indices, which «measure» the level of country's food security. Country's rating is formed as a result of analyzing index components made on the basis on such components as economic, physical accessibility, quality and safety of food. According to the data presented below Ukraine, having significant agrarian potential, is behind as to the rating and integral index components from reference states – the nearest neighbors and competitors (fig. 3).

It should be mentioned that the estimation of food security index and determining

the country's rating was conducted according to data of 113 countries. As for Ukraine, in 2016-2018 the country was the 63d, however in 2019 it lost its positions significantly in comparison with 2012 and other years of the specified time interval, and at present it is the 76th among the studied countries.

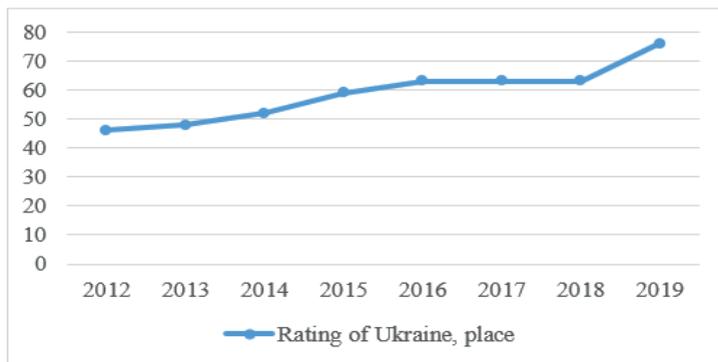


Fig. 3 Rating of Ukraine in the system of the global food security, 2012-2019
Source: 7

According to the place in the country's rating in terms of food security level the sum of points is determined (fig. 4).

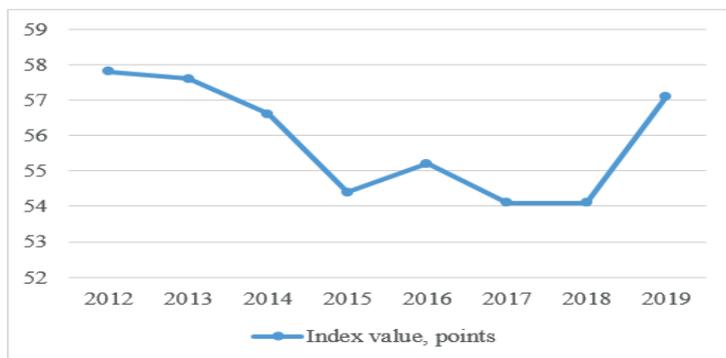


Fig. 4. The value of food security index, 2012-2019
Source: 7

Taking into account the world tendencies and directions of the EU, the agrarian sector of Ukraine has to be aimed at manufacturing competitive products, in particular organic ones, which is possible having effective Government support of small economic units that are the basis of sustainable rural territories' development and increase of food security level [8].

Under present economic conditions of Ukraine's integration in external markets it is particularly important to increase the competitiveness of the national sectors, which manufacture food products and other consumer goods. The formation of state reserves of agricultural raw materials and food in the amounts, which enable to maintain sustainable food supply at the regulatory level, and also the reserve of deficit food products and guarantee the performance of export supplies, is an important factor ensuring food security.

The current state of Ukraine's economy determines particular relevance of the state's activity to ensure food security. Moreover, purposeful activity of our country in this field is necessary.

Thus, the formation of competitive agrarian sector is extremely important and priority task for the country's Government. The significance of competitive advantages of the national agrarian enterprises increases with the development of European integration processes. Under the present conditions, the issues of agrarian enterprise's resource potential are extremely topical, and the environmentalism of agricultural production in the context of sustainable development is a priority task for successful functioning of agrarian sector of the national economy by singling out labor, land and marketing potential in exceptional component.

Efficient using fertility capital of the Earth has to play a major role in maintaining and increasing prosperity in Ukraine.

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ANALYSIS OF THE CYBER SECURITY POLICY OF UKRAINE

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The issue of cybersecurity is increasingly often discussed at both national and international levels. Research findings from the publications indicate that nowadays most of the powerful countries in the world (NATO, USA, Russia, China, India and others) are in the process of transforming their own military capabilities having regard to opportunities of Internet use [1-3]. At the same time, cyberspace is gradually becoming a separate area of warfare activity, along with the traditional «Earth», «Air», «Sea» and «Space», in which the specialized cyber units of many countries of the world are increasingly active [4].

A special aspect of cyberspace, as the area of warfare space, is associated with the total digitization of both armaments and critical infrastructure of life support facilities. These realities have both a purely technological component and a human component: personal computers and smartphones of military personnel, computer equipment for navigating various drones, such as aircraft one; use of Supervisory control and data acquisition (SCADA) technologies; use of information and communication (ICT) technologies in all types of weapons – armored combat vehicles, planes, ships, missiles and even hand-carried weapons. The dependence of military technology on ICT increases each year, and therefore, the interchange of data between military ICT devices is an element of common cyberspace.

According to McAfee's CEO, released at the World Economic Forum in Davos in 2014, more than 20 countries have actually carried out various cyber operations in 2013-2014. Special units have been set up for: reconnaissance in network, protection of own networks, blocking and «crash» of enemy structures. According to official statements, such units have been established in the United States, the United Kingdom (under the UK government), Germany, Australia, India and other countries. NATO, the leading international security organization, also takes an active role in cyber threat countermeasures.

The level of concern of the world's leading powers in the field of cybersecurity is evidenced by the desire to regulate the possibility of recognizing cyberattacks as an «act of war» of international standing. For example, in June 2013, an expert

group led by M. Albright proposed to interpret the large-scale cyber-attacks as cases falling under Article 5 of the North Atlantic Treaty and considered to be the attacks on all members of the Alliance. Such a position of NATO is also reflected in the new NATO Strategic Concept including the proposal to enhance NATO's organizational and military capabilities to counter cyber-attacks.

At the moment, in the context of the «hybrid aggression» of the Russian Federation, Ukraine has faced a critical situation, where the priority of national security is to ensure military security and defense of the state [5].

NATO defines hybrid warfare as a situation where a wide range of overt and covert military, paramilitary, and civilian measures are employed in a highly integrated design. One prominent leading theorist of hybrid warfare is F.G. Hoffman. Hoffman defines hybrid threat as, «Any adversary that simultaneously and adaptively employs a fused mix of conventional weapons, irregular tactics, terrorism, and criminal behavior in the battle space to obtain their political objectives» [6]. Hybrid war is a mixture of classic warfare with the use of irregular armed formations [7]. However, there are multiple diverse definitions for the same terms in different sources.

At present, the document defining the concrete content and practical mechanisms of the state's policy on ensuring military security is the Military Doctrine of Ukraine. However, the Law of Ukraine «On Organization of Defense Planning» defines the need to develop a Military Security Strategy as well, which is intended to determine the directions of prevention and neutralization of real and potential threats to the national security of Ukraine in the military sphere [8-9].

The military doctrine of Ukraine is a system of views on the causes, nature and spectrum of modern military conflicts, principles and ways of preventing their emergence, preparation of the state for a possible military conflict, as well as the use of military force to protect state sovereignty, territorial integrity and other important national interests [10].

Pursuant to the Constitution, Laws of Ukraine, National Security Strategy of Ukraine and the Military Doctrine of Ukraine, the Concept of Development of the Security and Defense Sector of Ukraine is put into effect, which defines a system of perspectives on the development of Ukraine's security and defense capabilities in the medium term, formed on the basis of the evaluation of security environment and financial economic capabilities of the state, implemented in the framework of a comprehensive review of the security and defense sector of Ukraine.

The provision of information security on the state level is currently based on the provisions of the National Security Strategy of Ukraine and the Doctrine of Information Security of Ukraine, approved in 2017 by the National Security and Defense Council of Ukraine (NSDC) decision.

Economic domain, scientific and technical area, information and public administration, defence industry complex, transport complex, electronic communication infrastructure, security and defense sector of Ukraine are becoming increasingly sensitive to the reconnaissance subversive activities of foreign spy

services in cyberspace. This is facilitated by the widespread, sometimes dominant presence of organizations, groups, individuals in the information infrastructure of Ukraine, which are directly or indirectly linked to terrorist and separatist movements predominantly widespread in Eastern Ukraine [11]. Modern information and communication technologies can be used for terrorist acts, in particular by violating the regular modes of operation of automated systems for managing technological processes at critical infrastructure facilities. Politically motivated cyberspace activity in the form of attacks on government and private websites on the Internet is becoming more widespread.

Increasingly, the cyberattacks and cybercrime are focused on information resources of financial institutions, transport and energy enterprises, government bodies that guarantee security, defense, and protection against emergencies.

The latest technologies are used not only for committing traditional types of crimes, but also for committing fundamentally new types of crimes common to society with a high level of information.

Cybersecurity threats are actualized by influence of the following factors:

- inconsistency of the electronic communications infrastructure of the state, the level of its development and security with the modern requirements;
- insufficient level of critical infrastructure protection, state electronic information resources and information against cyber threats, the requirement for protection of which is established by law;
- inconsistent cyber protection measures for critical infrastructure;
- insufficient development of the organizational and technical infrastructure for providing cybersecurity and cyber protection of critical infrastructure and state electronic information resources;
- insufficient effectiveness of subjects of the security and defense sector of Ukraine in counteracting cyber threats of military, criminal, terrorist and other nature;
- insufficient level of coordination, interaction and information exchange between cybersecurity entities.

Recent cyber-incidents and cyber-attacks on information and telecommunication systems of state information resources and critical infrastructure require high priority measures. For example, there were cyber-attacks with the use of malicious «Black Energy» software carried out on the energy industry objects, air transport networks of the «Boryspil» airport and rail transportation at the end of 2015 – beginning of 2016. About 30 institutions, including regional units of the Pension Fund of Ukraine, were hit and there were an unauthorized tampering to the Unified and State registers of the Ministry of Justice of Ukraine.

As a result of cyber-attacks, the network computer equipment of the State Treasury Service and the Ministry of Finance of Ukraine was disrupted on December 6, 2016, which resulted in failure of the treasury servicing of budget spending units and receivers (about 150,000 electronic transactions per day). During November-December 2016, there were about 125,000 cyber attacks in total detected, about

6,500 of them were targeted.

Investigation of these incidents indicates their involvement directly or indirectly with the security services of the northern «neighbor», which, by changing the tactics of «hybrid war», intensified aggressive actions in cyberspace by targeted cyber attacks, aiming at the destabilizing situation in Ukraine meaning the actual cyber warfare against Ukraine.

Today, the activities of the Russian APT 28 group, known as Fancy Bear, Sofacy, Sednit, Pawn Storm, or Strontium, are aimed at achieving the following goals:

- deliberate neutral positioning of the Russian Federation in the global information space, with the aim of positive conduct of future cyber wars;
- collecting information on cyber security systems of public authorities, military departments of the leading countries of the world;
- political and economic espionage;
- monitoring and regulation of the geopolitical situation with the help of fundamentally new technological principles and processes.

The activities of these groups are quite reasonably planned at a strategic and tactical level, which makes their behavior in cyberspace very covert and difficult to identify, unlike their Chinese counterparts.

The analysis suggests that we can expect an increase in cyber threats for the Ukraine. We must bear in mind that today cyber security sector is only partially ready to respond to massive cyber-attacks, that can be proven, in particular, by the scale of successful distributed denial-of-service (DDoS) attacks on government resources. A DDoS attack occurs when multiple machines are operating together to attack one target. DDoS attackers often leverage the use of a botnet - a group of hijacked internet-connected devices to carry out large scale attacks. Attackers take advantage of security vulnerabilities or device weaknesses to control numerous devices using command and control software. Once in control, an attacker can command their botnet to conduct DDoS on a target. In this case, the infected devices are also victims of the attack [12].

The appeal of some Ukrainian information security experts to create own cyber confrontation units indicate not only the level of attention to this problem, but the limited capacity of the state as well.

External players are actively preparing for large-scale cyber confrontations, changing their approaches to the vision of cyberspace, forming appropriate regulatory and organizational elements, heavily investing in it. Global geopolitical confrontation inevitably leads to an improvement in the quality of offensive cyber-weapons at the disposal of all geopolitical entities. It is not just the United States and China that are the spark plugs of the cyberweapon race, but also other powerful nations – Russia, India, the countries of Asia and the European Union. Ukraine cannot simply ignore this new reality, since further informatization processes will only prove that Ukraine’s opponents (and possibly today’s allies) have already moved from conditionally dangerous DDoS attacks to tougher actions – from cyber

espionage and cyber sabotage to conducting activities (operations) of military formations in cyberspace.

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PART 2. CHALLENGES AND THREATS TO ECONOMIC SECURITY UNDER THE TRANSFORMATION OF NATIONAL AND TRANSNATIONAL RELATIONS

OPTIMIZATION OF CASH FLOWS OF AGRICULTURAL ENTERPRISES AS A DIRECTION OF PROVIDING FINANCIAL SECURITY

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Financial stability of agricultural enterprises depends to a large extent on a rational use of cash flows, the ability to meet deficit and generate them in sufficient quantities.

Functioning of cash flows of an enterprise is characterized by their constant circulation, during which they can be at different stages at any time, causing changes both in the sources of formation and in their placement. Dynamics of cash flows enables to focus on the structural formation of sources of an enterprise (liabilities), and the directions of their rationally balanced placement (assets). This process is a form of organizing cash flow optimization at agricultural enterprises, taking into account the conditions and peculiarities.

Cash flow optimization is one of the most important and challenging problems that are solved in the financial management process. The optimal structure of cash flows is the ratio in the use of own funds and funds attracted, which ensure the most effective proportionality between the coefficient of financial profitability and the coefficient of financial stability of an enterprise, that is, its market value is maximized. However, in the process of cash flow optimization, it is necessary to take into account the main peculiarities of each element of their composition. Cash flow optimization is one of their most important management functions aimed at improving cash flow efficiency in the future period [2].

In our opinion, the most important tasks in the process of cash flow management are: the identification and implementation of reserves, which will reduce the dependence of an enterprise on external sources of attracting funds; ensuring a better balance of positive and negative cash flows in time and volume; ensuring closer correlation of cash flows in terms of economic activity; the increase in the amount and quality of a net cash flow generated by the activity of an enterprise.

We determine the need for effective management based on the optimization of cash flows of an enterprise by the following statements:

- cash flows serve an economic activity in almost all its aspects;
- effective cash flow management ensures the financial equilibrium of an

enterprise in the process of its strategic development, which largely depends on the diversity of cash flows and their synchronization in time and volume;

- effective cash flow management reduces the need of an enterprise to borrow capital;

- cash flow management is an essential instrument in ensuring the acceleration of an enterprise capital turnover;

- effective cash flow management reduces the risk of enterprise insolvency;

- effective cash flow management contributes to the formation of additional investment resources for financial investments, which are a source of profit for an enterprise [4].

The cash flow optimization process is based on the following principles, which should ensure:

- information authenticity;

- balance;

- efficiency;

- liquidity.

On the principle that the cash flow of an enterprise is a set of distributed over time receipts and payments of monetary funds generated by its economic activity, cash flows, as a rule, should be considered in three directions of activity (main, financial, investment) (fig. 1).

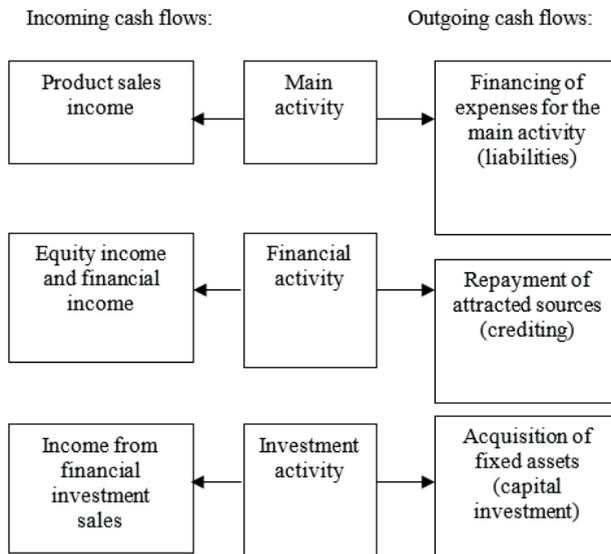


Fig. 1. Directions of cash flow movement [3]

The main purpose of optimizing the cash flow of an enterprise is to identify the

level of adequacy of the formation of monetary funds, the efficiency of their use, as well as the balance of receipt (incoming) and outflow (outgoing) of money in terms of volume and time. As a result, in our opinion, it is advisable to carry out the optimization of cash flows in several stages.

At the first stage, it is necessary to consider the dynamics of formation of the incoming cash flow of an enterprise in terms of its individual sources. The rate of increase in the value of receipts are needed to be compared with the rate of growth of assets of an enterprise, production volumes and sales. At the same time, the special attention should be paid to the ratio of monetary funds at the expense of internal and external sources with revealing the degree of dependence of enterprise development on external sources of financing.

The second stage deals with determining the dynamics of formation of the negative cash flow of an enterprise. As a result, it is necessary to determine the structure of the negative flow in terms of spending money both own and attracted ones, and its impact on increasing the market value of enterprise assets.

The third stage is based on the balance of incoming and outgoing cash flows by their volume, namely, determining the dynamics of the net cash flow rate as the most important indicator of the financial and operating activity of an enterprise and an indicator of the level of its cash flow balance as a whole. The special attention in determining this indicator should be paid to the factors that caused its formation, either by increasing the share of net profit, which is associated with the increase in output of commodities and the decrease in its cost, or by increasing the share of a net profit due to the increase in sales prices for commodities and the implementation of out of sales operations.

The fourth stage, the final one, determines the synchrony of the formation of incoming and outgoing cash flows in the context of separate intervals of the reporting period, which allows them to be optimized.

The systematic factor impact enables to carry out the process of optimization of enterprise cash flow, namely to reveal the basis of such optimization and to provide a balanced volume of positive and negative types of them, which affect the result of the economic activity of agroindustrial enterprises and can represent both a deficit and an excess cash flow [1].

Thus, the negative effects of a deficit cash flow are manifested in the decrease in liquidity and the level of enterprise solvency, the increase in overdue short- and long- term external liabilities, the creation of an internal debt of an enterprise, the increase in duration of the financial cycle, and ultimately, earnings dilution in the use of owned capital and assets.

The negative effects of an excess cash flow are observed in the loss of the value of temporarily idle monetary funds due to inflationary development, the loss of potential income from the non-use of cash assets in the short-term financing of investments in economic activities, which also has a negative impact on the return on assets and owned capital of an enterprise.

Therefore, in our opinion, it is necessary to introduce appropriate methods of optimizing a deficit and an excess cash flow of an enterprise, which depend on its short- and long-term activities, the nature of the deficit and the growth of capital investments.

Thus, the optimization balance of a short-term deficit cash flow is achieved through the use of “the system of speedup – slowdown of the payment cycle”. The essence of this system lies in the development of measures to accelerate the attraction of incoming cash flows and slow down their payments (outgoing cash flow) [5].

Accelerated cash flow attraction is achieved by:

- elasticity of price discounts due to cash receipts for the sold products;
- full or partial prepayment for products;
- reduction of terms of commodity crediting;
- acceleration of debit debts collection or its refinancing;
- accelerated flow of payment documents.

The slowdown in an outgoing cash flow is achieved by:

- slowing down the collection of external credit debts on the basis of debt restructuring, or on the basis of slowing down payment documents flow, or the change of the form of payments;
- increase in terms of commodity crediting to suppliers;
- replacement of acquired long-term assets for their leasing;
- restructuring of short-term crediting into long-term one.

However, it should be noted that short-term cash flow synchronization requires balanced measures of the long-term deficit cash flow, which include:

- improvement of the attractiveness of an enterprise in order to attract investments for increasing its owned capital;
- raising of long-term crediting;
- sale of unused non-current assets, or leasing them out;
- reduction of investment programs;
- partial or complete diversification of production

At the same time, a leading role in the implementation of the system of payment turnover of an enterprise should be played by the balance of structural elements of the gross cash flow at the intervals of time, they require a relevant classification according to the following features given below.

The level of «neutralization» is the ability of a particular kind of a cash flow to change over time. In this case, cash flows should be divided into those that are subject to changes (payments on short-term and long-term liabilities) and that cannot be changed (tax payments).

The level of predictability. There are two basic methods to optimize predicted cash flows over time:

- cash flow equalization. This method makes it possible to compare to some extent seasonality of the production cycle in the formation of cash flows based on

the optimization of average cash balances (preliminary reservation of funds);

- synchronization of cash flows – should minimize the difference between their positive and negative views and aim for a +1 ratio.

Thus, the main condition for optimizing cash flows is to ensure the maximum growth of a net cash flow, which will increase the rate of economic development of an enterprise on the principles of self-financing, reduce the level of dependence on external sources in the formation of financial and resource potential of an enterprise and provide the increase in the market value of an enterprise.

So the main task of optimizing cash flows is to obtain only the information that can be useful in making management decisions at a particular enterprise. Based on the essence of the direction of determining deviations in the optimization of incoming and outgoing cash flows, this direction should act as a holistic system of management impact at enterprises, which is integrated by individual elements: accounting, analysis, control, planning. In addition, the optimization system has relevant functions, which can include:

- information function – formation of information flows based on control;

- accounting and control – comparison of planned and actual values to measure and evaluate the degree of pursuing a goal;

- analytical – creation of basic controlled indicators for assessing the performance of an enterprise in determining the degree of impact of various factors on the value of the final result;

- planning – coordination of individual financial plans in relation to the overall plan, both within the short- and long-term planning.

Short-term cash flow balance is achieved through the use of «the system of speedup – slowdown of the payment cycle», which is to develop measures on accelerated attraction of incoming cash flows and slow down their payments (incoming cash flow). The speedup is achieved due to: the elasticity of price discounts, full or partial prepayment for products, the reduction of terms of commodity crediting, the acceleration of collection or refinancing of debit debts, the acceleration of payment documents flow. Management of an outgoing cash flow is achieved by slowing down the collection of credit debts, changing the acquired long-term assets for their leasing, restructuring short-term crediting into long-term one, etc.

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THE SPREAD OF LEAN MANAGEMENT AND ITS CONNECTION WITH THE FINANCIAL AND ACCOUNTING INFORMATION SYSTEM

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The present study aims at summarising the specific characteristics and basic principles of the lean approach, with a special emphasis on its effect on the accounting system and financial culture. The universal importance of the lean thinking for all operating organisations, profit or non-profit alike, is also highlighted. Lean accounting started to spread following the academic appearance and increased business application of lean management and lean philosophy. Lean accounting is becoming more and more popular among businesses of the production sector thanks to those practising accounting specialists who recognised the need for changing the accounting system.

The 2008 crisis showed that economic operators need to change in order to avoid economic recession of such a grand scale in the future (Lentner,2015). Its key could lie in changing financial behaviour, which plays a decisive role in improving a country's competitiveness (Gáspár-Thalmeiner, 2019; Lentner, 2007, 2019). In today's rapidly changing economic environment, efficient communication with clients and partners, optimal financing structure made it necessary to develop

strategies that help guarantee value-creation in key corporate processes (Andrássy-Lentner, 2005). In today's globalised and turbulent world economic conditions, economic operators put more and more emphasis on applying management systems that are principally made up of financial decision support information, thereby aiding planning, strategy-making and investment structure development managerial tasks. To develop their vision of the future and their strategy, as well as defining actual objectives and tasks, businesses heavily rely on internal financial and funding perspectives (Zéman,2017, Zéman-Lentner,2018). By the beginning of the 2000s, the lean method was considered the decisive strategy of production systems. One of the major aims of a business applying lean management is to identify and eliminate loss-making activities. According to this approach every activity that does not create value is loss-making. The lean corporate culture is characterised by the creation and maintenance of a zero waste system, elimination of loss-making activities, identifying and solving problems, proper information flow and communication, and customer-centeredness. (Balogh et al., 2020) The study also discusses the connection between the lean approach and the accounting information system. A traditional cost-calculation does not motivate a lean corporate behaviour. In the case of traditional cost management, production cost management is complicated; determining the actual cost of an activity, a product or a service is only possible by means of complex and wasteful operations. This type of data collection system is contrary to lean thinking. Traditional cost-calculation does not provide the information needed to support and motivate lean production. The cost calculation method of the lean approach is called Value Stream Costing (Baggaley, 2003).

An overview of the lean method. Basically means streamlining and a lean company is streamlined. What does it actually means for companies? Lean is a principle-based and supported philosophy, whose focus is on decreasing hidden and visible losses so that value creation is guaranteed at every step of the process from the point of view of the customer. Thus, lean is a corporate governance philosophy, which aims at reducing waste at the organisational level, encompassing specific functions with the active participation of employees in order to create value for the customer, and, by doing so to increase corporate (owner) value as well. "Lean is more than a sum of tools, since its appropriate application requires that the philosophy runs through the entire organisation; and these tools are not limited to a certain principle or introductory step. A single tool may have an effect on the whole system" (Gyenge et al., 2015; Slack et.al,2004).

Lean management aims at the elimination of losses and waste, which may help processes become faster, more reliable, higher quality and lower-cost. (Pankotay – Koloszár, 2019) To this effect, the approach must be incorporated into everyday practice and become part of the corporate organisational structure with a view to making every member in the organisation committed to it. Leaders can contribute by top management fully identifying with the lean philosophy and representing their commitment towards employees. This way a company can seek efficient operation

with creating an increasing customer value (Vojnisek, 2008).

Certain research projects also draw attention to organisational subcultures, that is, certain subcultures can have a closer connection to different lean tools. Therefore, when introducing and applying lean management, it has to be taken account which corporate subculture prefers or feels hostile towards which tool (Jenei et al., 2015).

Womack and Jones (2003) collected the 5 strategic principles that summarise the essence of corporate value-creation:

1. Identifying value according to customer needs.
2. Understanding value flow necessary for production.
3. Continuous value flow.
4. Creating a pull system focusing on producing only products and services that meet customer demands.
5. Seeking perfection and avoiding losses (Womack-Jones, 2003).

Which factors did help create the lean philosophy?

By now customer demands have greatly changed and differentiated, to which the mass production approach fails to flexibly adapt. According to the lean approach, methods aiming at enhancing corporate performance design products and services, and their necessary functions and inherent costs, based on customer expectations. Thus, lean operation – let it be a business in the production or the service sector – was born to eliminate the weak points of mass production, and to counterbalance it.

Table 1

Comparison of mass production and lean production

MASS PRODUCTION	LEAN PRODUCTION
<ul style="list-style-type: none"> • Focused on products • Production optimised for high volume • Production in advance based on forecasts • Long production time (from purchasing materials to delivery) • Vast stocks • High level of division of labour • Single expertise • Acceptable defect rate • Organisation into functions 	<ul style="list-style-type: none"> • Focused on customers • Low-volume production • Production to order • Short production times (from customer order to delivery) • Low stock level • Minimal handover points in production • Versatile, highly skilled workforce • Zero defect approach • Organisation into value processes

Source: own compilation

The basic definition includes that lean corporate operations require the application of strictly regulated principles. The relationship between the principles is depicted in the figure below.

The process focuses on customers, more precisely customer needs, based on which the objective, also expressed as value, must be determined.

A customer is someone who – either for meeting their own or another customer’s demands – uses a product or service, either inside the business or externally (Németh, 2009).

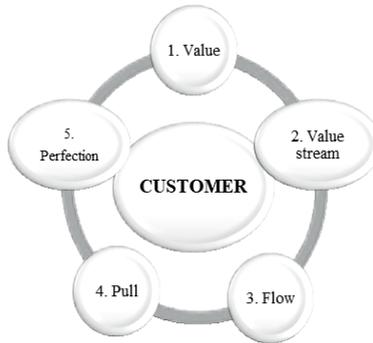


Fig. 1. Lean basic principles
Source: own compilation

Short description of lean principles.

Value and value stream. The sum of those characteristics of a product or service create value that ensure meeting customer needs at the highest possible level. Basic customer needs (values) regarding a product or a service are made up of, and also influenced by the sum of its function, quality and production time. Lean value-centeredness is also manifest in management accounting. The connection between lean and management accounting is created by product or activity production cost calculations and measures taken to reduce company costs. It is proven that the application of the lean philosophy helps realise cost reduction, which in the end leads to increased outturn, since by reducing losses, costs caused by unjustified use of resources (unjustified costs) can be identified and eliminated, thus decreasing the production cost of products or services. However, waste may only be reduced if the company can identify its sources in time. Everything that hinders meeting customer demands at a high level is considered a waste source or factor. Identified waste sources are waiting, defect amounts, overproduction, unnecessary motion and unused knowledge. The major aim of lean management is optimising output by minimising waste. Defect or low quality products or services produce losses for the business. The smaller the waste, the better the quality of a product or service is (Oláh, 2014; Oláh – Popp, 2016; Oláh et al., 2017; Oláh et al., 2018).

There are two ways of lean value creation.

1. eliminating internal waste, thereby reducing costs and improving customers' relative cost value perception.
2. a product or service is designed according to customer appraisals, that is, value is created, by way of, for example, shorter delivery cycle, smaller delivery batches, etc., that is, without additional costs. This Figure shows that products and services can be grouped on the basis of customer evaluation of their relative cost/value ratio. The Cost-Value Equilibrium shows those situations when product/

service value matches customer's willingness to pay (Hines et al., 2004).

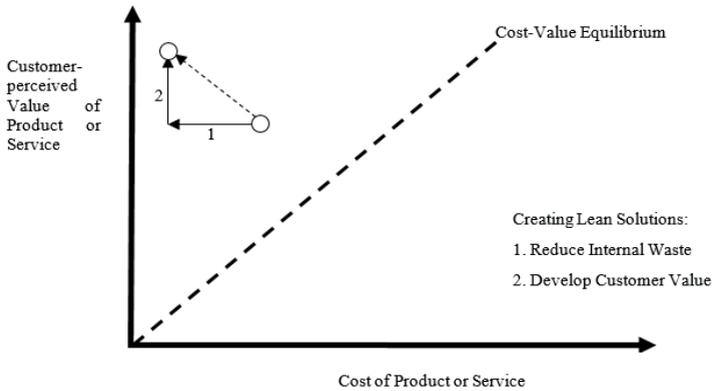


Fig. 2. Relation of Value, Cost and Waste

Source: Hines et al., 2004 p. 4.

In the knowledge of value, mapping of every operation and part of operation has to be carried out, that is, the creation of a value stream map is recommended. A value stream entails all those steps that are necessary for the creation of a certain product or service, in other words, to satisfy customer requirements. After having explored and identified value streams and elaborated their relation systems, the so called value stream map can be created. Value Stream Mapping visually displays the stream, showing both material and information flow (Demeter et al., 2011).

Value stream analysis identifies three types of operations (Monden, 1983):

- Value-adding (VA) operations: these operations directly contribute to those product/service characteristics that customers value.

- Necessary but non-value adding (NNVA) operations: those operations that do not create value in the above sense but are necessary for some reason. For example, certain support activities or compliance with rules and regulations.

- Non-value adding (NVA) operations, wasting. Literature mentions several types of waste (1. overproduction, 2. waiting for information, material, delivery, 3. unnecessary or excessive transport, 4. excessive, unnecessary or inappropriate activities, 5. excess stock, 6. unnecessary movement at the workplace or in between workplaces, 7. faulty/defective product, 8. poor communication, 9. unused knowledge).

Flow Principle. The flow principle means the close sequencing of value-adding steps in space and time. This makes it possible to minimise stock levels between the stages, reduces waiting time, delivery time and energy and enables early identification of defects. Its aim is to establish small- batch, if possible, one-piece flow.

Pull Principle. Based on the pull principle, at the upper stage of the process

nothing is done until there is a demand at the lower stage (customer). This reduces the amount of material and finished product stocks, and stocks between stages. Furthermore, lead time is also reduced making production planning and management more simple.

Perfection Principle. Perfect value streaming does not exist. There is always room for improvement and the application of new technologies. Continuous changes in customer demand also contribute to this. Its tools are PDCA (Plan - Do - Check - Act), standardisation, Kaizen (continuous improvement) and Kaikaku (radical improvement).

Lean approach in corporate governance. As already mentioned above, lean thinking has to appear in the work of every employee and leader for the company to become lean. In developing a lean corporate culture the role of the management is indisputable; especially, the role of the leaders, since they are responsible for their subordinates, for motivating employees to carry out efficient, effective and responsible work, and they have to take the lead and set a good example in the case of innovative initiatives (Losonci, 2011). In the present case setting an example is understood as the actual application of lean thinking.

The basic requirements from leaders are as follows:

1. Leader commitment to process development is necessary.
 - Set an example in process development.
 - Recognise efforts made.
 - Spend time/devote energy to understand employee and process problems.
2. Become a learning organisation.
 - Make improvement an ongoing task until it becomes a routine.
 - Apply lean principles for all value streams and background processes.
3. Engage employees in improvement.
 - They know processes and inherent problems best and have surprisingly good ideas for problem-solving.
 - Increase employee satisfaction and loyalty to the company.
4. Improvement must be based on the long-term philosophy – even at the expense of short-term financial goals.
 - Process development should not mean job cuts.
 - Changing the corporate culture is a long-term investment.
5. Stop to remedy problems. Instead of (/Besides) quick fixes permanent solutions must be found.
 - There are always problems, even if they are not overt. Encourage employees not to cover problems but to reveal them and try to find solutions as soon as possible. Leaders should reward problem-solving, if possible.

General benefits of applying the lean method. The application of the lean method gives a competitive advantage to those companies which apply this way of thinking in the production of their product/service, by way of more precise and/or cheaper satisfaction of customer needs (Womack-Jones, 2009).

More specifically:

- It reduces production times and energy used (productivity).
- It reduces investments in stocks, freeing up working capital.
- It helps identify and eliminate defects and faults thereby reducing unjustifiable costs, as well as cost of poor quality.

In summary, the focal points of the lean concept are shown in the figure below.



Fig. 3. Focuses of the lean concept

Source: own compilation

According to literature lean management greatly improves productivity; however, its corporate application is a difficult task. Although lean methods are common in production, albeit not a routine yet, they are completely unusual and full of challenges in the service sector. Lean practice has appeared not only in service provider companies, but also in the office environment, known as lean administration.

Kovács and Rendesi (2015) point out in their survey research that lean methods help crisis management as well.

Demeter and Losonci (2011) studied the relation of lean production and business and financial performance. They found that on the operative level investment in lean production practices brings returns, however, when introducing a lean system, internal operations in themselves do not bring financial results. As they explain, financial performance is subject to other factors that production management cannot influence, for example, market dynamics, the intensity of competition, or the number of new entrants. Thus, lean production in itself does not guarantee business success: it is a necessary but not sufficient condition; the continuously improving operative performance may become the basis for balanced and stable business performance.

On the other hand, there are also research results showing a relation between the lean system and business performance. Consequently, it is difficult to take a clear position when it comes to the relation of lean management and business

performance (Losonci - Borsos, 2015).

The relation of lean and accounting. The lean method and lean principles have a long way to go for economic operators until a completely lean company is born with lean management, value streams and related cost calculations. From the appearance of the lean concept to the birth of a lean company the organisation goes through several developmental stages, and with it the information need – primarily regarding the content of the required information – of decision-makers at the management levels and areas, as well as divisions, also continuously changes. Moving towards the corporate application of the lean philosophy means a shift in focus from the traditional product towards value streams. Accounting may be considered as one of the main players in the process of information provision as accounting is a practical activity which has to provide reliable and true information about the operations and the profitability and financial situation of the operator. Accounting due to its primary – in accordance with the Act on Accounting – legal force fulfils its compulsory information provision obligation in the form of an annual report system. The annual report can be interpreted as a form of financial accounting report whose form is highly standardised and is based on the application of evaluation models and methods proposed by the accounting act, to ensure same-principles-based information provision primarily for external market actors. The standardised annual report also ensures transparency. Deeper detailing of accounting information – on product, product group, project or division, etc. levels – responds to owner and leader information needs. Its form is the management report which is less standardised and not compulsory by rule of law. According to classical understanding, an organisation's obligation to prepare management reports is realised in the framework of management accounting functions. Management reports may prove to be a useful tool for providing well-structured analyses and reports related to value streams. Accounting activities and processes operate in a synchronised system thus creating the corporate accounting information system. Regarding the focus, structure and content of the information system, the accounting information system is flexible. The flexibility requirement for accounting information systems has become significant in today's rapidly changing environment, in the world of digitisation and robotisation. The spread of lean in accounting systems also requires changes. These changes call for the development of newer cost calculation methods and systems, and, at the same time, bring about changes in the content of the planning system and management reports. The focus of the lean decision-making process has shifted to, for example, profitability calculations for customer order, "make-or-buy" decisions, product rationalisation, inter-company transfer pricing, etc. areas (Sisa - Szijártó, 2018).

Lean accounting versus accounting in lean organisations. Practising experts make a distinction between lean accounting and accounting in lean organisations. Lean accounting is defined in international literature (McFay et al., 2013). Lean accounting is the application of lean tools in the area of accounting

(operations). Reducing wasting transactions and operational procedures helps avoid unjustified costs (for example, production costs of defective products, general costs of unnecessary processes), while there is more time for value-added work. The elimination of unnecessary procedures is a general objective in all areas of operation. Therefore, it is also necessary to review and rationalise accounting operational procedures in order to reduce working time taken up by carrying out administrative, repetitive and routine tasks. One way to achieve this is digitising or robotising routine-like and simple tasks, or implementing the 5S method, standardising accounting procedures (for example, in areas of registering and processing customer invoices). Accounting experts can use the freed up working time for satisfying customer demands (value-adding), thereby contributing to the fulfilment of lean principles. The starting point for developing lean accounting can be a leader decision to involve accounting employees in the application of the kaizen method, primarily to improve accounting operational procedures. By applying kaizen, accounting professionals will also have a better understanding of the essence and role of lean culture and principles so they become more motivated to apply this concept in their own – everyday – work for continuous improvement.

According to Maskell-Baggaley-Grasso financial and accounting professionals play a particularly important role in the life of lean companies. They are the active members of lean teams who must assume primary responsibility for controlling corporate performance and value streams and processes, and planning in an organisation (Maskell et al., 2011).

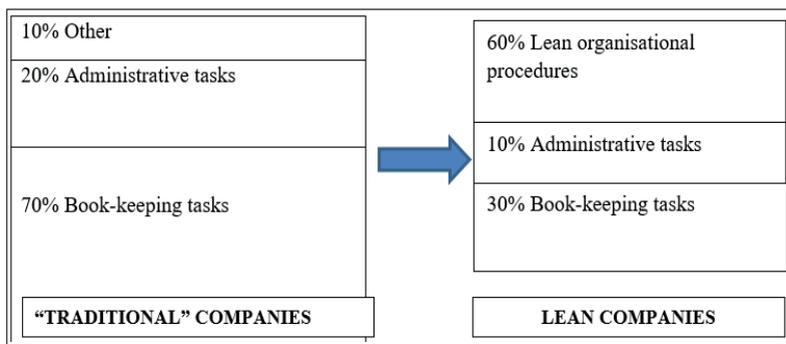


Fig. 4. Financial-accounting tasks in “traditional” and lean companies
Source: based on figure by Maskell et al. (2011, p. 105)

During the course of optimising financial-accounting procedures the following questions regularly call for an answer:

- Why is it necessary, what is the aim of the management report, accounting part of process or authorisation procedure?
- Does the report support actual decision-making processes with useful and

relevant information?

- Are established requirements and full compliance to them really necessary during the course of a transaction, or is it possible to choose a more simple way of compliance – taking the cost-benefit principle into account?

- If an authorisation process, an approval process or process step is removed or simplified, how big is the risk of an error during a transaction – does it require any preliminary risk assessment?

Why is lean accounting important? The rapidly changing economic environment, the need for communicating with the client made it necessary to develop strategies that help make key corporate processes value-adding.

Baggaley noted that traditional cost calculations do not motivate lean corporate behaviour. According to him, in the case of traditional cost management the actual production costs can only be obtained after completing complex, wasteful and confusing operations. This type of data collection system is contrary to lean thinking. Traditional cost calculations do not provide the information needed to support and motivate lean production.

According to the lean concept general costs apply to the entire value stream. Maximal profitability stems from maximal product flow through the value stream with prioritising customer needs. There is no differentiation made between direct and indirect costs; all costs of the value stream are considered direct. The cost of a certain product mainly depends on how fast it flows through the value stream. The cost calculation method of the lean approach is called Value Stream Costing (Baggaley, 2003).

The method has the ability to identify and calculate the costs of all streams adding value for the client. It is vital to determine the amount of value-adding for each process; that is mapping the value stream.

Maskell and Baggaley summarised the aims of lean accounting as follows:

- Provision of reliable and understandable information in appropriate time according to the lean concept.

- Simplification of accounting (controlling) processes using lean tools.

- Harmonisation of external and internal reports.

- Supporting the lean culture (Maskell - Baggaley, 2004).

The need for optimising accounting processes primarily appears in the case of lean company management, however, recently we have witnessed it appear among other, not lean companies as well, in process reviews and process development in several areas of operation, including administrative (finances, accounting) work. This is mostly characteristic of medium-size or large companies having a complex operational, organisational and ownership structure, in which accounting tasks (accounting of economic events, closing and reporting) are carried out by an independent organisational unit in the company.

The need for transforming the accounting system of lean companies can be justified by the reasons below:

- The transformed accounting system can support the entire lean decision-

making process with more explicit information.

- The lean focused information and statistical data from the “new” system help develop long-term lean ideas for further development, and identify strategic objectives and plans that can be continuously measured.

- Using focused information helps make the financial results of lean development and the extent of strategic expectation implementation measurable and therefore identifiable.

- It becomes possible to identify and measure customer value factors and to maximise customer value.

By implementing lean accounting, professionals have more time so they can become active participants in strategic planning and corporate brainstorming, taking up a direct role in strategic management and cost management activities, that is, value-adding. An additional advantage of their participation is employee satisfaction, loyalty and positive attitude, all of which result in the long-term maximisation of value-adding.

An outline of lean accounting processes. As the first step of the process, every accounting work element must be identified and inspected so that visible and hidden opportunities for further development can be established. In this phase a list is compiled of ‘necessary and value-adding’ and ‘not necessary and therefore not value-adding’ activities. The investigation of operations and information must be carried out with extreme caution. Analysis is needed on the type of information the accounting information must provide, to whom the information is provided, and how, with what content and structure this information is used in decision-making.

A detailed list must be drawn up about every accounting process and implemented activity.

After this, a resource needs assessment must be carried out to measure the amount and type of resources needed for accounting operations, as well as how long these resources are used during the implementation of the activity. This is followed by customer value assessment regarding every operation, including the assessment of customer value added by the operation. The customer in the present case is an actor using intra-company information. It is also inevitable to analyse the cost-effect of change, which is virtually a cost-benefit analysis. It is a reasonable expectation of development that its costs are proportional to the benefits it yields. The process ends with an action plan which details the implementation of the change.

The international literature suggests 6 successive steps for the implementation of lean accounting, as follows (Maskell et al., 2011):

Step 1 Gathering main processes and activities.

Arising questions:

- Which are the main accounting work processes?
- Which actual tasks make up a main process?

Step 2 Quantifying resource and time requirements.

Arising questions:

- Which employees perform certain activities?
- Which employees take part parallelly in the work of another department, division, or organisational unit?
- How much time (workhour) do employees spend on a certain activity?
- How frequent are certain activities?
- Besides labour, what other forms or resources are required for the implementation of activities?

- Ranking the resource demand of activities

Step 3 Customer value assessment.

Arising questions:

- Which intra-corporate actors use the information?
- Which decisions require these pieces of information?
- How is information used?
- Is information available in lean operational areas?
- Which activities do not have a lean alternative? What kind of opportunities are there for updating an activity?

Step 4 Cost-effect analysis.

Arising questions:

- Does the activity require simple changes?
- How fast can changes be implemented? At what cost?
- How many workhours do the change, development and corporate implementation of the activity require?
- Are there any additional costs related to the change? (the total cost must be calculated, including additional purchasing of equipment and software)
- What are the expected effects of the change? How does the change affect the customer (person ordering information, user)?
- How does the change affect the quality of information?

Step 5 Selection.

Arising questions:

- Which activity/activities should come first in the continuous improvement activity?
 - o the cheapest or the one with the fastest implementation?
 - o does change mean resource-saving?
 - o does the change affect the operations in other divisions (parallel effect)?

Step 6 Making an action plan.

Arising questions:

- Regarding the activity marked for change:
 - o What is the current “state” of the activity?
 - o What is the desired (ideal) state like?
 - o How can the gap between the current and the desired, ideal state be filled?
 - o Which professionals in the company must be involved in the change process?
 - o How should the change be scheduled (description of 3-6-9-12-month planned

targets)

o development of the next steps of implementation.

Conclusions and suggestions. The present study aimed at investigating a fairly new area of study. Parallel to the spread of lean management and lean philosophy, financial and accounting professionals also came across the business concept of lean companies and the essence of its corporate culture. Awareness and understanding finally gave way to the need related to accounting operations from professionals to optimise their processes. Given that accounting tasks are diverse – despite the fact that a part of the tasks can be standardised easily and simply – and resource-intensive, the question has arisen: “How to carry out tasks more efficiently without the process development reducing quality and reliability of the finished work?” The answer lies in the application of lean tools and methods in accounting operational processes, which is called lean accounting in literature. Lean tools can aid reasonable and resource-optimal operations, which ultimately leads to a more appropriate use of the capacity that was freed up, strengthening employee satisfaction, keeping employees motivated, and, after all, creating a successful working environment. The study raises further research questions concerning the application of such an efficient system in the current economic environment.

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ECONOMIC SECURITY OF ENTERPRISE'S DEVELOPMENT

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Development is one of the key notions in contemporary management as it is directly related to enterprise's capacity to transit to a qualitatively new state due to certain changes in its activities. In this newer state, an enterprise gets new properties, new qualities and features which are revealing themselves through implementation of new opportunities, thus leading to the capacity to perform new functions, solve brand new tasks and in a such a way strengthen enterprise positioning in its external environment.

Enterprise development is the process, the key result of which is a certain achievement shaped as a qualitatively new state of an enterprise, while enterprise development as such is the process of objectivizing enterprise's capacity to develop. This objectivization is performed through managed changes in enterprise activities and its adaptation to unmanageable changes of various nature [1, p. 35]. For this very reason, enterprise development should be primarily studied as the process the course of which, under certain conditions, is capable to deliver an expected result - a qualitatively new state of an enterprise. In other words, the process of enterprise development is always delivery-oriented, therefore, this process must be well managed and controlled.

The very notion «result of the enterprise development process» is derivative from the notion «enterprise development process 2, thus, further we would like to investigate the contents of the latter.

Development process is seen here as a combination of changes in both external and internal environments of an enterprise, including changes happening between these environments, improving its state, its activities and the results of these activities. All these changes can be managed (performed by the enterprise itself) or unmanageable (taking place without direct participation of the enterprise itself). Managed changes are always under enterprise control, their occurrence depends on the quality of change management [3, p. 98]. In its turn, change management is predetermined by the quality of development management and some other factors.

Unmanageable changes are not controlled by the enterprise (and cannot be initiated by it), thus, the enterprise can only adapt to these changes by means of enforcing changes in its own activities, already controlled by the enterprise itself.

Result of the enterprise development process means that the enterprise, by means of imposing manageable changes and adapting to unmanageable ones, achieves its development goals. In other words, the enterprise is moving in the direction to a qualitatively new state, the complex criteria of which is restrengthened positioning of an enterprise in the external environment predetermined by its capacity to perform new functions, solve new tasks and detect new opportunities.

The result of this development process depends upon the availability of several preconditions, including: quality of the development management; economic security in the course of development; resources' provision for development; availability and efficiency of the organizational-economic mechanism of development, the latter being one of the key instruments in development management.

Among all the mentioned preconditions of the enterprise development process result, economic security is a relatively new and understudied topic.

Economic security as a precondition for resultant development of the enterprise from the standpoint of the contextual approach [4] (according to Peter Unger, it allows formulating answer to a question depending on a combination of the available conditions and circumstances [5]) is expedient to be studied from the viewpoint of defensive approach.

Defensive approach today is among the key ones in economic security studies. The imperative notions under this approach are «threat», «protection» and «security». Their joint application allows explaining the contents of the notion «economic security of enterprise development» in the following way: current absence and low probability of near- future emergence of various hindering factors to manageable changes in enterprise activities and/or of the unmanageable changes with negative consequences which are the results from threats' materialization.

Threats to enterprise development are suggested to be considered as processes, phenomena, events and situations which are taking place in external and/or internal environments of enterprise activity (which includes the behavior of external environment subjects). Such threats, under certain conditions and circumstances, are able to cause serious damages to implementation of changes in enterprise activity. As it has been noted in [6], most frequently the very notion of «threat» is interpreted using such wording as «phenomena», «event» or «act».

In relation to enterprise development most of the processes and phenomena in its internal and external environments are indifferent (neutral), or in other words – they are not directly aimed at hindering enterprise development. Such processes and phenomena emerge due to the reasons that often have absolutely no relation to the activities of not only this specific enterprise but enterprises as such. In other words, not all processes and phenomena taking place in external and internal environments of the enterprise become threats to its activity and its development, but only those

that emerge under certain, highly specific conditions.

For example, rises in hryvnya's exchange rates to USD that was observed in the 4th quarter of 2019 became an immediate threat to the activities of many exporting enterprises, however, it had hardly any influence on the activities of those enterprises that are supplying products and services to the national market only, not using imported materials, equipment or its components.

Same applies to the actions of many subjects of the external environments in relation to the enterprise: but for a few exceptions, their actions do not cause any serious damage to the activities and/or development of the enterprise. Generally speaking, actions of the external environment subjects are usually directed on satisfaction of own interests.

Conditions under which certain processes or phenomena, usually indifferent to enterprises' activities or development, may negatively influence on them should be understood as a combination of the factors of both subjective and objective nature which can:

- be formed as a logical regularity (as a result of objective processes, impacts of objective economic laws or as totally predictable consequences from the intentional actions against the enterprise);

- be of artificial nature (be formed under the influence of the regulatory policy of the state or of the interstate organizations; be formed due to the attempts to maintain ecological and/or economic balance, socialization and humanization of management; or when employees are following the visions appropriate today (homo economicus, homo socialis etc.); or when interests of the participants of various markets should be protected [7, p. 66].

When all these factors of subjective and objective nature are combined, the influence of one of them can be hindering and strengthening the influence of other factors.

Consequences from implementation of threats to enterprise development can be significantly negative: they may damage many planned changes (distorting them, making them incomplete or belated, deviating from the plan overall). This would most probably require the attraction of additional resources needed for enterprise development (noteworthy, these additional resources would be not always able to reproduce the initially planned process of development).

Threats to enterprise development (just as threats to enterprise functioning, actually) never emerge suddenly and unexpectedly (this has been explained and proved with great deal of detail in [8]). From the standpoint of the process approach, a threat is always a process which has its beginning and end, and it also had certain stages (again, this has been explained in [8]).

Enterprise development can be also considered from the standpoint of the process approach since changes in enterprise activities that are supposed to cause its transition to a qualitatively new state do not happen in one moment - they are also processes, of different scale and dynamics. Continuity of changes in enterprise

activity shape the contents of its development, and with the course of time they determine the expediency of using project approach in development management. Projects of enterprise development may be different in terms of their scale and expected results, thus, changes in the course of these projects may be combined according to various features: achieving the expected result through changes (complex projects); localization of changes (spatial projects); timing of changes' implementation (time projects); nature of changes (large-scale projects).

Therefore, the toolkit of enterprise development consists of its development strategy and the related projects of changes, while project network becomes the key instrument in its implementation.

Both enterprise development strategy and the projects of changes must be strictly personalized. In other words, the enterprise must assign the managers responsible for implementation of its development strategy and also managers responsible for the separate projects of changes. Competences of all these managers must be determined very thoroughly. At this, it is considered to be a bad practice to have the same person serving as the manager of a structural unit and as the manager in a project of changes, since their competences are very different.

In this context, we can also confirm that realization of threats to enterprise development may have the following consequences:

- full or partial non-performance of the separate projects of changes (namely, due to the so-called «chain reaction», when non-performance of one project leads to full or partial non-performance of other projects);
- serious violation of deadlines in implementation of separate projects of changes due to which project results may lose their initial value and importance.

Threats to enterprise development may be divided into general ones (those that, under certain conditions, may threaten any enterprise, regardless of its size or sector) and also specific ones (those that become probable only for the enterprises with specific types of economic activity and/or with some specific features of functioning or development).

The list of general threats to enterprise development is presented in table 1.

Threats to enterprise development need to be determined not only overall but for each project of changes. Threats of general nature should be considered together with specific threats, applicable to each of the projects of changes.

At this, managers of these projects should be fully aware of:

- all potential threats to their projects' implementation;
- the preconditions under which potential threats are turning into real ones;
- early signs of real threats' actualization;
- consequences from real threats to project implementation;

means which can be used to hinder the actualization of real threats in the course of projects' implementation along with the means to remove both causes and consequences of these threats.

Table 1

General threats to enterprise development

Threats to development	Sources of threats	Consequences from threats' realization
Loss of interest and attention on the side of top management to the already developed strategy of enterprise development	<p>Changed ownership or top management of the enterprise. Reorganization of the enterprise form (for example, due to merger or acquisition). Changes in personal priorities of owners or top managers of the enterprise. Changed attitude to perceiving risks on the side of enterprise owners or top managers</p>	<p>Turning down the realization of the separate projects of changes which would eventually lead to lack of systemity in the development. Emergence of serious changes in the overall strategy of development due to changes or turndown of the separate projects of changes or due to approval of radically new projects of changes</p>
Significant changes in the enterprise development strategy (changes in project contents, in duration and/or deadlines etc.)		
<p>Turning down the realization of the separate projects of changes which would eventually lead to lack of systemity in the development. Emergence of serious changes in the overall strategy of development due to changes or turndown of the separate projects of changes or due to approval of radically new projects of changes</p>	<p>Low motivation among enterprise employees. Lack of attention and interest to enterprise employees, ignoring their interests</p>	<p>Underperformance of changes (not achieving the goals set for the projects of changes). Erosion of projects' contents. Violation of timing and deadlines</p>
Loss of business partners which were expected to participate directly in the projects of changes	<p>Disregarding the interests of business partners. Business partners' closedown for the reason not related to the enterprise itself (bankruptcy, for example). Changed priorities and vectors in the activities of business partners, due to which the latter lose interest in cooperation</p>	<p>Emergence of difficulties in the course of projects' implementation, which is leading to violation of timing conditions, changes in projects' contents etc. up to complete inability of their implementation. The necessity to develop new projects of changes and their implementation within the system of already available projects of changes</p>
Significant changes in relations with business partners		
Employees' competence being insufficient for the complex projects of changes	<p>Low quality of project management at the enterprise overall</p>	<p>Violation of projects; timing; their full or partial non-performance; underperformance; low efficiency in the course of projects' implementation</p>

Low level of organizational management in the projects of changes	Lack of personalization in the course of projects' implementation; Weak communication between managers and performers of the separate projects of changes; "information noise"; incoherence of actions in the course of projects' implementation	Violation of timing terms of the projects of changes; doubling functions and operations in the course of projects' implementation; weak control over projects' settling, performance and in-process corrections; overall underperformance of the projects of changes
Changes in the external environment that are downgrading the priority of the already available development strategy of the enterprise	International conflicts, including military ones (for example, as the current ones in Crimea and Donbas); Environmental and natural catastrophes; Changes in the acting legislation, that are significantly limiting enterprise activities and force the enterprise to reconsider its development strategy overall	Abandoning the idea of implementing projects of changes (all or some of them) due to the impossibility to perform the needed actions and operations included into the project of changes; loss of expediency to perform projects of changes
Serious lack of resources to perform and finish the projects of changes	Mistakes in planning of financial provision for the projects of changes; Reconsidered contents of the projects of changes which means extra spending on their implementation	Underperformance of the projects of changes (including those that have been corrected); insufficient results from the projects of changes.

Overall management of the security-providing activities in the context of enterprise development should belong to the competence of a manager responsible for implementation of the enterprise development strategy.

Therefore, economic security is an important precondition of enterprise development. Its provision assumes constant monitoring over the potential threats to enterprise development, their prevention or at least postponing of potential threats becoming real ones, that is, prevention of their actualization. There can't be absolutely secure development of an enterprise, however, provision of its economic security in the given context is one of the key tasks of the enterprise management, and the latter is quite fully capable of solving it.

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THE CONCEPTS OF THE MECHANISM FOR ENSURING ECONOMIC SECURITY OF INNOVATION-ACTIVE ENTERPRISES

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The innovation process is always associated with uncertainty, even in a stable economy, but under conditions of economic instability, this uncertainty is growing. Therefore, it is of particular importance to organize a process that is able to minimize this uncertainty and counteract the destabilizing factors caused by its impact on the activity of economic entities.

Innovation-active enterprises, more than other enterprises suffer from the impact of destabilizing factors, are caused by the specificity of innovative activity and its high level of riskiness.

The effective functioning of innovation-active enterprises requires the creation of an economic security system. In explaining the essence of the organization's

security system, it is advisable to follow the position of such scientists as: Laptev, V. G. Alkema, V. S. Sidak, M. I. Kopytko [1], O. V. Lokotetska [2], according to their scientific views, the enterprise security system is a set of objects, subjects of security and the mechanism of security realization, united by the common purpose and tasks of counteracting threats and promoting organization in realization of interests in the market.

Professor Alkema V. G. points out that «The primary purpose of an entity's economic security system is to prevent damage caused by theft of material and technical assets, destruction of property, leakage, disclosure or unauthorized access and use of confidential information sources, disruption of production facilities and business processes management at the enterprise, bringing the enterprise to bankruptcy, preventing damage to the personnel of the enterprise» [3].

The economic security system is aimed at performing the following functions: forecasting, detection, prevention, mitigation of dangers and threats, ensuring the security of the enterprise and its personnel, preserving property, creating a favorable competitive environment, eliminating the consequences of damage caused, etc. [3, P. 116].

The purpose of the economic security system of an innovative enterprise is:

- protection of the legal rights of the enterprise, its structural subdivisions;
- protection of the idea, process or result of the project, which is the subject of its innovation activity;
- protection of intellectual assets and intellectual property of the enterprise;
- protection and preservation of information, which is a trade secret of the enterprise;
- preservation and efficient use of all types of resources;
- elimination of possibility of receiving losses;
- ensuring safe and effective innovative, production and economic activity of the enterprise;
- enhancing the company's image and increasing its profits.

The economic security system of an innovative enterprise must answer a number of challenges, such as:

- identify and eliminate threats to the enterprise and its personnel, financial and material resources in a timely manner;
- create a reliable security mode;
- to organize and carry out protection of innovative activity of the enterprise, process and result of its projects and programs;
- to organize and carry out protection of the intellectual property of the enterprise;
- to carry out work with the staff and its training, to form «firm» patriotism and to promote in the enterprise the ideology of innovations;
- to organize interaction with state and law enforcement agencies and commercial structures whose activity is focused on the problems of ensuring the economic security of enterprises;

- create a system that maximizes the compensation and localization of damage from malicious actions of intruders and competitors.

At the same time, scientists have identified the main directions of the economic security system of an innovative enterprise, which include:

- innovative security;
- information and analytical support;
- protection of scientific and technical information;
- protection of information on the project;
- protection of intellectual property;
- protection of innovative developments and inventions;
- protection of confidential information and trade secret of the enterprise;
- security of information technologies and software;
- security and protection of access to buildings and premises;
- physical security of the owners, managers and personnel of the enterprise;
- security of communication systems and information communications;
- security of economic and contractual activity;
- safety of cargo and persons transportation;
- legal security;
- security of advertising, mass events, business meetings and negotiations;
- fire safety;
- ecological safety;
- ideological, social and psychological, preventive work among staff and his training on economic security;
- expert inspection of the security system mechanism;
- technical and technological safety;
- personnel and intellectual security;
- financial security;
- informational security;
- investment security;
- market security;
- physical security.

The investigation of the essence of the economic security system of an innovative enterprise requires an analysis of existing scientific works regarding the mechanism of management of the economic security system of innovative enterprises.

At the same time, it is necessary to investigate the concept of the mechanism and the features of its usage in economic systems. Thus, A.Yu. Chalenko proposed to consider the mechanism in the economy as a set of resources of the economic process and ways of their connection. According to the scientist, «a mechanism cannot exist without a process, as it is an integral part of it and is configured to perform only process functions» [4]. The mechanism is a way of functioning of the economic system and reflects the moment of movement, functioning.

In the system of economic security of the enterprise, scientists distinguish at

least three main types of mechanisms:

- mechanism of economic security formation;
- economic security management mechanism;
- mechanism for ensuring economic security.

Under the mechanism of economic security formation of the enterprise scientists Beloshkurskaya N. V. and Mishchenko S. P. understand the combination of goals, goals, objectives, principles, methods, functions, tools that allows to diagnose, predict and control the state of economic security to make adaptive decisions about the development of the enterprise [5] or an interconnected set of structures, tools, methods and activities that form the security of business [6].

The economic security management. Mechanism investigated in the works of Donets L. I [7], Korobchynsky O. L. [8], Poida-Nosyk N. N. [9] and others. In particular, under the economic security management mechanism of the enterprise, scientists understand the set of methods, principles, forms, methods, levers, measures associated with the process of their interaction. It is interesting mention the definition of the author Alkema V. G. [3, p. 188], he defines the economic security system management mechanism of innovative enterprises through the structures of the enterprise and security service structures, project structures and individual contractors, using the means and methods apply measures to neutralize real and potential threats and threats in the system economic security of the enterprise.

In the domestic scientific literature on the system of economic security management of the enterprise considerable attention is paid to the study and definition of the concept of the mechanism for ensuring the economic security of the enterprise, which refers to the integrated set of elements of institutional and operational influences on improving the efficiency of economic activity through the creation of safe conditions for its implementation [10].

In our opinion, the most appropriate is to use the concept of the mechanism for ensuring the economic security of the enterprise, because the level of economic security should be sufficient, but not excessive. Because a high level of economic security allows to achieve results and achieve the goals of the enterprise, and an excessive level of economic security, in most cases, leads to additional costs and, consequently, to a decrease in profitability, financial stability and other indicators of economic activity, which in turn leads to a decrease in the level of economic security.

On the base of the theoretical and methodological research, we can conclude that the mechanism for ensuring economic security of an innovative active enterprise is an integral part of the economic security system, a set of goals, objectives, methods, measures, tools, the implementation of which allows to achieve the target level of economic security, minimize the level of uncertainty and the effect of destabilizing factors in the process of innovation activity of the enterprise.

Financial, legal, innovative, technological, informational, personnel, intellectual, power, as well as methods, means and instruments of influence should be included into the basic components of the mechanism for ensuring the economic security of

an innovation-active enterprise.

In addition, scientists add to the basic components of the mechanism factors of external and internal impact on economic security; subjects of the influence: executives, managers, economists, technologists, engineering engineers; methods of influence: regulatory, financial, economic, organizational, information; tools: orders, codes, standards, grants, innovations, information portals and more.

Based on the strategic goals of the innovation-active enterprise, as well as its financial and economic status, available resources, specific options for ensuring economic security can be selected. In this way, a unique combination of measures can be developed that is able to provide a high level of protection of the economic interests of the entity, taking into account the conditions and peculiarities of functioning, environmental factors and directions of development.

The mechanism for ensuring economic security of an innovation-active enterprise involves performing a number of functions, which include:

- analytical,
- prognostic;
- information;
- warning;
- protective;
- regulating;
- control;
- stimulating;
- practical;
- ensuring.

The mechanism for ensuring the economic security of an innovation-active enterprise is characterized by the following features:

1) the mechanism is multilevel, ie implemented at the strategic, tactical and operational levels;

2) the mechanism is aimed at achieving the strategic goals of innovation-active enterprises, as well as ensuring the needs of consumers;

3) management of economic security of innovative-active enterprises occurs through the means of management (regulations, standards, type of management, state of management, etc.);

4) the object of managerial influence is the process of ensuring the economic security of innovation-active enterprises;

5) economic security is managed through the development and implementation of programs for ensuring the economic security of innovation-active enterprises;

6) the mechanism is implemented through the development of the concept and implementation of the management policy.

In addition, it should be noted that, at all stages and directions of the functioning of the proposed mechanism, monitoring should be carried out to adjust management decisions as needed.

In modern conditions of digital economy development, there is a need to minimize the level of uncertainty in the implementation of business activities by innovation-active enterprises and ensure the implementation of strategic goals and directions of development. The available approaches and methods for ensuring economic security enable each economic entity to form its own unique system of economic security, taking into account available resources, environmental factors and strategic development priorities.

A key role in the economic security system of innovative enterprises has the economic security mechanism, which is understood as a set of goals, objectives, methods, measures, tools, the implementation of which allows to achieve the target level of economic security, minimize the level of uncertainty and the effect of destabilizing factors in the process of innovation activity of the enterprise, as well as ensuring the implementation of strategic, tactical and operational goals of economic activity.

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INNOVATIVE ACTIVITY OF UKRAINIAN ENTERPRISES AND POTENTIAL OF CROSS-BORDER COOPERATION IN THE DEVELOPMENT OF ECONOMIC SECURITY

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The transition of Ukraine's economy to an innovative model of the development in the conditions of global competition involves active international cooperation in the area of science and technology transfer. Innovative activity and scientific research require considerable investment and leads to the diversification of funding sources and the expansion of international cooperation forms, including cross-border cooperation (CBC).

Despite the number of publications on the issues of innovative cooperation there are rare researches that take into account regional peculiarities of innovative project implementation, including cross-border cooperation possibility in improving their efficiency.

The aim of the study is to justify priority areas and forms of the promotion of industrial enterprises innovative activity from the perspectives of cross-border cooperation between Ukraine and Poland. Based on this objective, it is important to solve the following tasks:

- to characterize the existing institutional and legal support of innovative activity sustaining in cross-border areas;
- to justify priority areas and objects of the innovative activity support in cross-border areas;
- to identify the main components of projects on the innovative activity support in cross-border areas.

Institutional and legal support of innovative activity sustaining in cross-border areas.

A number of foreign and domestic scientific works and legal documents are dedicated to the issue of the mechanisms and forms of innovative activity support. The Laws of Ukraine «On Innovative Activity» [11, Article 266], «On Investment Activity» [10, 1991, Article 646], «On Priority Directions of Innovative Activity in Ukraine» [14, Article 41], «On Cross-Border Cooperation» [13, Article 499] provide an organizational and legal framework of the support and development of the

innovative activity in Ukraine's economy and international cooperation in this area.

The EU 2020 Development Strategy includes the Innovation Union Target Initiative, complemented by other innovation-related initiatives such as An Industrial Policy for the Globalization Era; Digital Agenda; An Agenda for New Skills and Jobs [3]. This requires the development of new long-term policy principles, such as clarifying the limits of application and securing the rights to intellectual property objects to reduce costs when forming a network of cooperating cluster organizations; creating and coordinating government support mechanisms that are consistent with the evolutionary nature of innovative projects; removing obstacles to knowledge diffusion and licensing of innovative offerings in EU Member States.

The enhancing of cross-border cooperation opens up new possibilities for the economic activity intensification in peripheral areas and improvement of their competitiveness through the mobilization of resources and technological development. In the concept of the Euro-region «Buh» development it is stated by 2020: «We should focus joint activity on certain economic specialization and on new technology implementation. The events in cross-border dimension should include: an integrated economic promo-campaign of the Euro-region, the support of enterprise mutual cooperation, especially in the field of raw materials supply for production, the use of modern tools for maintaining cooperation between enterprises, such as platforms B2B (Business to Business), the development of economic/investment zones and creating further incentives for doing business, including foreign investment. The mutual cooperation of institutions of business environment infrastructure is quite important, in particular so as to serve the companies interested in cooperation in the cross-border territory and to use the available potential of scientific and technological parks in order to transfer technologies» [2, 105-112].

Priority areas and objects of the innovative activity support in cross-border areas.

Identifying priority industries for innovative activities is one of the main tasks of it support. The key indicators for evaluating innovation are the following: costs of innovation in terms of sources of funding; volume of innovative products sold; number of innovative enterprises; the number of innovations implemented, by type of novelty; number of innovative processes implemented.

Consider the share of enterprises engaged in innovation in the total number of enterprises by type of economic activity for Poland and Ukraine. Chemicals, mechanical engineering are leading in the processing industry, both in Poland and Ukraine (fig. 1).

Taking into account the priority directions of international cooperation indicated in the Concept of the Euro-region «Buh» development, a promising form of their realization may be joint production of vehicles, chemical and petrochemical industry products.

One of the indicators that shows the effectiveness of the economic mechanism of stimulating innovation activity of enterprises is the share of own funds in the cost

of innovation. In our opinion, this indicator should fluctuate within 60-70 %, when the share of own funds in the cost of innovation activity is less than 60 % – this may indicate insufficient financial capacity of enterprises, and conversely, when this indicator is greater than 70 %, then it can be said that the state mechanism for support of innovation activity is not effective enough.

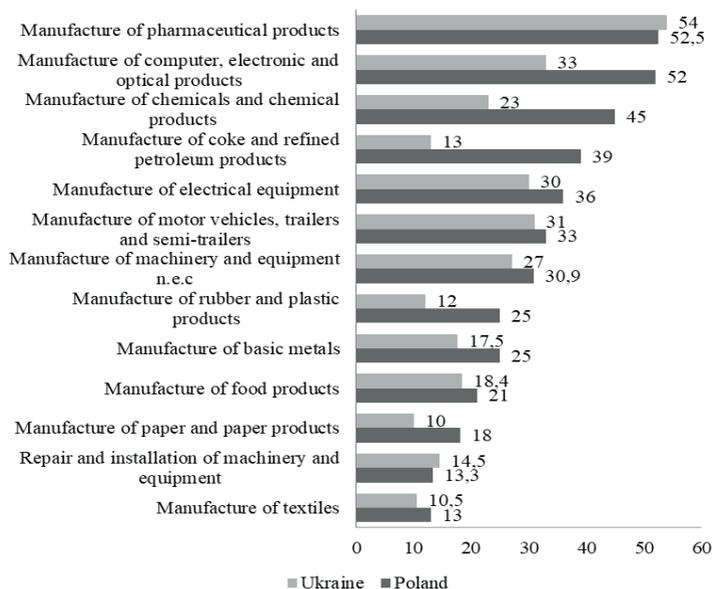


Fig. 1. Share of enterprises engaged in innovation in the total number of enterprises in terms of economic activities for Poland and Ukraine in 2018 (%)

Source: calculated by the authors using [8, 9]

As almost all financing of innovation activity in Ukraine comes from the own funds of enterprises, it can be said that the economic mechanism of support of innovation activity in Ukraine, compared to Poland, is at the stage of establishment and needs adjustment for its more effective action. In our opinion, one of the ways to solve the attraction of additional funds in innovation activities, in particular for foreign investors, is to build border clusters for promising areas of innovation (engineering and chemical industry).

The main components of projects on the innovative activity support in cross-border areas

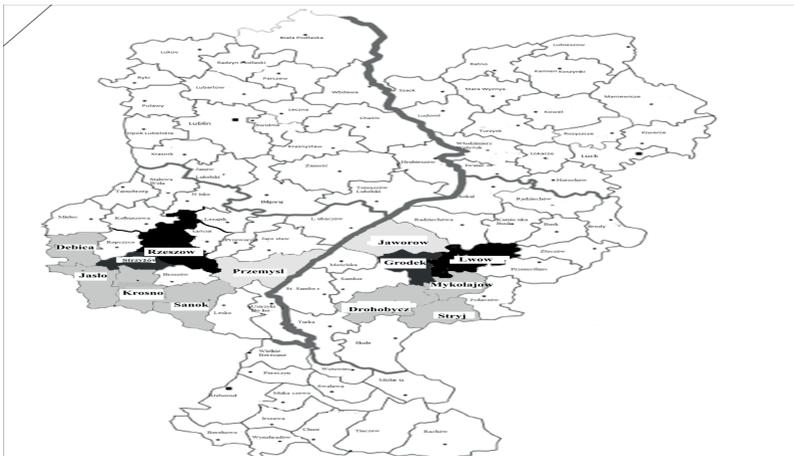
In Subcarpathian Voivodeship (Poland) and in L'viv region, (Ukraine) there are big basic enterprises specializing in:

1) vehicle production: ATS Stahlschmidt & Maiworm SP z o.o. Stalowa Wola (production of safety belts, doors and bumpers for cars); Open Joint Stock

Company «Drohobych Chisel Plant» (production of machinery for quarrying industry and construction); Open Joint Stock Company «Drohobych Truck Crane Plant» (production of motor vehicles), rohobych, Closed Joint Stock Company «L'viv Automobile Plant» (production of motor vehicles), L'viv, TzOV [«Limited Liability Company»] «Leoni» (production of electrical equipment for engines and vehicles), Stryi, Ukraine;

2) production of chemical and petrochemical industry output: (Rafineria Jaslo SA. Jaslo (petroleum refining products), Rafineria Jedlicze S.A. Jedlicze (petroleum refining products), Stomil Sanok S.A., GK. Sanok (production of rubber items), Open Joint Stock Company «Oil Refinery Complex «Halychyna» (petroleum refining products) [4, 120].

Given the distance between the enterprises in cross-border regions specializing in vehicle production it is appropriate to form industrial parks of virtual type. The main functions of such an industrial park are the interaction and coordination of all the participants of the innovative process in the region. To support industrial parks of virtual type, state institutions and local governments should pay special attention to the main components of innovative infrastructure and professional innovative management.



- Cross-border productive complex
- Cross-border exhibition complex
- Cross-border export complex
- Scientific centers of cross-border industrial parks

Fig. 2. Project scheme of the Ukrainian-Polish industrial park in the field of chemical and petrochemical industry

Source: developed by the authors

In view of the above described enterprise industrial specialization in

Subcarpathian Voivodeship and L'viv region and their geographical location in the cross-border area it is possible to realize an industrial park of investment type. Its territorial and organizational scheme is shown in fig. 2.

The scheme of the cross-border industrial park «Nadbuzhzhya» with project specialization in the field of chemical and petrochemical industry is shown in fig. 3.

The main components of the industrial park «Nadbuzhzhya» are: 1. Research. 2. Productive and technological units. 3. Infrastructure units. Each of these units provides appropriate information, financial, organizational and legal support.

Fundamental and applied research in the field of chemical and petrochemical industry for the industrial park «Nadbuzhzhya» can be carried out by the scientists of the Faculty of Chemistry of Ivan Franko National University, L'viv Polytechnic, Rzeszow University, Rzeszow University of Technology and the Institute of Bioorganic Chemistry and Petrochemistry of the NAS of Ukraine. It is advisable to create design bureaus, research institutes and design organizations in these universities.

The main task of small and medium enterprises as part of the industrial park «Nadbuzhzhya» is to test and introduce innovation in production. The “Fund of Small Innovative Business Support” should be responsible for the financial support of such enterprises.

The basis of the industrial unit of «Nadbuzhzhya» park is big chemical and petrochemical industrial enterprises (oil refinery plants in Jaslo, Jedlicze, a plant for rubber production in Sanok, OJSC «Oil Refinery Complex «Halychyna» in Drohobych), which provide mass industrial production of innovative products. The realization of industrial park innovative production is carried out through the infrastructure unit. This unit includes insurance companies, marketing companies, exhibition centers and logistic companies. We offer to create exhibition centers in Truskavets since it is a resort town and is provided with hotel service as well as in Peremyslyany and Yavoriv districts, logistic companies based in Horodok district and Stryzhovsk district (see fig. 2).

The infrastructure unit shall transfer data on customers' wishes to the unit of industrial park information support for making decisions on improving innovative products.

Consider the goals of the individuals interested in the creation of the industrial park «Nadbuzhzhya».

The objectives of the Universities (Ivan Franko National University, L'viv Polytechnic, Rzeszów University, Rzeszow University of Technology) are as follows:

- direct connection between science and production;
- the sharing of new technologies, accelerating the process of commercialization of research;
- increase in staff's knowledge and skills through training, retraining and skill development.

The objectives of the participation of small and medium enterprises-residents in the industrial park are as follows:

- ensuring stable business development with strategic business partners;
- availability of production facilities, technologies, infrastructure, intellectual property, «know-how»;
- creating favorable conditions for sustainable, long-term business relationships with industrial park members;
- reduction in production costs due to the territorial localization of the most of industrial park business entities;
- employment of qualified staff of large industrial park enterprises.

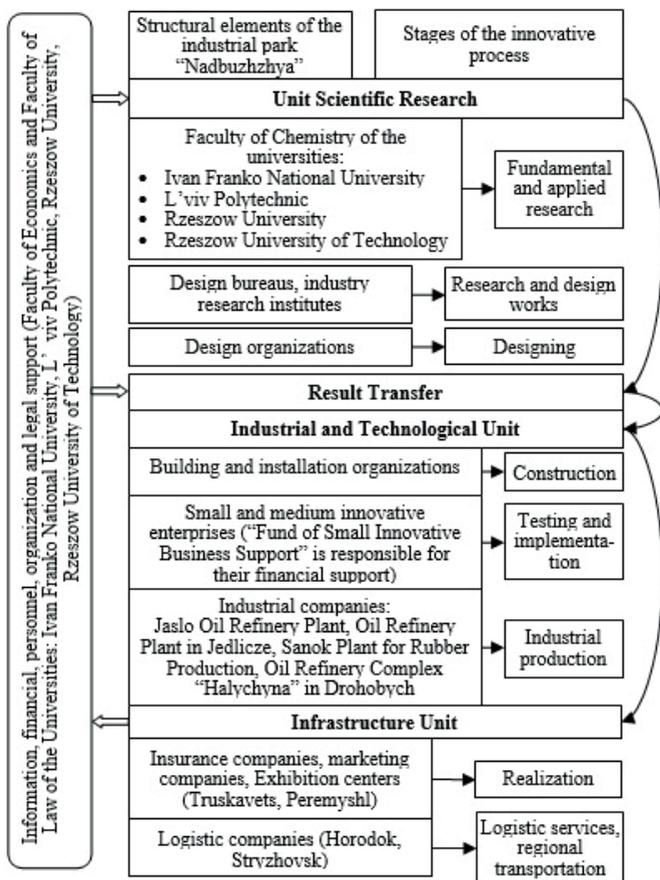


Fig. 3. Scheme of the cross-border industrial park «Nadbuzhzhya»
 Source: developed by the authors

The objectives of basic (parent) enterprises (oil refinery plants in Jaslo, Jedlicze, a rubber production plant in Sanok, OJSC «Oil Refinery Complex «Halychyna» in

Drohobych) are as follows:

- focus on key areas of development for increasing added value;
- saving capital expenditures in connection with the release of non-core industries;
- reduction in current production costs;
- increase in production capacity and flexibility;
- simplifying a management system to speed up decisions.

The aim of the territorial community (regional authorities: L'viv and Subcarpathian ones) is as follows:

- increased employment by creating jobs for highly skilled professionals and graduates that affects the area's welfare;
- increase revenues to the budget;
- infrastructure development;
- influx of domestic and foreign investment.

The main advantages of the cross-border cooperation of L'viv region (Ukraine) and Subcarpathian Voivodeship (Poland) lie in the fact that within the association it is offered to build a range of modern infrastructural facilities – from a transport terminal and border industrial park organizations to an international airport. The project opens up a number of possibilities for Ukraine, for example, the membership in the Association of European regions and funding by EU funds for a number of joint with Subcarpathian and Lublin Voivodeship programs [6, 480].

In addition, the creation of similar industrial parks is important for L'viv region for the development of the depressed areas that directly border with Poland.

The main idea of the industrial park «Nadbuzhzhya» is to create specialized clusters: Cluster A (centered in Drohobych and Krosno) may specialize in the manufacture and export of innovative chemical and petrochemical industry products. Cluster B (with the center in the form of a fairground at the border) should focus on marketing, insurance services, as well as exhibitions and e-commerce; Cluster C (centered in Stryzhovsk and Horodok) – on logistic services and regional transportation.

In the international practice, there are many successful examples of industrial enterprise merging in so-called clusters. In Italy there is the most advanced cluster system. Over the past 50 years a powerful branched cluster model of the economy has been created there. The model of a network system, in which there is a support mechanism between clusters based on the study of innovative, cooperative and organizational links between enterprises, has been formed in the country. Austria, having examined first the possibilities of each region has built nearly a whole sector of the innovative economy on a cluster model. Developed cluster systems operate in Hungary, Poland and Romania. For example, in Gdansk (Poland) the cluster, which deals with biotechnology, computerization, electronics and telecommunications, involves about 60 companies [1, 504].

The clustering of an innovative system is the transition from supporting individual companies and organizations, leading scientific research to the support of the development of interconnected clusters simultaneously running the state science

and technological and innovative policy. Therefore, a state innovative policy should be based not on some «isolated» enterprises and institutions, but on involving them into clusters (networks). Thus, a cluster system is designed to interact with public research institutions, universities, industry and business.

The study gives reasons for the following conclusions.

1. The most promising sectors in Ukraine's innovative activity are engineering, chemical and petrochemical industries. The development of information infrastructure and professional innovative management is a key element of the innovative infrastructure, which needs public support.

2. On the basis of the enterprises in Subcarpathian Voivodeship and L'viv region, which specialize in the production of chemical and petrochemical industry items, it is reasonable to develop and implement a project of the industrial park of investment type. The main activity of the industrial park can be aimed at financing various stages of innovative projects, searching for sources of innovative funding and helping in developing investment projects.

3. The international experience demonstrates the increased efficiency of state innovative policy that is oriented to the support of a cluster model of the innovative economy.

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APPROACHES TO THE FINANCIAL COMPONENT MODELING OF BUSINESSES ECONOMIC SECURITY

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Today, the dynamic development of social life causes permanent changes in economic processes, which most often occur in conditions of increasing volatility and risk in the operation of different businesses, construction, in particular.

Contemporary threats can affect the level of construction efficiency, its competitiveness, the rational use of all types of resources, ensuring a high level of profitability, solvency and financial sustainability.

All this determines the urgent need for research and modeling of the financial component, as dominant in the economic security of construction businesses taking

into account their industry-specific character [1].

The economic content of finance in construction, as well as the functions and basic principles of their organization are similar to those existing in industry and other sectors of the economy.

However, there is a specificity in the finance management, due to the technical and economic features of the industry, namely:

1. Construction production is characterized by a longer production cycle, which affects the volume of work in progress, covered by working capital.

Therefore, work in progress has a large relative share in the structure of working capital.

2. The construction of the facilities is carried out in different climatic and territorial zones, which is telling on their individual cost and leads to uneven receipt of proceeds from the delivery of completed works to the customer.

3. Financing of construction is carried out within the estimated cost, which is established on the basis of construction contracts with customers, as well as contracts concluded with material and technical resources suppliers [2-5].

4. The nature of the construction works causes a different degree of materials consumption and complexity of the work performed in specific construction periods, which determines the uneven demand for working capital. For example, the beginning of construction requires large material costs, and finishing works reduce material consumption while increasing labor costs.

5. Due to the heterogeneity and different nature of the costs required for the objects under construction, the price is determined on individual basis. The estimated cost of construction includes direct, overhead costs and planned savings. This order of pricing determines the normative method of profit planning.

Normally, the construction process consists of several steps: exploration, development and approval of construction budget; implementation of construction and assembly works. All stages are performed by specialized organizations. Financing is carried out for the account of customers [6-7].

Construction funds include:

- the customer funds;
- construction companies funds;
- planning organizations funds;
- geological exploration organizations.

The construction of a specific object is carried out on a contractual basis to order of another organization (the investor) and for his account, and the presence of work in progress is covered by means of a construction organization.

The finances of the investor represent a set of funds intended to cover expenditures in the newly created, reconstructed, updated and modernized fixed assets and for the vesting of the newly created and expanding production with current assets.

The sources of their formation are: sinking fund; the portion of the profit from core activity; long-term bank loans; budgetary allocations; tax investment credit, etc.

Finance contractors are formed mainly, in the same way as finances of industrial enterprises, however, their organization is carried out influenced by the specifics of construction industry production and commercial cycle.

The efficiency of contracting organizations financial management is affected by the duration of the production cycle, and in addition, the need to hand over a construction object to a customer in accordance with the established legislation. As a rule, the signing of acceptance certificate is preceded by the faults removal process, which, in turn, requires time and financial resources, whereas the facility construction is deemed completed. In addition, usually a fairly long warranty period is established during which the contractor is obliged to eliminate deficiencies identified in the process of the facility operation [8].

One of the most important features of contractors finance is unevenness in the flow of revenue, which is the main source of formation of own capital which is related to the duration of the production cycle and uneven requirements for working capital, which is characterized by different labor content and material consumption of works carried out at different stages of construction.

Considering the structure of the balance of the Ukrainian construction enterprises, the peculiarities of the structure of their assets is revealed, with assets high proportion in current assets (about 60 %).

Such ratio of current and non-current assets is also characteristic for the agricultural sector.

So the author of work [9] calls the reasons for such assets structure in construction businesses:

- high level of accounts receivable caused by prolonged period of the construction objects erection;
- high level of material resources;
- high level of fixed assets depreciation etc.

It should also be noted that settlements and monetary funds make a significant portion of contractors working capital. Working capital structure has no finished products, due to technical and economic characteristics of capital construction. The need for working capital is determined by valuation methods used in the industry, taking into account the specifics of construction companies.

Financial result (profit or loss) of construction organization includes financial result from objects handover to the customer, works and services stipulated by the agreements, selling fixed assets, other property of the organization, products and services of subsidiary and auxiliary productions that are the property of a construction company, and income from post-marketing operations, reduced by the sum of costs spent for them.

Working capital in construction companies are characterized by a long turnover. This feature is reflected in the fact that the funds turnover in contracting construction organizations ends in proportion to handover to the customer completed construction works. Depends on the form of payments for construction products.

In this regard, there is a large proportion of advance payments from customers and bank loans. Usually, construction contracts provide for advance payments to construction organizations. Loans are mainly issued upon the corresponding security, to a lesser extent – for a finished construction object.

This provision enables us to justify the importance and relevance of reporting the advance payments received by a construction business when modeling financial level of their economic security.

With the aim of clear understanding of the financial and economic mechanisms of the impact of advance payments received for the economic security, consider the principle they are recognized in the financial reporting of construction companies.

Methodological principles of data formation on revenues and costs in contractors accounting are associated with performance of construction contracts, and disclosure of this information in financial reporting determines the Provision (standard) of financial accounting 18 ‘Construction contracts’.

Advance payments under the construction contract – monetary funds or other assets received by contractor as payment for work performed under the construction contract [3].

Thus, upon receipt of an advance payment by the construction company from customer (investor), in accordance with the provisions of accounting, accounts payable occurs, which is recognized in the liability side of the balance-sheet, which, in accordance with accepted methods of financial analysis leads to an increase of borrowings in the capital structure of the business and, as a consequence, downfall of financial stability, liquidity, and solvency indicators. At the same time, according to the definition of advance payment under a construction contract, the amount of working assets of a business, including the most liquid assets – monetary funds, increases, which, in turn, has a positive impact on the financial indicators and, as a consequence, on the financial and economic security of a construction business.

Understanding this situation requires a study of the impact produced by the amount of advance payments received by the construction business, on the financial security indicators.

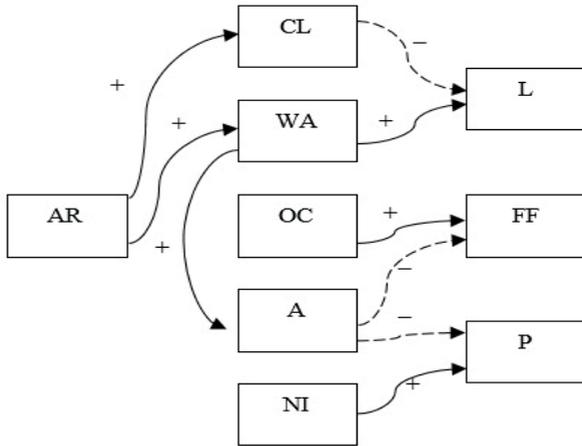
Table 1

Technique to calculate the components of Construction Businesses Economic Security (CBES) financial level

The level of construction business financial security	Indicator	Calculation formula
Short-term financial solvency	Current liquidity factor	$(\text{working assets}) / (\text{current liabilities})$
Long-term financial solvency	Equity-assets ratio	$(\text{own capital}) / \text{assets}$
Cost effectiveness	Return on assets (ROA)	$(\text{net income}) / \text{assets}$

For the study we selected the indicators used in the financial stability and economic security of enterprises analysis (table 1).

Here we provide a graphical representation of certain relationships of capital advanced by customers to construction companies and indicators of their economic security financial level (fig. 1).



Legend:

AR – advance payment received;

CL – current liabilities;

WA – working assets;

OC – own capital;

A – assets;

NI – net income;

L – liquidity level;

FF – financial firmness level;

P – level of profitability.

+ positive factor influence

– negative factor influence

Fig. 1. Here we provide a graphical representation of certain relationships of capital advanced by customers to construction companies and indicators of their economic security financial level

Compiled by authors [10]

We investigate the dependence of each of the considered components of the CBES financial level on the value of advance payments received by a company.

The output data for the study obtained from the annual reports of thirty-five construction companies are presented in table 2.

Table 2

**Output data for the study of the dependence of the components of the
CBES financial level on the value of advance payments received**

No. seriatim	Advance payments received	Short-term financial solvency	Long-term financial solvency	Cost effectiveness
1	51,410	0.883042	0.15354	1.815808
2	181	1.281567	0.533434	3.740216
3	21,071	1.412243	0.35127	1.650019
4	970	1.699515	0.518646	4.9198
5	3,510	1.205607	0.392776	3.495908
6	593	1.45181	0.502633	6.914739
7	12,492	1.506633	0.452442	3.234227
8	37,144	0.823619	0.288706	3.159485
9	18,950	1.395784	0.294434	3.688979
10	1,726	1.21154	0.525643	6.171143
11	573	1.608773	0.414668	3.720853
12	573	1.601843	0.328459	5.492051
13	360	1.453396	0.443534	4.959194
14	32	1.819444	0.33912	8.333333
15	68,365	0.967382	0.055578	2.135914
16	39,553	0.670256	0.259393	2.3689
17	27,260	1.158335	0.371645	1.282256
18	1,274	1.444726	0.304389	5.144911
19	7,217	1.706894	0.425741	3.777218
20	1,191	2.157891	0.713613	2.6105
21	166	1.915775	0.33667	7.8886
22	62	1.572939	0.331996	5.57041
23	52,572	0.716061	0.228733	1.270392
24	17,006	0.9219	0.318514	2.102656
25	5,228	1.258177	0.377689	4.88763
26	1,031	2.372909	0.704612	5.0406
27	126	1.679754	0.321768	2.3635
28	6,297	1.244397	0.455877	4.60996
29	202	1.967734	0.407952	5.947938
30	20	1.470297	0.379668	3.331784
31	72,867	0.760144	0.198674	0.442986
32	28,017	0.818883	0.173562	2.630865

33	10,989	1.422679	0.351393	4.410493
34	1,282	2.034858	0.715544	7.9536
35	7,583	1.424534	0.381136	2.504938

**Compiled by authors based on SMIDA data*

On the basis of the output data of selected components of the financial level of construction businesses economic security (CBES), we construct the theoretical dependencies of each of them on the amount of advance payments received (fig. 2).

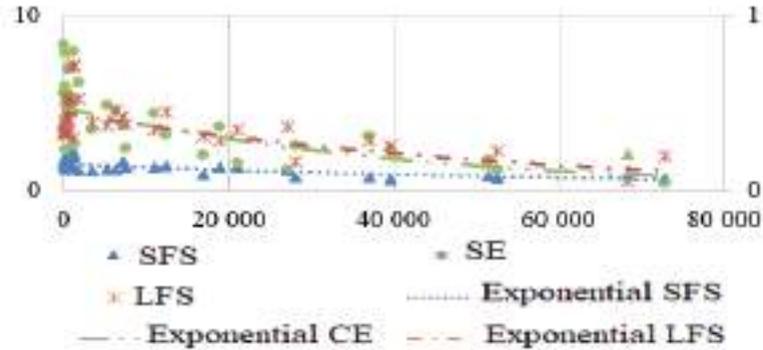


Fig. 2. Field of correlation of short-, long-term solvency, financial efficiency and advance payments received

The results of the theoretical representation of the dependence of indicators selected for research, on the advance payments received for construction businesses will be presented in the summary table. 3 [10].

Table 3

Theoretical dependencies of CBES financial level

Indices of CBES financial level	Determination factor, R ²	Theoretical dependence, f(r)
Short-term financial solvency (SFS)	0.6255	$x(r) = 1.5943e^{-1E-05r}$
Long-term financial solvency (LFS)	0.6123	$y(r) = 0.4516e^{-2E-05r}$
Cost effectiveness (CE)	0.605	$z(r) = 4.7719e^{-2E-05r}$

The results obtained allow to proceed directly to the modeling of the financial level of economic security of construction businesses, taking into account their inherent financing specifics.

For the study of the financial level of EBPS we apply methods of differential calculus, which study the theory and methods of solving equations containing the

desired function and its derivatives of different orders of one argument (ordinary differential) or several arguments (differential equations in private derivatives).

Thus the equation contains not only an unknown function, but also its various derivatives. In solving this problem we will use the differential equation in partial derivatives.

We will consider the financial level of the CBES as a complex function $f = f(x, y, z)$ defined in the open domain Ω , with each of the variables x, y, z being a function of the variable r . In accordance with the indicators of the CBES financial level, presented systemic interaction, we introduce the notation:

x – short-term solvency of a construction business;

y – long-term solvency of a construction business;

z – financial efficiency of a construction business;

r – advances received by the construction company from the customer.

In this case: $x = x(r)$; $y = y(r)$; $z = z(r)$, that is, the function f is a function of the variable r , so f is a complex function of the argument r .

Thus, the proposed approach allows to present a model of the CBES financial level, allows to make a differential equation using the formula of a complex function full derivative:

$$\frac{df}{dr} = \frac{\partial f}{\partial x} \cdot \frac{dx}{dr} + \frac{\partial f}{\partial y} \cdot \frac{dy}{dr} + \frac{\partial f}{\partial z} \cdot \frac{dz}{dr}$$

In the presented expression (1):

$\frac{\partial f}{\partial x}, \frac{\partial f}{\partial y}, \frac{\partial f}{\partial z}$ – partial derivatives of the function $f = f(x, y, z)$;

$\frac{dx}{dr}, \frac{dy}{dr}, \frac{dz}{dr}$ – derivatives of the theoretical dependencies of the financial level components of the CBES on advance payments received (table. 3) [10].

Substituting the data into expression 1 and making the calculations, we obtain a differential equation, the solution of which will allow to determine a function that describes the impact of the advance payments received by the construction business on the CBES financial level.

Thus, a private solution of equation 2 is obtained:

$$f = 0,41659 \cdot e^{-10^{-5}r} + 0.117597 \cdot e^{-2 \cdot 10^{-5}r} + 2.37116 \cdot e^{-2 \cdot 10^{-5}r} - 1,90535$$

In fig.3 a graph of the EBPS financial level dependence on the advance payments value received by a business.

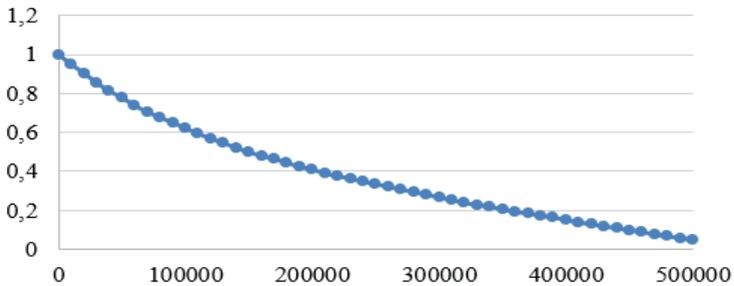


Fig. 3. Functional dependence of the EBPS financial level on the amount of advance payments received

The study results of construction businesses finance peculiarities, presented in this section, sufficiently reveal the financial specifics of the construction industry.

Thus, the obtained functional dependence allows to conclude that the growth of capital advanced to a construction business, leads to a decrease in its financial stability from the point of view of financial analysis, and as a consequence, reduces the overall level of EBPS while adversely affecting its financial component.

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CURRENT THINKING ON NEW APPROACHES TO THE ESSENCE OF ECONOMIC SECURITY OF THE COMPANY

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The usefulness of ensuring the economic security of any company dictates the objective necessity to fulfill the tasks of ensuring the stability of functioning and achievement the basic goals of activity for each economic entity. The economic crisis has increased the impact of dangers and threats on the activity of all companies in these difficult conditions that have developed in the Ukrainian economy. The issue of ensuring the economic security of the company is acute because the ability of any enterprise to develop steadily and carry out effective economic activity is determined by the stability of its financial condition, the efficiency of economic activity, as well as the ability to stand up to internal and external negative factors. Ensuring these basic principles of enterprise activity will allow the Ukrainian economy to get out of the systemic crisis and follow the road of social and economic development.

The notion of «economic security» as an independent entity is quite new. It is integrally and thoroughly researched by modern scientists at the macro level, mainly in the system of general categories. It is about national security or economic security of the country. A comprehensive study of the essence of the notion «economic security» as an independent object of management at the level of business entities in modern literature has not been sufficiently investigated. It is identified only as one of the elements of enterprise security.

The necessity for a comprehensive approach to the formation of economic security of the enterprise determines its allocation to an independent management unit in the overall system of financial management. This approach protects economic interests of the enterprise in the development process. In this regard, there is a need to study carefully the essence of the notion «economic security of

the enterprise». There is a need for identifying its most characteristic features as an object of management.

Modern scientists interpret the notion of «economic security» as the condition of the most efficient usage of resources of the company, also as a measure of harmonization of its interests in time and space or as a condition of protection against external and internal threats [1]. So, we may say about the absence of a clear and precise definition of the term «economic security of the enterprise». Scientists study various factors that affect the economic security of the enterprise depending on the explanation of this category.

It is characterized by both qualitative and quantitative indicators, which are directly dependent on the ability of top management and profile specialists of the company to respond adequately and effectively to possible threats and quickly eliminate the harmful effects of negative components of the external and internal environment of the company.

Economic security and its criteria are quite versatile in researches concerning economic security. Therefore a generally accepted definition of this notion is not available yet.

So, O. A. Grunin understands the economic security of the company as a condition of an entity that uses corporate resources most effectively and can mitigate, prevent or protect itself against the existing dangers or threats or unforeseen circumstances and is capable to achieve business goals at a moment of competition and economic risk [2].

According to E. A. Oleynikov, economic security of the enterprise is a condition of the most efficient usage of available resources in order to overcome threats and ensure the stable functioning of the enterprise at present and in the future [3].

There are many other variants of definitions of «economic security». They are characterized by their diversification and a wide range of usage which have a relation to international relationships, sociology, jurisprudence, etc. At the same time, almost all domestic researchers use such categories as «threat», «priorities», «economic security criteria» and their «limit values».

Given an in-depth analysis of the proposed definitions of the economic security of the enterprise, it can be underlined that the scientific literature still lacks a common and consolidated view on the notion of the economic security of the enterprise. However, it is possible to distinguish some specifics and approaches to the definition of «economic security of the enterprise». According to these peculiarities the purpose of creation and basic methods of operation of the system of economic security of the enterprise may change (table 1).

Modern security theory interprets the essence of economic security in terms of several approaches, such as: protective, financial, sustainable, informative, resourcing and functional, competitive and harmonizing. Some approaches are still at the stage of formation, others have their own positions in the enterprise security system (protective, resourcing and functional, harmonizing).

At the same time, approaches to the understanding of the category «economic

security of the enterprise» do not contradict or compete with each other.

Table 1

The aim of creation and functioning of the system of economic security of the company in accordance with the approaches of its understanding

The name of the approach	The essence of the approach	The purpose of creating and functioning of the economic security system
Resourcing and Functional approach	Enterprise development that is achieved through the efficient usage of corporate resources by functional components	Ensuring stable functioning and development of the enterprise, preventing internal and external negative threats
Protective approach	Preventing the negative impact of the environment and protecting the economic interests of the enterprise	Counteracting the negative impact of the environment Protection of the enterprise from threats of the internal environment
A sustainable approach	The ability of an enterprise to have a balance and sustainability as an economic system	Ensuring stability, independence, ability to progress in the conditions of destabilizing factors
Competitive approach	The competitive advantages as the main condition for ensuring the economic security of the company	Advantages that guarantee the possibility of existence and development in a competitive environment
Harmonizing approach	Harmonization of the interests of the company with the interests of the environment	The economic interests and their protection in interaction with the external environment
Financial approach	The ability of the company to provide the realization of financial interests	Increasing financial stability of the company, protecting its commercial interests from the impact of negative market processes
Informative approach	Keeping business secrets	Data protection

Based on [4, 14]

They do not substitute each other and are not analogues of other ones. Each of them is a synthesis of the point of views of a certain area of economic security and has a number of special advantages and disadvantages [5].

Kozachenko V.G. and Adamenko T.M. understand the lack of rivalry in approaches to understanding the definition of «economic security» because of the fact that each approach uses the interpretation of the essence due to the concept which is based on the categorical and conceptual apparatus, the so-called «imperative concept» [4].

The imperative notion of the approach to understanding the essence of the economic security of the enterprise is a starting point for other concepts of a specific

approach that complements it, reveals its content more fully and clarifies its purpose.

Among other things, the concept of «threat» is compulsory in the defensive approach, «resource efficiency» is the basis principle of the resourcing and functional concept, «business interest» is important in the harmonizing one and 'competitiveness' is basis in the competitive concept.

The protective approach most fully reflects the main essence of the economic security of the enterprise, that means protection against the negative impacts that may occur in all areas of its activity, at the same time, supporters of the protective approach do not take into account the following characteristics in this interpretation: efficiency of the activity, as the main goal of creation and existence of the enterprise ; prospect – the condition of the object at the present time is under study; the influence of the environment takes into account indirectly.

L.E. Shulzhenko underlines that the key position belongs to the concept of «ability» in the interpretation of the concept of «security», which needs more consideration in the economic security of the enterprise [5]. D.P. Pilova defined the economic security of an enterprise as its ability to resist the combined impact of threats to the macro- and microenvironment in order to achieve its strategic goal in all activities [6].

The economic security of the enterprise in accordance with this approach can be considered as:

- the condition of protection of the main interests of the enterprise from the available and possible dangers or economic threats;
- the protection of its productive potential from direct or indirect threats;
- the protection of its activities from the negative impact of the environment, as well as the ability to respond in a proper way to a variety of threats or adapt to existing conditions;
- the protection from the negative impact of internal and external factors: social, economic, environmental, legal and force [7, 8, 9, 10].

The main principle of harmonizing approach is the dependence of the interests of the enterprise on the interests of the environment. A group of economists led by V. Gusev define «economic security» as the current state of efficient usage of resources and the existing market advantages of the enterprise, which contribute to the prevention of internal and external threats, ensure long-term survival and sustainable development in the market in accordance with a chosen mission [13]. That is why, the economic security of an enterprise is understood as a measure of harmonization of the economic interests of the enterprise in time and space with the interests of environmental stakeholders [15].

A common disadvantage of a harmonizing approach is that orientation towards the external environment significantly negates the impact of the internal condition of the enterprise on its economic security. Moreover, it should be emphasized that the focus on the external environment is a determining factor for the functioning of business in a market economy.

Resourcing and functional approach to the study of economic security can be considered as a quite popular one in the scientific literature. The following functional components of the enterprise are traditionally considered: technical, technological, financial, legal, environmental, personnel, informative, power. However, there is often a combination of resourcing and functional approach with active one, where the economic security of an enterprise is shown as:

- a state where external and internal threats can be prevented with the most rational usage of resources and existing market opportunities; ensure the viability and sustainable development of the enterprise in the market in accordance with the chosen mission;

- a state when the avoidance, mitigation or localization of threats and dangers are possible with the most efficient using of resources, and, as a result, the entire enterprise realizes own goals in competitive conditions;

- a state of corporative and productive resources (financial, personnel, informative, technological, technical) and entrepreneurial opportunities, where they will be most rationally used for the effective functioning, dynamic, scientific, technological and social development, confronting and preventing internal and external threats [1, 10, 12].

The main disadvantage of these approaches is the complexity of their usage in the activities of domestic enterprises at the present stage of their development.

In addition to all approaches above that characterize the level of economic security, some experts recommend the use systematic, integrated, strategic, sustainable approaches that have not got theoretical substantiation and wide practical application yet.

All approaches above are closely intertwined. None of them can be called inclusive and perfect. Each next scientist adds own refinements to the existing characteristics, but the common idea from all definitions is the following: maintaining the enterprise in the condition of economic security is the main prerequisite for sustainable business development.

The final choice about the usage of this or that approach or its individual components rests with each enterprise and depends on such factors as the size of the enterprise, its activities, owner's ambitions and many more.

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ORGANIZATION OF BUDGETARY MANAGEMENT IN CONDITIONS OF PROVIDING FINANCIAL DECENTRALIZATION IN UKRAINE

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Decentralization in decision-making promotes territorial development, and fiscal decentralization promotes revenue mobilization and public service delivery. Therefore, it is important to take into account the experience of functioning of foreign countries when constructing a decentralized budget model in Ukraine. The

main principles of which are responsibility, efficiency and openness, which contributes to the improvement of the division of powers, optimization of revenue mobilization and regulation of the state credit system [1]. The development of financial decentralization implemented in Ukraine requires the provision of a full and effective mechanism for managing budget resources at all stages of the budget process, and especially in the context of regulating the system of intergovernmental budgetary relations and financial equalization. Scientists believe that: «... Being closely connected with the organization of the government system, decentralization is a factor in building fruitful relations between the central government and local governments» [2, p. 158]. In the context of financial decentralization, the issue of financial autonomy on the ground, that is, the right to free ownership and disposition of financial resources to perform functions and powers, is sharply raised. In particular, the approximation of financial resources directly to the consumers of services, ensuring the efficiency of management through the selection of the most needed with the optimal price under the direct control of the community. Experts dealing with decentralization state that: «... today there are contradictions and conflicts of interest between the interest of local development actors and the actual competence of the executive and local self-government bodies, the satisfaction of the territorial community in their management services and quality ...» [3]. An effective step along this path will be to expand the functions of local governments, delegate authority and increase responsibility for the use of budgetary resources. The organization of the budget process should be carried out on the basis of the provisions on the functioning of public finances: «... it is necessary to spend no more quantitatively, but more effectively and closer to taxpayers and consumers of financed public services...» [4, p. 5]. Such an approach, in our opinion, will contribute to solving key issues of economic development of the territories, completeness and ensuring the financing of budgets, social standards, quality of service delivery. Undoubtedly, the priority at the same time is measures to activate the development of the economy and its shadowing, reduce the tax burden, introduce mechanisms of interaction between government, community and business. In the context of this study, considering different scientific approaches to the essence of the category «budget management» we managed to form his own interpretation, which is interpreted as: «a complex of means, procedures, methods, techniques for managing budget funds in the budget process of the state». Based on the formulated essence, the main task in the implementation of budget management, we see the achievement of efficiency, radically and efficiency of managing budget funds. Its implementation is directly entrusted to the budgetary management bodies-legislative and executive authorities, operational budgetary management and non-financial bodies. Therefore, the executive consciousness of the participants in the process must consist in the ability to make promising, optimal and competent decisions at every stage of budget management: planning, execution, accounting and control over budget execution. While researching the structure of budgetary management,

it is worth noting the importance of each, but we believe that priority should still be given to budgetary planning, as the main component of financial planning, which actively participates in the distribution and redistribution of gross domestic product between budgets of different levels and aims at ensuring complexity, priority, rationality, unity, realistic and validity of budget estimates. Practice shows that the inconsistency and imperfection of certain legal acts and methodology of providing medium-term and program-targeted budgeting reduces the rationality and efficiency of the functioning of the state budget system. The increase in commitments and financing, mainly through intergovernmental transfers, has transformed them from a regulatory instrument into a source of financing. This situation forces to find out the causes and take measures on the fundamental changes in the choice of vectors for the development of the budget system. Conclusions of the Strategy for the Reform of the Public Financial Management System for 2017-2020 revealed that inefficient management of public finances is mainly due to the low level of satisfaction of the needs of the population and a considerable amount of public expenditures (about 43,2 % of GDP in 2015) [5]. An uncoordinated medium-term state policy adversely affects the level of effectiveness of the program-target method and investment processes in the country. The gaps in the targeting method are the unpredictable risks of using budget funds, the ramifications, duplication and underfunding of budget programs [6]. Considering these problematic aspects, the main directions of the budgetary policy for 2019–2021 are: «... improving budget planning tools, strengthening the financial capacity of local budgets, improving the efficiency and effectiveness of using budget resources, and creating a two-tier system of intergovernmental budgetary relations...» [7]. The implementation of these provisions will be implemented through the introduction of program-targeted budgeting at the level of local budgets, expanding the tax base of revenues of local budgets, equalizing their tax capacity, expanding the geography of direct relationships of local budgets with the state (continued creation of OGT), decentralization of budgetary powers. Currently, in mid-2019 and fully into 2020, the process of introducing mid-term planning at the local level begins, leading to an increase in the number of stages [8]. The forecast of local budgets is planned to be made on the whole, by basic indicators, income, development priorities, investment programs, debt and budget liquidity, intergovernmental relations (paragraph 3, subparagraph 2, point 49 of section VI «Final and transitional provisions») [9]. When implementing medium-term planning, it is important to take into account the particular circumstances of the impact of inflationary processes and the elements of destabilization, which may adversely affect the implementation of the strategy plan. In addition, there are risks of deterioration of budgetary discipline, low levels of competence and responsibility of participants in the budget process. A distinction should be made between the budgetary authority over the medium term. This process should be accompanied by the consolidation of national taxes and the reformation of the principles of a development management system that will allow

the formation of financially able communities capable of self-realization and active position. The basics of strategic planning are defined by the Budget Declaration, in particular, the limits of the budget deficit, strategic directions of development and the amount of budget expenditures by the main spending units. The peculiarity of strategic planning is the refinement of budget programs for the next period without significant changes, promulgation of the results of their evaluation, which characterizes transparency, anti-corruption of the budget (use of systems: «E-Data», «Openbudget»). These are changes recommended by the European Commission under the new fiscal conditions, accounting procedure, security system and sanctions [9]. The next steps will be: ensuring long-term planning; security and limitation of public expenditures; detailed forecast and analysis of income; introduction of fiscal and corrective instruments; effective monitoring. Along with the introduction of medium-term planning, the development of a democratic state requires the development of a proper budgetary strategy, namely a model budgeting based on program-based budgeting, taking into account foreign experience towards the use of an investment loan instrument (UK), three-tier independent planning in Sweden, reserves), five-year planning in Germany (economic equilibrium of power, legislative support for loan instruments, debt, expenditure regulation) [10]. Budget forecasting combined with the programmatic targeting method reveals budgetary opportunities and actual financing [11]. The purpose of the program-target method is to: open the budget; achievement of task performance efficiency; strengthening the responsibility of program implementers; development of budgetary policy. The components of programmatic budgeting include: «... the manager's purpose; purpose of activity; purpose and objectives of the program, performance indicators» [12]. The volume of programs, the purpose, the task, determines the passport of the budget program. It is formed on the basis of budget requests and budget appointments, is developed by the main spending units, approved by the Ministry of Finance. As the practice shows, the budget process in the past years was carried out on the principle of retention, but current requirements require effective financing. Thus, our opinion is in line with the opinion of some experts, regarding the need to determine the mechanism of priority of selection and sources of financing of budget programs. In particular, programs with defined performance indicators, namely the number of service users, process description and performance results. This, in turn, will facilitate effective management decisions and quality development policies. Budgeting is the process of planning and designing its results in the form of a budget system. As a financial planning tool characterizes its purpose, the definition of specific financial and operational tasks for certain periods [13, p. 159-160]. Budgeting goals are to: ensure current planning; coordination and communication between units; cost justification; control of plans [14, p.198]. According to the research of foreign scientists, budgeting occurs in the systematic measures, in particular, reforming the public administration system, and is focused on the effect of spending budget funds. In view of this, it is worthwhile in national practice to

adhere to strategic budgetary goals, first and foremost in the field of social security, which has global implications for the development of society, improvement of quality of life, demographic situation and, finally, human potential. Exploring the peculiarities of budgetary interrelationships in terms of budgetary decentralization, it should be noted that there are such types of budgetary relationships as the distribution of expenditures according to delegated powers, the provision of revenue sources to exercise their own and delegated powers, the redistribution of funds between donor budgets, and the formulation of recipients' alignment [15, p. 119]. Their implementation is carried out by means of financial instruments: «... regulatory and own taxes; tax delimitation; general-purpose grants; targeted transfers...» [16, p. 823]. However, practice shows that the share of local budget revenues in the consolidated budget is insignificant (more than 20 % without transfers) the provision of local budgets is mainly due to intergovernmental transfers, which accordingly impedes the development of the institution of local self-government [17, p. 59]. The unsustainable fiscal equalization policy in the current system of intergovernmental budgetary relations in Ukraine restrains local authorities from pursuing sound local policies in shaping the proper investment climate. The effectiveness of budgetary management is seen in the creation of an effective distribution mechanism, taking into account the level of self-sufficiency, growth of tax potential, territorial image. And the budgetary allocation should take into account the natural and climatic conditions of the regions, tax and resource potentials, ecological status, etc. In addition, scientists see stimulating factors for regional development in improving the local tax system. In the USA, local tax financing is 88,6 % of local budget revenues [18, p. 223]. The advantage of tax over transfers improves tax discipline, promotes the efficient mobilization of levies, and stimulates the authorities and business structures. Expenditure management requires clear rules and procedures, appropriate analytical systems and methods, informing participants in the budget process, increasing the effectiveness of expenditures under decentralized expenditure management methods, setting goals, quality standards and controls. In the process of budget execution, the main task is to control the budget funds provided in order to use them properly. Continuous deviations from planned funding from actual funding require modifications, and therefore expenditure monitoring, which will allow us to adjust funding plans according to realities and current needs. Periodic reports should include information on the level of program performance and service delivery. The key to successful operation of the budget process is adherence to the principle of publicity and transparency (Article 7 of the Code), which is to inform the public of the progress of all its stages. It provides credibility and enhances the effectiveness of all controls over public finances. Its compliance ensures public confidence in budgetary policies, promotes budgetary inputs at various levels, and enhances the effectiveness of public and public control over public finances. An important area of socio-political development in Ukraine is the introduction of a qualitatively new type of relations

between citizens and authorities. In particular, the Law of Ukraine «On Local Self-Government in Ukraine» recognizes the importance of involving the public, stating: «Ukrainian citizens exercise their right to participate in local self-government by belonging to the respective territorial communities». This right is also envisaged by the Code, but in practice the role of the public in decision-making is extremely limited. Transparency of the budget process is important because it allows citizens as taxpayers to control services, influence the distribution of expenditures, and monitor the quality of budget decisions. Methods for improving budget transparency include: involving the media in the budget process; preparation of information in the form of projects or budget collections; holding public hearings on budgetary issues; holding meetings for comment, as well as critical remarks, facts and opinions on a particular issue; compilation of voter list; setting up advisory committees representing the interests of the local public. In addition, an effective method currently practiced in Ukraine is the use of a «participatory budgeting» mechanism. It is a form of direct democracy – an open process of consideration and decision-making. Creating a budget with the participation of citizens allows their maximum involvement in discussing and solving problems of the territorial community by its residents. Budget implementation in Ukraine began in 2015 in Cherkasy, Chernihiv, Sumy, Poltava and Lutsk. The formation is supported by the Polish-American-Ukrainian Cooperation Initiative Foundation in the framework of the Project «Particulate Budget – Opportunities for Increasing Public Engagement and Establishing a Good Partnership with Authorities». The project has some achievements but: «... there is a need to increase the real participation of citizens in the budget process. It is necessary to increase the level of technological support for the openness and transparency of the budget of participants in the budget process. We need technologies for finding consensus of the multilevel participants of this process» [19, p. 105]. Our research shows that the formation and development of budgeting, subject to the introduction of new technologies of financial management, should strengthen the link between all participants in the budget process and ensure the rational accumulation and efficient use of budget funds in the current conditions of financial and economic development of the state.

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ECONOMIC SECURITY DIAGNOSTICS OF INDUSTRIAL ENTERPRISES BASED ON APPLICATION OF CONSULTING

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Economic security management of an industrial enterprise involves a set of interrelated elements that are aimed at the stable functioning of the enterprise, achievement of the set goals, overcoming various threats and rapid adaptation to changing environmental conditions. The scientific works of many scientists are devoted to the study of theoretical aspects of ensuring the economic security of enterprises, as well as some of its components [1-12]. However, issues of economic security diagnostics remain relevant.

In order to ensure economic security, it is advisable to diagnose the major threats, opportunities and environment of the enterprise in order to make appropriate management decisions. This should take into account legislative and regulatory acts, as well as methods and means that ensure the achievement of the declared goals and objectives of economic security of the enterprise.

Diagnosis of economic security of enterprises is associated with the need to seek and involve consultants to solve specific management problems of the enterprise and reduce (eliminate) threats to its security.

Consulting is a type of professional activity which ensures the providing of independent advice, guidance and assistance of qualified consultants to enterprises

and organizations with the purpose to investigate management problems find optimal solutions and implement recommendations, that's why consulting is of great importance of the economic security management. One of the newest areas of consulting is security of an organization.

The implementation of consulting services in the field of economic security involves the development of a set of measures aimed at improving the quality and efficiency of both the enterprise as a whole system and its separate components. Problems of diagnostics of the enterprises economic security in modern conditions have become especially relevant, because the efficiency of the enterprises functioning depends on the degree of their economic security. The economic security of an enterprise should be understood as a state of protection of economic relations that allows to avoid external dangers and threats, as well as to ensure the stable development of the economic potential and functioning of the enterprise in the current and future period. The most important factor for successful consulting is to identify the real needs of the clients of the organization and its management that they seek to satisfy in the consultation process.

The growing role of consulting in the global economy is caused by the complexity of management decision-making due to the increased of the business environment uncertainty. The range of problems solved by consulting firms is quite broad; in addition, the specialization of consulting services companies may be different: from narrow, limited one-way consulting services (eg, strategy, economic security, ecology, IT, taxes investment, personnel, finance, etc.) to the fullest one that provides a full range of services in some branch.

The main components of the economic security system of the company should include:

1. Intellectual and human resources component covers the development of intellectual potential, effective coaching creation, formulation of proposals for improving the corporate strategy and corporate culture of the organization. Intellectual and personnel security is based on modern professional knowledge, skills and competences that impede the negative impact on intellectual potential and corporate relations.

2. Information and communication component provides assistance in the selection, implementation and maintenance of software products to build an effective information and communication support of the enterprise. The modern process of informatization is an important tool for organizing and regulating social relations, since information affects all spheres of economy: it contributes to the growth of labor productivity, to the improvement of the economy management, to the development of high technology industries and high technologies. Nevertheless, information has become a factor that may cause the occurrence of technological accidents, military and political conflicts, miscalculations in the financial system, and so on.

3. Technical and technological component is based on the analysis and evaluation of the technology market, technological processes, as well as internal reserves for improving existing technologies in accordance with world standards. The technical

and technological component directly influences the increase of the technical level of the economic entities and ensures the competitiveness of the enterprise's products.

4. Financial component, its main task is to analyze and evaluate the systems and methods of financial planning and calculate the parameters of the future state of the enterprise. Financial security is formed on the basis of a set of financial instruments and technologies that ensure the realization of financial goals and objectives for achieving sustainable development of the financial system.

5. Marketing component studies the marketing environment of the enterprise, develops a marketing strategy, creates advertising and positive image, and forms a marketing network. The marketing component of economic security is formed on the basis of the managerial, economic and legal interests of the enterprise with the interests of counterparties, which give the opportunity to intervene target market share, increase the competitiveness of products.

6. Investment component involves the valuation of tangible and intangible assets, which affect the attractiveness of the investment climate and increase its efficiency, forecasting investment and current expenses, income and financial flows. The investment attractiveness of the domestic market somewhat hinders the process of attracting foreign investment.

7. Innovative component involves the choice of perspective ideas and mechanisms for the implementation of innovation processes in order to create high innovation potential. The basis of the modern stage of ensuring innovative security is the development of knowledge-intensive industries that produce scientific and technological developments and inventions in accordance with scientific and technological progress.

8. Foreign economic policy component is based on the definition and formation of priority areas for an effective system of cooperation with foreign counterparties. The integration processes strengthening intensifies the issue of foreign economic security, since participation in world economic relations and international division of labor characterizes the ability of the state to withstand the impact of negative external economic factors and minimize the negative effects they cause in order to create favorable conditions for economic development and to ensure foreign economic activity compliance with national economic interests.

9. Political and legal component ensures the effective legal support of the activity of enterprises, as well as observance of the legal rules of the current legislation. The political and legal component takes into account those threats that may have both internal and external origin. Negative internal threats may be a low level of legal service qualification, insufficient funding for legal support. Political conflicts and, as a consequence, political crisis, can be a negative external threat.

Ensuring the economic security of enterprises involves diagnostics of existing threats to each of the functional components and development of a system of measures to prevent and eliminate identified problems on this basis. The main tasks of economic security diagnostics are:

- forecasting of potential threats to the economic security of the enterprise;
- organization of activities for prevention of possible threats;
- identifying, analyzing and evaluating real threats to economic security;
- identification of causes, sources, nature, intensity of influence of threatening factors;
- organization of activities to respond to emerging threats;
- prediction of the main tendencies for ensuring stable functioning of the enterprise.

The main purpose of economic security diagnostics is to analyze and evaluate the state of economic security of enterprises, identify threats and opportunities, weaknesses and strengths in the process of development and implementation of various management decisions (table 1).

Table 1

**Elements of economic security diagnostics of industrial enterprises
based on the use of consulting**

Economic security components	Threats	Opportunities
Intellectual and human resources component	-low wages, lack of motivation to work; -breach of business relations with partners; -corporate ethics reduction.	- formation of corporate thinking; -use of knowledge and professional experience of employees of the enterprise.
Information and communication component	- unauthorized access to information; - development and distribution of computer viruses; - computer information changing and electronic signatures falsifying.	- integration into the world economic space; - introduction of the latest information technologies.
Technical and technological component	- high level of deterioration of material and technical base; - inefficient organization of the production process.	- introduction of technological innovations; - increase of a number of mechanized and automated technological operations.
Financial component	- inefficient financial planning; - high level of external debt; - high unemployment rate.	- introduction of an adequate system of accounting for financial flows; - balance of financial flows.
Marketing component	- loss of traditional markets; - ineffectiveness of marketing strategies.	- expansion of target market segments; - establishment of strategic relationships with vendors
Investment component	- low level of investment income; - insufficient investment support for the activity.	- increase of investment potential; - transformation of investment resources.

Innovative component	- low level of scientific and technical potential; -lack of own developments and innovations.	- improvement of the efficiency of the innovation subsystem; - development of innovative infrastructure.
Foreign economic policy component	- a significant share of commodity exports; - dependence on imports of food products.	- improvement of access to external markets; - participation in international cooperatives.
Political and legal component	- imperfection of legislation in the sphere of economic relations and mechanisms of economic policy-making.	- planning a set of measures to improve the level of political and legal security; - observance of legal norms of the current legislation.

The technology of the economic security diagnostics of industrial enterprises based on the use of consulting is shown in fig. 1.

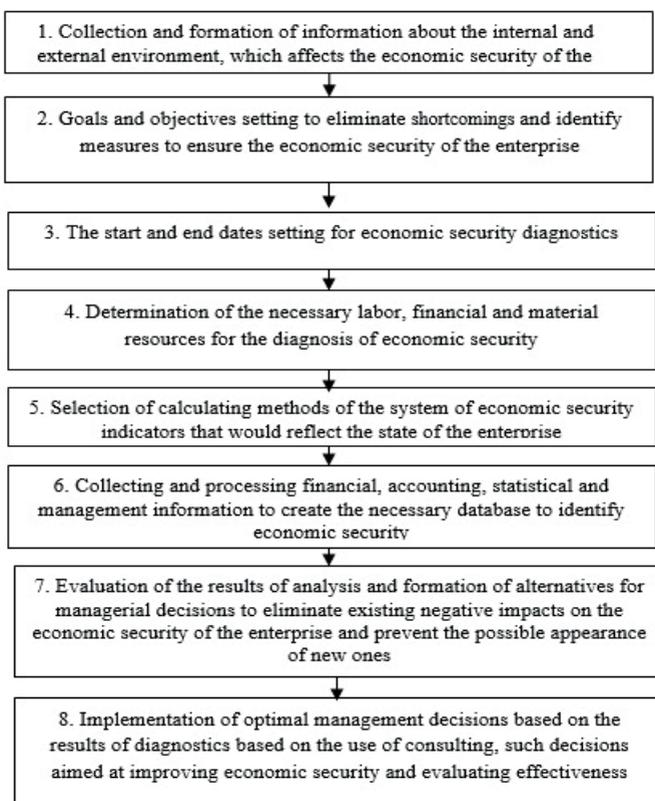


Fig. 1. The technology of the economic security diagnostics of industrial enterprises based on the use of consulting

It is advisable to carry out economic security diagnostics of industrial enterprises with the help of professional support of leading consulting companies, which gives the opportunity to get the qualified help and professional recommendations for the development and making management decisions aimed at ensuring industrial enterprises' sustainable development and economic security.

On the basis of the conducted research the opportunities and threats of the main components of economic security (intellectual-personnel, information-communication, technical-technological, financial, marketing, investment, innovation, foreign economic and political-legal) are characterized.

On the basis of the conducted research the elements of the economic security diagnostics of industrial enterprises on the basis of the use of consulting have been determined.

The stages of technology implementation of realization of the economic security diagnostics of the enterprises are offered, on the basis of application of consulting, which will help to increase the efficiency of evaluation procedures, to ensure a high level of completeness and reliability of the obtained results.

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THE ECONOMIC SECURITY OF ARBOREALITY AS A NEW DIRECTION OF ECONOMIC BASECOLOR

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The hierarchy of large-scale socio-economic systems necessitates the consideration of architectonics of socio-economic security. However, the construction of such architectonic in the economic security general and in economical meso-levels, in particular, is not completed yet. So the main object of socio-economic security is mainly a region which is considered in the context of the administrative structure of the country, that is, the default region is the region of Ukraine. But the region as an administrative unit of the country is a socio-economic system with a complex hierarchical structure, each element of which may be the subject of socio-economic security. It is the concretization of socio-economic security large-scale socio-economic systems is today one of the development directions of economic security.

One of the objects of architectonic in the economic security meso-level is the city. The city is an important, but relatively a new object of socio-economic security. Because more than 70 % of the world economy concentrated in cities. They have the main economic events and form the best opportunities for realization of human and business ideas. Contemporary cities compete for resources and capital, the presence in its territory innovation companies, small and medium businesses, large corporations, financial intermediaries, starts, etc.

In Ukraine the level of urbanization is high: according to the state statistics Committee of Ukraine, the level of urbanization in our time is nearly 70 %, although the dynamics of the rate of urbanization is negative (0.33 percent per year according to estimates by 2015-2020) [1, 2].

In the economic security of the meso-level is already noticeable is the attention of scientists to the socio-economic security in the city:

– in generally the relevance of the study of socio-economic security of the city are acknowledged;

– there are some attempts of the notion's interpretation of socio-economic security of the city;

– shows the relationship of the concept of socio-economic security of the city with the concepts of socio-economic development (state, region, city) and the effectiveness of the socio-economic system.

However, the published results of a study of socio-economic security of the city not yet allow to generate relevant provisions of the economic security on the meso-level, but rather create a reason for questions the answers which will help to improve and clarify existing results.

Modern cities are so complex and varied formation with pronounced features that the consideration of them only as a human settlement with a clearly defined territories where the objects of various infrastructures, functioning of which is aimed at meeting the diverse needs of the population, economic entities of the region and the state as a whole to a certain extent narrows the object of study. Therefore, in recent years the city is considered from the standpoint of system approach that is recognized as a socio-economic system or urban ecosystem. The recognition of the modern city socio-economic system gives grounds for use in his study of the methodology of system analysis.

Urban ecosystem should be considered as a systemic education with a particular territory, that is at a certain point in geographical space, where objects of different infrastructures (production, transport, energy, social, educational, health, cultural and recreation), the functioning of which is aimed at meeting the diverse needs of the population, economic entities of the region and the state as a whole, which is accompanied by violations of natural ecosystems.

They are different in scale, dynamics of development and peculiarities of functioning.

Urban ecosystem is a complex open system whose operation is aimed at achieving a number of goals. Its complexity is primarily manifested in:

– The plurality of heterogeneous elements (citizens, economic agents operating in the city, regional agencies and public authorities) that is very diverse;

– the presence of each of the elements of self-interest, which are often contradictory and their balance is almost never to implement;

– different powers the capabilities of each of the elements in defending and protecting their own interests.

The main subsystems of urban ecosystem which ensure its functioning and vitality, is the nature (ecology), the city's economy and its society. Each of these subsystems has a different origin and peculiarities of functioning. But what is indisputable that is their interaction. For example, the environmental subsystem in its origin is natural, but on her condition significantly affects the functioning of the economic subsystem is that its origin is artificial, fully controlled by man. However, it is the social component provides their functioning and active performance of its functions.

The functioning of urban system must meet certain requirements, one of which is its effectiveness (the measure of achievement of goals of the operation or the stage of completion of assignments). In turn, the performance is determined by a number of conditions, among which, first of all, it should be noted the socio-economic security.

Socio-economic security is an important condition and functioning, and development of urban ecosystem because:

- creates a favorable conditions for sustainable development of the economic and social spheres of the city;
- is the result of not only meeting the economic and social interests of citizens, economic entities, bodies of power with the interests of external and internal environment, but approval of such interests.

An acceptable level of socio-economic security of urban ecosystem promotes a positive decision of the investors regarding the investment in its industrial and social infrastructure, strengthening of business activity of business entities and innovation of their activities and, consequently, the creation of new jobs and ultimately strengthen the economy of the city, which should have a positive impact on the social subsystem and, unfortunately, often negatively on the ecological subsystem.

In the explanation of the notion socio-economic security of urban ecosystem it is advisable to use the concepts of several approaches which has found application in economic security.

Approach to the explanation of the study object (the phenomena, processes, etc.) is a set of concepts which provide together an opportunity to explain that it's meaning and nature in the form of the corresponding concept, which reflects the set of most general and important basic known characteristics of the object of study. Concept approach reflects the vision, knowledge, and associations related to the object of study. That is, the differentiation of the concept from the concept of clearly defined. It is the concepts of the approach together represent his idea about getting the result data for the formation of evaluative judgments about the object of study (in our case, the socio-economic security of urban ecosystem).

Protective approaches, the main concepts are the «threat», «protection», «safe state» [3]), and in harmondale «interest», «interaction», «balance» [3,4]).

In the context of protective approach the socio-economic security of urban ecosystem represents a set of various conditions for the positivity of the characteristics of the population living in the city and activities of economic agents, their needs, interests and rights as a result of the balance of interest. The effective use of its capacity that is the result of city management and effective communications between government, city government, population and business entities.

The use of protective approach involve the study of threats, their development (stages of actualization, activation and implementation [5, 6]), the prediction of the impacts of threats, development of preventive measures for the prevention or delay in the implementation of the threats and the organization of their performance,

which, in fact, is the content of basic authentication activities in urban management.

The concepts of protective approach to the study of socio-economic security of the interconnected urban ecosystem: recognizing threats ecosystem provides for the protection of their implementation to prevent or mitigate its negative impacts, which should ensure it safe condition (understandable to the relative safety of her condition, it is absolutely safe condition of any system does not exist).

Safe should recognize this state of urban ecosystem, which at the present time and in the short term it lacks in scale and intensity of change is negative, which is due to the implementation of threats.

The threat urban ecosystem considered in the context of the definition of this concept in [5] as the processes and phenomena occurring in the external and internal environments. In the presence of a particular combination of conditions and circumstances in its functioning can cause the changes of negative character, of different localization and scale, the consequences of which more are significant significantly worsen the condition of ecosystem and effectiveness of its functioning. That is the safe condition is a consequence of ensuring its socio-economic security.

From the above it turns out that one of the urgent tasks of providing socio-economic security of urban ecosystem is the formation of methodological bases identification of potential threats and their sources, determination of the conditions turning potential threats into real, continued research of the process of development threats, the fundamental principles of which are given in [5, 6, 7], the search of ways of influence on the development of the threats, the rationale for the characteristics of the safe state and indicators to describe them.

Modern urban ecosystem operates in an environment that is a source of numerous threats, but it is extremely sensitive on several points to the effects of the environment.

However, the functioning of urban ecosystem generates a number of threats, chief among which is the formation of artificial ecosystems natural anthropogenic complexes in urbanized areas. A serious threat, which creates internal environment of ecosystem are not only objective, but artificial, that is, caused by erroneous management decisions, their lack of coordination and the conscious actions of individuals or groups of people or X-inefficiency of the state regional policy. The growth of the scale of urban ecosystem implies an increase in the number of its functions, decrease of stability, which poses a threat to the fundamental functions – maintained, that is, to prevent the danger of collapse of the system.

In addition, you should pay attention to the threat of systemic nature, as the conflict between the subsystems: active development of the economy of the city leads, as a rule, positive impact on the social subsystem, but also affects the ecological subsystem and the social subsystem. This circle of influence subsystems to its socio-economic security also requires research.

If the application of a protective approach allows identifying the nature of socio-economic security of urban ecosystem, the reasons for its degradation, forming the

methodological basis of the study, the use of harmonization approach creates a fundamental basis for ensuring socio-economic security of ecosystem.

The harmonization approach provides for the prevention of infringement balance interests in items urban ecosystem by eliminating or mitigating the contradictions of their interests. The foresight of such contradictions and forms of their manifestation, the establishment sign of such manifestation and development of system measures on overcoming the consequences of actual interest conflict on ecosystem in the case of its occurrence (the real conflict has certain signs).

After all, interaction is the integrating factor that brings together the elements of urban ecosystem in a certain kind of integrity – the city determines the behavior of each of them to protect their own interests and their balance with other elements of system, reflects the processes of exposure to the elements of ecosystem each other, their interdependence due to the close interconnectedness.

Harmonization approach to economic security involves to study the interaction elements of urban ecosystem to meet the interests each of them. Therefore, the study socio-economic security of ecosystem in the context of interaction its elements is advantageously carried out in the plane of the behavioral theory the organization that demanded the connection and the sociological theories. After all, the interests of the elements of urban ecosystem is personified, that is, there are always entities (officials) who makes decision on behalf and in the interests of certain structures (state and County government, organization, etc.) whose behavior cannot be considered rational and aimed at achieving stability and balance in the functioning of this structure: the interests of the structure always adds to its own interests and vision of the interests of a certain structure is always subjective.

In explaining the fundamental basis of the socio-economic security urban ecosystem within harmonization approach seems appropriate using the position of such sociological theories as a theory of exchange at the macro level (or the theory of P. Blau [8]) and the theory of the interaction of results D. Thibaut and Harold Kelley (point of view or frame of reference), the Foundation of which is behaviorism [9]. Using the theses of these theories are able to explain the causes and changes of interests items urban ecosystem, because changing interests in inhomogeneous composition of its elements is the source of serious threats to the functioning and effectiveness of ecosystem.

Therefore, one of the important directions of further development economic security of meso-level is the research of socio-economic security of ecosystems, which together constitute a system of higher order – social-economic system of region.

Socio-economic security of urban ecosystem is an important prerequisite for its effective functioning and development that reflects the interdependence, interdependence, complementarity of economic and social security of this system. The economic security of the object is important not only for socio-economic development of the city, but at the same time lays the foundations of his social security and further disruption of the natural ecosystem of the area where the city

is located.

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EVALUATION AS THE SUBJECT DOMAIN IN ECONOMIC SECURITY STUDIES OF THE MICROLEVEL

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Economic security studies is a complex of interrelated ideas, which is differentiated and hierarchical, though still united as a system of knowledge. In this system, some elements are dependent on the others, while the very basis consists of a combination of statements, notions and categories predetermined following

certain methodological principles and rules [1].

By its nature, economic security studies are «weak» gnoseologically (following the terminology used in [2, p. 57]), and this is manifested through the complexity of the related objects, weak predictability of the processes that are strengthening or weakening economic security (of a state, a region or an enterprise), unpredictability of influence of various combinations of factors and of the results of this influence, and also of the results of security-providing activities.

The subject domain of economic security studies is made up of the combination of the most relevant, for the current stage of its development, issues, and the scope of such issues is really very wide. Proper and correct definition of these issues directly predetermines the priority order of their research, and the latter, in its turn, predetermines academic and applied orientation of the economic security studies overall.

As it has been noted above, economic security studies are hierarchical, thus, in them, the objects of economic security are allocated by levels: the state (national economy) – region – the subject of economic activity (enterprise). Therefore, we can state that economic security studies can be of macro-, meso- and microlevels. The subject domain of economic security studies at each of these levels is different, though general principles of construction are equally followed at all levels.

Since combinations of cognitive objects in economic security studies are somewhat detached, there are several generally acknowledged subject domains, the available knowledge on which are constantly updated and enriched.

The subject domain of economic security studies at any of these levels is a unity of the interrelated similar elementary objects which takes into account their properties, relations and functions that are considered within a separate direction of economic security studies [1].

According to H.V. Kozachenko, subject domains within economic security studies by now have been studied to a different degree – from the availability of quite clear and logical explanations of the nature and behavior of the protected subjects, determination of their properties, key specific features and interrelations between them up to the level when new questions are being put forward, thus, new objects and subject matters are being revealed and actualized [1]. One of the subject domains in economic security studies of all levels is evaluation of the economic security objects.

Evaluation as a general scientific and cross-disciplinary category has rather general contents (formulation of judgements about the objects under evaluation using certain reference points) and is equally applicable to all knowledge fields. Evaluation results that are used while studying the surrounding reality may become the ground for further decision-making concerning actions to be taken in relation to the evaluated objects in management, political science, psychology, sociology, economics and so on.

Evaluation as an important subject domain in any science rests on:

- general theoretical basis which is made up of Lebesgue measure theory and evaluation theory;
- universal metrological evaluation theory (as summed up in the theory of measurement by Karel Berka [3]);
- specialized metrological basis for evaluation in each specific field of knowledge: natural sciences (physics, biology, chemistry etc.), social sciences and humanities (sociology, psychology, economics, management etc.);
- singling out the objects of general evaluation (process, phenomenon, system).

Despite the seemingly serious basis behind the evaluation of various objects (processes, systems, phenomena etc.) in various fields of different sciences, the evaluation domain still has quite many unsolved or partially solved issues. One of them is understudied issues related to the epistemology of evaluation (as the science of evaluation, its nature, essence and the related knowledge development).

Evaluation and its objects are largely predetermined by the contents of the knowledge field within which this evaluation is to be carried out. Accordingly, in economic security studies overall and at each of its levels evaluation has its specific features. The specific features of evaluation in economic security studies of the microlevel are presented in table 1.

Evaluation at the microlevel of economic security studies is never the end goal (in the praxeological sense) and/or the end value (in the axiological sense), it actually does not have a separate value of its own. In other words, evaluation of various objects in economic security studies of the microlevel for the sake of their evaluation alone does not make sense. In fact, evaluation is always a precondition for further decision-making which may concern all aspects of enterprise activity and/or development, decisions' choice (in the presence of alternatives), selection of means for construction of action algorithms to be performed in the course of the selected decision implementation.

Table 1

**Specific features of evaluation in
economic security studies of the microlevel**

Specific features	Manifestations
The nature of evaluation in time	Discrete or periodical
The number of objects under evaluation	The totality which consists of several objects
Subject of evaluation	Variable
Field for further use of evaluation results	Wide
Influence of evaluation results on the evaluated object	Decisive in security-oriented management; strong, in the absence of the latter
Circulation of evaluation results	Rather limited due to targeted nature of evaluation results (the latter are delivered exclusively to those top managers and/or stakeholders who have the authority to use evaluation results further)

Functional role of evaluation in its general scientific understanding is always predetermined by the aim of getting evaluation results. Following this criteria, we can distinguish between the following functional types of evaluation in economic security studies of the microlevel (table 2).

Table 2

Functional types of evaluation economic security studies of the microlevel

Functional types of evaluation	Description of the functional type
Choice-grounding	Formulation of an opinion on each variant among the available alternatives for further final choice
Problem-oriented	Description or identification of the problem, the symptoms of its emergence, the indicators of state etc.
Description-oriented	Description of an object, process or phenomena, aimed at determination of its state and full investigation of its influence on other objects and/or processes, with forecasting of its course in the future
Diagnostics-oriented	Diagnostics of an object, process or system aimed at determination of its state; determination of the key problems along with the possible means of their solution
Entropy-reducing evaluation	Obtaining more information concerning a specific system, object or process aimed at reducing the uncertainty about its state and/or behavior
Hypothesis-proving evaluation	Confirming or rejecting a hypothesis through getting evaluation results which are supposed to serve as evidence for hypothesis confirmation/rejection

The mentioned in this table functional types of evaluation in economic security studies of the microlevel may overlap. That is, in a specific case, evaluation may be of two or more functional types at the same time. For example:

- problem-oriented evaluation can be also diagnostical (as problem-oriented analysis from the standpoint of enterprise economic security would always help with diagnostics through clarifying the nature of the problem, its key features, scale and depth);

- description-oriented evaluation can be combined with entropy-reducing evaluation (as object evaluation through information collection about it would anyways lead to reduced uncertainty in understanding its state and behavior).

Criterial description of each functional type of evaluation used in economic security studies of the microlevel is presented in table 3.

Criteria behind the functional types of evaluation in economic security studies of the microlevel differ primarily in their goal (or in their answer to the question «Why is this evaluation needed?»), in the key object under evaluation, and also in applicability of evaluation results as well as in qualifications of the evaluating subjects.

One of the key features of evaluation in economic security studies of the microlevel is multiplicity of objects under evaluation: economic security of an enterprise, the system of economic security at an enterprise, security-providing activity of an enterprise, activities carried out by a structural unit responsible for economic security of this enterprise. Evaluation of all these objects of economic security at its microlevel has been researched to a very different extent.

Majority of contemporary research studies cover the evaluation of enterprises' economic security.

In economic security of the microlevel, evaluation has two distinct directions with two different degrees of exploitation:

- formal one: evaluation of enterprise economic security on the basis of measurable empirical data within the framework of the functional approach and also with application of such methods as analytical function, weak signal detection, fuzzy logic models, boundary indicators etc.;

- analytical one: it covers the axiological attitude of the evaluating subject to various manifestations of economic security along with the opportunities to use them cognitively and practically, applying such methods as dynamic evaluation (using the signature criterion as applied to dynamic values of the selected indicators), the checklist method, scenario forecasting of threats' development in enterprise activity.

As applied to economic security of enterprises, evaluation methods can be very different, primarily, in their degree of complexity in application (the volume of initial information needed; the number of operations to be performed; requirements to qualification of the involved experts; complexity of interpretation of the obtained results etc.). Thus, the following requirement should be taken into account: the larger and the more complex structurally is the enterprise - the more applicable become complex instruments of evaluation.

Table 3

Criterial description of the functional types of evaluation in economic security studies of the microlevel

Functional type of evaluation	The key function of evaluation results	The key objects of evaluation or of the quantitative description	Applicability scope of evaluation results	Qualification level of the evaluation subject
Choice-grounding	Grounding the choice	Alternatives	Average	Average
Problem-oriented	All-encompassing description of the problem	The problem itself	Narrow	Higher than average
Description-oriented	Maximum full description of the object under evaluation	Evaluated object	Wide	Low

Diagnosics-oriented	Decided on a “diagnosis”, confirming or rejecting it	Key signs of the problem, deviations from the reference state	Narrow or average	High
Entropy-reducing	Reducing the uncertainty through information collection	The object under evaluation and other objects related to it	Wide	Average
Hypothesis-confirming	Confirming or rejecting the hypothesis	The state of the object, process or phenomenon concerning which the initial hypothesis has been put forward. Also, the facts that are confirming or rejecting this hypothesis	Narrow	Higher than average

However, the already available studies on evaluation of enterprise economic security tend to be controversial and not always comprehensive; there is also a certain tendency observed in the direction to overgeneralization due to the lack of obvious epistemological contextualism in economic security studies. Epistemological contextualism is usually manifested through the presence of several approaches to interpretation of the contents of the notion «economic security of an enterprise» (e.g., protective approach, harmonic one, resource- or activity-oriented approaches). Thus, evaluation of enterprise economic security should stem from the very contents of this notion, and evaluation toolkit should be selected accordingly as well.

The situation which takes places in the course of enterprise economic security evaluation is explained by:

- weakness and complementarity of theoretical and practical bases in evaluation;
- stereotypes that are already deeply rooted in evaluation. Such stereotypes have been formed due to various reasons (in particular, due to incorrect/simplified absolute scientific expansion, in the course of which evaluation procedures from other sciences have been introduced in economic security studies as native ones). These stereotypes are rather persistent and new knowledge (which is the result of economic security studies’ development) usually have very little influence on them.

There are still no systemic studies concerning the evaluation of other objects in economic security of the microlevel (the system of enterprise economic security; security-providing activity of the enterprise; activity of the enterprise structural unit responsible for economic security). Moreover, some of the related studies turned out to be rather mixed (for example, evaluation of the enterprise economic security system is seen as evaluation of enterprise economic security overall). Thus, we have reasons to state that the subject domain of economic security studies still has quite a

lot of unsolved issues, one of which is toolkit development for such an evaluation.

Therefore, evaluation in its general scientific sense and in the context of economic security studies of the microlevel has very different functional meaning. In each particular case it would be appropriate to specify this functional meaning in detail. Specifying the functional meaning of evaluation would allow maintaining its well-targeted character and would also increase the value of the obtained evaluation results in relation to the preset in advance target.

Evaluation as such should be understood as one of the key subject domains in economic security studies of all levels. At this, the toolkit of this subject domain can be very different. Methodological and instrumental principles of evaluation may turn out to be providing quite positive results at one level of economic security evaluation but be ineffective at other levels.

Development of the conceptual grounds for the system of enterprise economic security as well as for the security-providing activities of enterprises and also for the activities of the enterprise structural units responsible for economic security are topical tasks within the subject domain of economic security studies of the microlevel.

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DIAGNOSTICS AND ASSESSMENT OF FINANCIAL SECURITY OF THE CONFECTIONERY INDUSTRY ENTERPRISE

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Ensuring the dynamic growth of the market value of an enterprise today is one of the most important tasks and criteria for assessing the effectiveness of its development in the current rather unstable economic situation in Ukraine after the events of socio-economic and political crisis 2014-2015.

In order to help maintain the market position and sustainability of an enterprise

development at the present stage, the formation of a system of financial security management of an enterprise should become a priority task for its management, which expresses the purpose and summarizes the results of its business activities. That is why the question of the study of the essence, diagnostics and assessment of the level of financial security, as a basis for ensuring the effective activity and “survival” of an enterprise in the conditions of unstable economic situation in Ukraine, today can be considered relevant.

Many domestic scientists have devoted their activities to the study of issues, related to the diagnostics and assessment of financial security of enterprises. Among the scientists, who have paid considerable attention to this issue, we should mention such as O. V. Arefyeva, A. O. Epifanov, T. B. Kuzenko, I. S. Kernitsky, U. V. Lavrova, V. L. Ortynsky, R. S. Papekhin, T. S. Shabatura, etc. In spite of the considerable amount of work of scientists in the field of diagnostics and assessment of financial security of enterprises, the questions concerning the development of the ways of the most effective improvement of their financial state and diagnostics still remain insufficiently studied.

The goals are to disclose the nature and methods of diagnostics and assessment of financial security of enterprises on the example of Ukrainian PrJSC «Kyiv Confectionary Factory «Roshen» and to outline the main recommendations for improving its financial condition and financial security.

One of the most important areas of studying the enterprise’s financial condition and the effectiveness of its business activities – is the diagnostics and assessment of its financial security. Many domestic scientists have devoted their work to the study of financial security and provided their own definitions of its essence. The most interesting and prudential definitions are presented in table 1.

Table 1

Definition of theoretical principles of the essence of «financial security» concept in the writings of domestic scientists

Source	Interpretation of theoretical principles of the essence of «Financial security» concept
Papekhin R. S. [8]	Financial security – is the ability of an enterprise to independently develop and execute a financial strategy in accordance with the objectives of the overall corporate strategy in an uncertain competitive environment.
Arefyeva O.V., Kuzenko T. B. [1]	Financial security – is the state of the most efficient use of corporate resources, expressed in the best values of information and financial indicators: liquidity, solvency, business activity, return on capital of an enterprise and its structure, etc.
Epifanov A. O., Plastun O. L. [2]	Financial security of an enterprise – is the ability of business entity to carry out its business activities efficiently and consistently, by using a set of interrelated diagnostic and instrumental measures of a financial nature that should optimize the use of financial resources and counterbalance the impact of internal and external environment risks

Ortynsky V. L., Kernitsky I. S. [7]	Financial security of an enterprise – is an activity of risk management and protection of interests of an enterprise in order to ensure the protection of its potential (production, organizational, technical, financial-economic, social) from the negative effects of external and internal factors, direct or indirect economic threats in the current and long-term perspectives.
Lavrova U. V. [3]	Financial security – is an integral part of the economic security of an enterprise, characterized by the existence of such financial state of an enterprise, the main features of which are the following: the balance of financial instruments, technologies and services; resistance to threats; the ability of an enterprise to provide the realization of financial interests, missions and tasks with sufficient amounts of financial resources; focus on sustainable development.
Shabatura T. S. [9]	Financial security of an enterprise –is a set of quantitative and qualitative characteristics of the level of financial condition of an enterprise, which ensures the balance and protection of its priority financial interests against threats of different nature, as well as financial support for the sustainable development of an enterprise in the current and future periods.

Thus, according to the variety of interpretations of the essence of «financial security» concept, it is possible to identify two key approaches of domestic authors to determine its essence:

- financial security is considered as a certain financial state of an enterprise, which is determined by its ability to effectively implement its business activities and to effectively use its own corporate resources;

- financial security is considered as an activity and part of the economic security of an enterprise, aimed at achieving such financial state of an enterprise, which ensures its sustainable development (provided that its priority financial interests and financial potential are balanced) and ensures protection from negative effects of external and internal factors, direct or indirect economic threats in the current and long-term perspectives.

PrJSC «Kyiv Confectionary Factory «Roshen» is a leading enterprise representative of the confectionery industry of Kyiv region in Ukraine. The main activity of the enterprise includes: production of breadcrumbs and dried biscuits; production of flour confectionery, cakes, pastries, pies and biscuits of long-term and short-term storage; production of cocoa, chocolate and sugar confectionery: caramel, nougat, sweets, white chocolate; wholesale of sugar, chocolate and sugar confectionery. The ultimate beneficial owner of PrJSC «Kyiv Confectionary Factory «Roshen» is Alexey Poroshenko, son of P. Poroshenko, the fifth President of Ukraine from 2014 to 2019. The main indicators of financial state of the enterprise are given in table 2.

Table 2

**The indicators of financial state of the PrJSC
«Kyiv Confectionary Factory «Roshen»**

Indicator	Value					
	2013	2014	2015	2016	2017	2018
Depreciation ratio of fixed Assets	0,273	0,317	0,343	0,361	0,328	0,347
Liquidity indicators						
Overall liquidity	0,220	0,371	0,778	0,950	1,78	0,224
Quick liquidity	0,193	0,330	0,714	0,848	1,62	0,200
Solvency indicators						
Net working capital, mil. UAH	-214	-133	-29	-4	40	-319
Autonomy Ratio	0,592	0,662	0,752	0,812	0,677	0,553
Business activity indicators						
Accounts receivable turnover ratio	6,06	4,76	3,06	2,78	3,42	4,72
Term of accounts receivable turnover, days	59,35	75,63	117,6	129,5	105,2	76,27
Accounts payable turnover ratio	1,82	1,24	1,50	2,24	4,28	4,71
Term of accounts payable turnover, days	197,8	290,3	240,0	160,7	84,1	76,4
Profitability indicators, %						
Return on assets ratio	0,48	4,43	1,56	0,59	0,34	1,12
Return on equity ratio	0,80	6,70	2,08	0,73	0,51	2,02
Profitability ratio	0,78	11,82	4,41	1,68	1,06	2,98
Profitability ratio of products	0,86	13,56	5,12	1,91	1,21	3,49

Source: compiled and calculated by the authors on the basis of financial statements of PrJSC «Kyiv Confectionary Factory «Roshen» according to [6]

The data analysis of the table 2 allows to make up an idea about financial state of PrJSC «Kyiv Confectionary Factory «Roshen». In general, for the period 2013-2018, the overall financial state of the Confectionery Factory «Roshen» is leaves much to be desired. Among the main problems are the following:

- deterioration of the technical condition of the fixed capital of the enterprise (due to the increase in the wear factor);
- significant reduction in «Roshen's» assets and capabilities to repay its short-term liabilities due to its current assets in 2018 compared to 2017 (as evidenced by a very significant decrease in liquidity ratios);
- decrease in the degree of financial independence of «Roshen» from external sources of financing its activities and decrease in the degree of availability of the enterprise with its own funds (as evidenced by the decrease in the values of solvency

indicators of “Roshen” in 2018 compared to 2017);

– «Roshen» receivables term of turnover increase by 17 days, which indicates that the debt repayment process of «Roshen» debtors is slowing down.

However, there are also positive aspects (evidences) that indicate an improvement in the financial performance of «Roshen» Confectionery in the 2013-2018 period, namely:

– reduction of accounts payable and, accordingly, its maturity by more than 121 days. For suppliers and creditors, this means that «Roshen» can be called a bona fide debtor and the confectionary factory is making sufficient efforts to repay its existing debt;

– improving the overall profitability of «Roshen», as evidenced by the increase in the values of all indicators of profitability of the enterprise. It can be concluded that «Roshen» is carrying out a sufficiently effective financial policy in the context of increasing its net income and reducing costs.

Table 3

Actual values of the given coefficients of the Bankruptcy Probability Analysis models of PrJSC «Kyiv Confectionary Factory «Roshen»

Model	Coefficients						
Altman's	x1	x2	x3	x4	x5	–	Z
	-0,322	0,011	0,013	1,24	0,376	–	0,79
Tereshchenko's	x1	x2	x3	x4	x5	x6	Z
	0,90	2,40	0,011	0,029	0,026	0,376	1,84
Springate's	a	B	c	d	–	–	Z
	0,093	0,013	0,031	0,376	–	–	0,30
Taffler's	x1	x2	x3	x4	–	–	Z
	0,031	0,224	0,415	0,376	–	–	0,18
Lise's	x1	x2	x3	x4	–	–	Z
	0,093	0,013	0,011	1,24	–	–	0,009

Source: compiled by the authors based on [6], [10]

Therefore, the financial security management system should be aimed at achieving and maintaining the desired financial indicators of an enterprise performance, which ensure its viability and good financial state.

The financial security of an enterprise, in addition to being very closely related to the key financial indicators that characterize the financial state of an enterprise, is also related to the bankruptcy probability models. Determining the level of bankruptcy allows you to determine the level of financial security of an enterprise. The actual values of the given coefficients of the Altman, Tereshchenko, Springate, Lise and Taffler models for the PrJSC «Kyiv Confectionary Factory «Roshen» are given in table 3.

Bankruptcy standard values by the models of Altman, Tereshchenko, Springate, Lise and Taffler are given in table 4.

Table 4

Probability of bankruptcy by the models of Altman, Tereshchenko, Springate, Lise and Taffler

Z-score	Probability of bankruptcy
Altman's Model	
$Z < 1,81$	80-100%
$1,81 \leq Z < 2,77$	35-50%
$2,77 < Z < 2,99$	15-20%
$Z \geq 3$	0
Tereshchenko's Model	
$Z < 0$	Very High
$0 < Z < 1$	High
$1 < Z < 2$	Medium
$Z > 2$	Low
Springate's Model	
$< 0,862$	High
$> 0,862$	Low
Taffler's Model	
$Z > 0,3$	Low
$0,3 < Z < 0,2$	Medium
$Z < 0,2$	High
Lise's Model	
$Z < 0,037$	High
$Z > 0,037$	Low

Source: compiled by the authors based on [10]

PrJSC «Kyiv Confectionery Factory «Roshen» has a high probability of bankruptcy by all models except Tereshchenko's bankruptcy model (average probability). The analysis of bankruptcy models of the Table 3 and Table 4 shows, that today «Kyiv Confectionery Factory «Roshen» has an unsatisfactory stock of financial stability and, consequently, a low level of financial security. That is why, in order to improve the financial security of this confectionery factory, «Roshen» can be advised to properly develop and implement an effective financial sustainable development strategy, that is both adequate in terms of goals and priorities.

Thus, the diagnostics and assessment of financial security is one of the most important areas of studying the enterprise's financial condition and the effectiveness of its business activities. The main task of financial security is to ensure the financial stability and financial efficiency of an enterprise, therefore: the financial security management system should be aimed at achieving and maintaining the desired

financial indicators of an enterprise performance, which ensure its viability and good financial state. The data analysis of financial state of PrJSC «Kyiv Confectionery Factory «Roshen» shows, that the overall financial state of the Confectionery Factory «Roshen» is leaves much to be desired. Severally, the analysis of probability of bankruptcy by the models of Altman, Tereshenko, Springate, Lise and Taffler shows, that today “Kyiv Confectionery Factory «Roshen» has an unsatisfactory stock of financial stability and, consequently, a low level of financial security. In order to improve the financial security of this confectionery factory, «Roshen» can be advised to properly develop and implement an effective financial strategy, that will be resolved to improve the technical condition of the fixed capital of the enterprise; increase in the degree of financial independence of “Roshen” from external sources of financing its activities and increase in the degree of availability of the enterprise with its own funds.

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INTERCONNECTION OF SOCIAL AND ECONOMIC COMPONENTS OF SUSTAINABLE DEVELOPMENT OF THE AGRARIAN SPHERE

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In the present conditions of humanity's existence, issues of environmental protection and social issues of life support for the population are dominant. One of the significant components of the sustainable development of society is the complex, balanced development of the agrarian sphere, which, in turn, promotes progressive transformations in the industrial, social and environmental spheres.

Let's consider the social determinant that together with economic and ecological ones forms the system of sustainable development. Thus, Decree of the President of Ukraine No. 722/2019 «On Goals of Sustainable Development of Ukraine for the Period until 2030» [7] declared support for global goals of sustainable development until 2030 and the results of their adaptation proclaimed by the United Nations General Assembly Resolution No. 70/1 of 25 September 2015, taking into account the specifics of Ukraine's development, outlined in the «Sustainable Development Goals: Ukraine» national report, in particular, among others, the Sustainable Development Goals include overcoming hunger, achieving food security, improving nutrition and promoting sustainable development of agriculture [8].

In addition, as stated in the Strategy for the Development of Agricultural Sector of the Economy for the Period until 2020: «The agricultural sector of Ukraine, the basic component of which is agriculture, is system-forming in the national economy, forms the principles of preserving the sovereignty of the state - food and within certain limits economic, ecological and energy security, provides the development of technologically connected sectors of the national economy and forms the social and economic foundations of rural development».

In turn, the principles of the agricultural sector development in the field of agricultural production organization are a balance of its development according to economic, social and environmental criteria. With the aim of the Strategy is to create organizational and economic conditions for the purpose of effective agricultural sector development by providing the unity of economic, social and ecological interests of society for the stable providing the population with quality, safe, affordable domestic agricultural products and industries with agricultural raw materials. One of the strategic goals of the agricultural sector development, defined in the Strategy, is to promote the development of rural settlements and to form the

middle class in the countryside by providing employment of the rural population and raising the income level [5; 6]. This points to the importance of the social component of the development of agricultural sector of Ukrainian economy. At the same time, the first principle of the agricultural sector development in the field of agricultural production organization is proclaimed as the balance of its development by economic, social and ecological criteria, which confirms the focus exactly on sustainable development.

One of the indicators of social component is the employment of population (table 1).

Table 1

Dynamics of the number of employed population of Ukraine by type of economic activity, 2012-2018, thousand people [1]

Indicators	Years							2018 to 2012, %
	2012	2013	2014	2015	2016	2017	2018	
Employed population, total	19261,4	19314,2	18073,3	16443,2	16276,9	16156,4	16360,9	84,9
Agriculture, forestry and fisheries	3308,5	3389,0	3091,4	2870,6	2866,5	2860,7	2937,6	88,8
Industry	3236,7	3170,0	2898,2	2573,9	2494,8	2440,6	2426,0	75,0
Construction	836,4	841,1	746,4	642,1	644,5	644,3	665,3	79,5
Wholesale and retail trade; repair of motor vehicles and motorcycles	4160,2	4269,5	3965,7	3510,7	3516,2	3525,8	3654,7	87,8
Transportation, warehousing, postal and courier activities	1150,9	1163,6	1113,4	998,0	997,2	991,6	995,1	86,5
Temporary placement and catering	326,7	328,9	309,1	277,3	276,7	276,3	283,0	86,6
Information and Telecommunications	297,9	299,9	284,8	272,9	275,2	274,1	280,3	94,1
Financial and insurance activities	315,8	306,2	286,8	243,6	225,6	215,9	214,0	67,8
Real estate transactions	322,2	314,3	286,1	268,3	255,5	252,3	259,4	80,5
Professional, scientific and technical activities	504,1	493,6	456,0	422,9	428,1	415,8	437,9	86,9
Administrative and support service activities	343,9	343,3	334,3	298,6	304,3	297,9	304,3	88,5
Public administration and defense; compulsory social security	1003,6 2	962,3	959,5 2	974,5 2	973,1	979,7	939,3	93,6
Education	1633,2	1611,2	1587,7	1496,5	1441,4	1423,4	1416,5	86,7

Health care and social assistance	1181,4	1171,8	1150,5	1040,7	1030,4	1013,6	995,4	84,3
Arts, sports, entertainment and recreation	225,6	226,5	221,2	207,9	201,6	199,8	196,9	87,3
Other economic activities	414,3	423,0	382,2	344,7	345,8	344,6	355,2	85,7

1 Data for 2012-2018 are given without taking into account the temporarily occupied territories of the Autonomous Republic of Crimea and the city of Sevastopol, since 2015 - also without part of the temporarily occupied territories of Donetsk and Lugansk regions.

2 The number of temporary workers involved in the preparation and holding of elections in: 2012; 2014; 2015 is taken into account.

After analyzing the data in Table 1, it was found that the number of employed population in Ukraine decreased by 2900.5 thousand people or 15.1 % during the study period, which can be explained by demographic, migration factors and lack of data from the occupied territories.

It was estimated that the most of the population is employed in trade, namely 22.3 % for 2012-2018. Agriculture occupies the second place – 18.0 % or 3046.33 thousand people in the average for the study period, that is the agricultural sector of the economy accounts for a significant share of the employed population in Ukraine, which determines the impact of the sector on the sustainable development of the country as a whole.

Accordingly, let's also examine the employment of the population of Poltava region (table 2).

Table 2

Dynamics of the number of employed population of Poltava region by type of economic activity, 2012-2018, thousand people [1]

Indicators	Years							2018 to 2012, %
	2012	2013	2014	2015	2016	2017	2018	
Employed population, total	652,7	648,3	602,9	583,6	570,4	575,0	580,6	89,0
Agriculture, forestry and fisheries	126,6	128,5	120,6	119,8	120,6	125,9	125,6	99,2
Industry	126,3	122,4	115,8	105,7	99,4	98,8	97,8	77,4
Construction	21,8	22,1	19,0	16,7	16,7	16,6	16,6	76,1
Wholesale and retail trade; repair of motor vehicles and motorcycles	136,6	138,4	119,1	113,2	117,2	119,9	124,7	91,3
Transportation, warehousing, postal and courier activities	40,0	39,5	39,3	42,2	38,5	37,0	35,8	89,5

Temporary placement and catering	10,5	10,5	9,9	9,2	8,8	9,0	9,1	86,7
Information and Telecommunications	6,3	6,2	5,4	5,3	4,9	5,0	5,1	81,0
Financial and insurance activities	7,1	7,0	6,5	5,6	5,0	4,7	4,6	64,8
Real estate transactions	7,7	7,5	7,0	6,8	6,4	6,0	7,3	94,8
Professional, scientific and technical activities	11,0	10,8	9,5	8,7	8,6	8,5	10,3	93,6
Administrative and support service activities	10,2	10,1	8,7	7,9	7,6	8,0	7,9	77,5
Public administration and defense; compulsory social security	35,1	32,9	32,8	34,9	34,0	32,3	33,1	94,3
Education	53,9	53,0	51,8	50,6	47,1	47,5	47,0	87,2
Health care and social assistance	42,2	42,2	41,8	40,6	39,9	40,2	39,6	93,8
Arts, sports, entertainment and recreation	6,8	6,7	6,2	7,0	6,3	6,3	6,3	92,6
Other economic activities	10,6	10,5	9,5	9,4	9,4	9,3	9,8	92,5

So, after considering the data in Table 2, it should be noted that there is a tendency to increase in number of employed in agriculture in the region until 2014. Since 2016, the number of employees in the sector continued to grow gradually, but it was not significant. At the same time, the share of persons employed in agriculture in the region during the study period takes second place (on average 123,94 thousand people), while trade is the highest among all types of economic activity (on average, 124,16 thousand people).

Let's determine the share of population employed in agriculture in Poltava region among the total number of employed and present these calculations using fig. 1.

It should be noted that during 2012-2018 the largest share among the main types of economic activity in the Poltava region is occupied by trade, agriculture – 20.6 % on average and industry 18.1 % in accordance. The largest share of the population of oltava region employed in agriculture was recorded in 2017, for the study period the level of this indicator ranged from 19.4 % to 21.9 %.

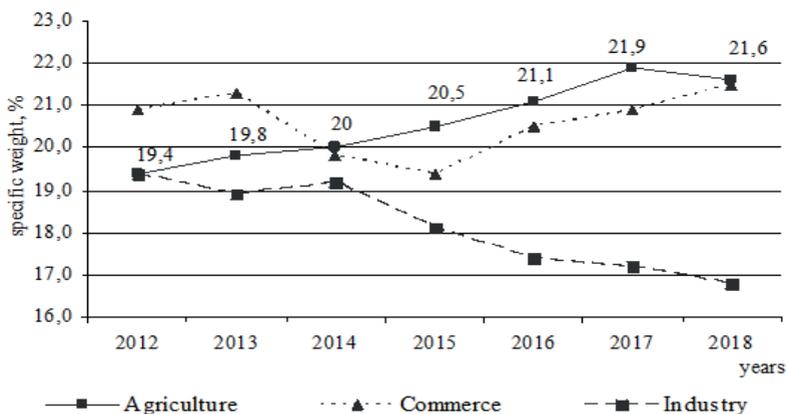


Fig.1. The share of population employed by the main types of economic activity of Poltava region, by the total number of employed, 2012-2018, %

Data of fig. 1 show that the share of employed in agriculture remains one of the highest, which has a positive impact on the social determinant of sustainable development in rural areas of Poltava region, but negatively characterizes the productivity of agricultural production.

As was mentioned, one of the strategic goals of the agricultural sector development, defined in the Strategy for the Development of Agricultural Sector of the Economy for the Period until 2020 [5] and subsequently signed Decree of the President of Ukraine No. 722/2019 «On Goals of Sustainable Development of Ukraine for the Period until 2030» [7], is an increase in the level of incomes of the employed in the agricultural sector of Ukraine. One of the targets for the realization of these tasks is to increase the average monthly wage of agricultural workers to the national average. Therefore, let's examine the dynamics of wages of agricultural workers and in Ukraine as a whole (table 3).

Table 3

Dynamics of the average monthly wage of workers in Ukraine per employee, 2012-2018, UAH [2, 3]

Indicators	Years							2018 to 2012, %
	2012	2013	2014	2015	2016	2017	2018	
Total	3041,0	3282,0	3480,0	4195,0	5183,0	7104,0	8865,0	291,5
Agriculture, forestry and fisheries	2094,0	2344,0	2556,0	3309,0	4195,0	6057,0	7557,0	360,9
Agriculture separately	2024,0	2269	2476,0	3140,0	3916,0	5761,0	7166,0	354,1

After analyzing the data in table 3, it should be noted that the positive tendency

for the increase of the level of wages of agricultural workers and the narrowing of the gap between the wages in agriculture and the average across Ukraine (by all sectors of the national economy). But despite the increase in the average wage in agriculture, its value in 2018 remains below the average wage in Ukraine as a whole by 19.2 % (fig. 2).

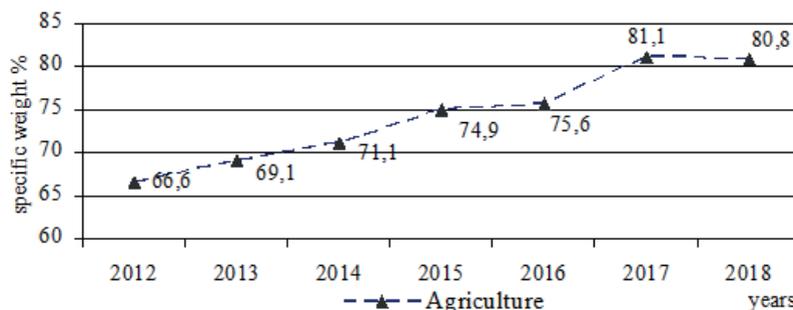


Fig. 2. Percentage ratio of wages in agriculture to average wages in all sectors of the economy of Ukraine, 2012-2018, %

The consequences of this are the departure of labor from the countryside (both internal migration and departure of able-bodied people abroad are observed); rural depopulation; outflow of skilled personnel from the agricultural sector, etc. Whereas, low employment in agricultural holdings is caused not by the level of payment, but by the mechanization and automation of agrarian production processes. Therefore, increasing the level of rural wages remains an unresolved task.

That is why, in order to achieve sustainable agrarian development, it is necessary to consider the interconnection of social and economic components. Accordingly, the increase in wages has to be confirmed by the growth of outperforming labor productivity in the sector.

Therefore, it is necessary to emphasize the importance of understanding the essence of development of the agrarian sphere on the basis of sustainability, which is related to the type of its development, in which strategically coordinated quantitative and qualitative changes are carried out and the living standards of agricultural producers, rural population and the whole nation are increased, and they achieved due to the harmonization of the production sphere, human resources and the environment, etc.

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DIVERSIFICATION OF ACTIVITIES IN THE SYSTEM OF ECONOMIC SECURITY OF ENTERPRISES IN THE AGRI-FOOD SECTOR

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The formation of a modern competitive environment in the agri-food industry is determined by the presence of trends associated with increased risks and threats to the activities of agro-industrial structures, increased competition, the current trend is to improve the level of capital concentration as a method of building up technical and technological potential in order to solve the problems of ensuring sustainable development of rural areas. Under such conditions, the strategic priority for the functioning of agro-industrial groups is the diversification of production activities

as one of the most effective methods for achieving competitive advantages in the market and the strategic goals of the enterprise.

Diversification is one of the types of management practices focused on ensuring economic sustainability in a dynamically changing market environment. Its essence is to ensure sufficient product diversity in the adopted production plan. The risk of adverse changes in the market conditions creates situations of loss of profit due to unrealized offers for certain types of products. The combination of a grocery basket leads to the distribution of risk, reduces the overall riskiness of the business.

In the case of manufacturing products with a high proportion of specific resources, situations of underutilization of production assets may arise, form a low level of use of attracted capital and, accordingly, reduce the cost of the business. These processes are manifested in the context of integrating the activities of enterprises in the environment.

On the other hand, the internal tasks of the enterprise are associated with the tasks of forming the conditions for the efficient use of the most “capacious resources” of production. The most capacious condition for the formation of economic activity in the processing sector of the agri-food sector is production facilities. Their cost gradually affects the cost of production, so the stability of the capacity of production assets depends on the effectiveness of each of the many production cycles. That is, the key task of the internal environment is to ensure the planned return on the involved production capacities.

Since the anti-crisis management of enterprises in the agri-food sector provides for the adoption of measures of diversification and technical renovation, it is natural to raise the question of what is more important for enterprises in the agri-food sector: ensuring the efficiency of product sales or ensuring the efficient use of investments in fixed assets. Obviously, such questions arise when a solution is difficult or impossible to evaluate by a single criterion. Since we are talking about commodity production, including end-use products, it is natural to plan the production of an assortment of products in such a way that to make a profit from sales and, consequently, maximum profit with various options for the state of the market. However, such planning negatively affects the efficiency of the use of fixed capital. Thus, the agri-food enterprise is a multi-product enterprise with its inherent advantages and disadvantages, which include:

1. The concept of saving from diversity: the joint production of two or more goods, which can significantly reduce production costs compared to separate production.
2. The creation of various goods in the enterprise is associated with imperfect competition, which leads to the current excessive capacity of the company.
3. Excessive capacity is the main reason for the emergence of a multi-product company, since it is trying to use this excess capacity to produce other products as well.

Due to the increase in the degree of differentiation of goods, both an increase in the degree of imperfection of competition and a deviation of the used capacities,

production volumes and prices from the most effective ones occur simultaneously. For the variety of manufactured goods, business executives have to «pay» with an excess of unused capacity, the construction and maintenance of which create significant costs. Limitations on efficiency at each production cycle also do not solve the problem.

So, the criterion for maximizing the stability of the grocery basket and the criterion for maximizing the efficiency of capital use belong to the Pareto region, and it is almost impossible to build such a region, since both of these criteria are connected by technical and technological processes.

Thus, the construction of value functions of decisions is impossible due to the fact that the process of production and sale of products and the formation of the cost of capital is a single process. Moreover, it is not limited to one step. This means that at some stage of production it is possible to maximize the stability of the grocery basket, worsening the efficiency of using fixed capital, and at some step, on the contrary, it is advisable to increase the efficiency of using production assets due to the deterioration of economic indicators of product sales. In other words, this process should take a sufficiently long time interval, including at least the duration of the equipment operation period. So, the optimal composition of diversification measures and ensuring the planned economic return on production assets determines the conditions for the development of a type of activity that would be universal on the basis of an existing legal entity. It is proposed to consider this type as a multibusiness enterprise in the agri-food sector.

We define the essence of a multibusiness enterprise in the agri-food sector as a way of organizing economic activity focused on providing maneuvering opportunities for the specialization of the enterprise in a wide range in order to maintain economic stability in an unstable market of agricultural processed products.

A distinctive feature of this approach to business organization is the dynamic management of not only the grocery basket inherent in a traditional organization, but also the reorganization of technical and technological chains. That is, under certain conditions, a complete change in the specialization of economic activity is possible, accompanied by technical and technological re-equipment, while taking into account the regional resource potential and regional market conditions.

The results of the study of the current state and development of enterprises in the agri-food sector led to the conclusion about its crisis state. During the theoretical analysis, external and internal factors of crisis situations were identified; they indicate the need to develop effective management decisions to overcome and prevent them.

One of the basic elements of this process should be considered the diversification of activities of enterprises in the agri-food sector, which may ultimately lead to the formation of a new type of enterprises adaptive to environmental challenges – multibusiness enterprises in the agri-food sector. This predetermines the subject of further scientific research in this direction.

The results of experimental testing of the proposed anti-crisis mechanism using the advantages of a multi-business model as part of the investment initiative of Kremenchuhmiaso JSC prove that strategic planning for sustainable effective development must be carried out on the basis of long-term programming of optimal dynamic changes. This allows you to take into account forecast changes in the capital of the enterprise and to form timely measures to prevent crisis phenomena associated with the loss of profitability of business models that make up the economic activity of the enterprise.

It should be noted that with this approach, technological and technical capabilities are considered more widely. According to the traditional scheme, interest in technological capabilities is limited by the parameters of production lines necessary for obtaining the planned product (or product range), which are formed on the basis of the results of the scientific and technological progress. The connection point in this case is the product with its technical parameters. When using a multibusiness model, in addition to communicating with product parameters, the resource potential (both general and specific resources) and the potential of the market environment (capacity of the main and alternative types of products) are of exceptional importance. The potential of meat processing enterprises also includes the available opportunities for raw materials of agricultural origin (imports can be assessed as a backup option), including crop production.

The restructuring of economic activity (changing specialization) is not limited to technological restructuring, but should not change the economic sphere. Under this condition, the corresponding constancy of the agro-industrial sphere is ensured.

It should be pointed out that the process of forming a multibusiness meat processing enterprise has significant commonality with such a phenomenon as unrelated (non-native) diversification and is its continuation.

Unrelated diversification is a penetration into directions that do not have a direct connection with the main production and economic activities of enterprises. Unrelated diversification to a greater extent can be carried out by large enterprises. An example of this is the activity of industrial processing enterprises in the structure of JSC “Mariupol Ilich Iron and Steel Plant”. This plant for the production of metallurgical products (the main ones) also organized the production of sanitary products, furniture, ancillary agricultural production of sausages, bread, and other food products. Such diversification is characterized by the absence of common markets, resources, technology, and the effect is faster and to a greater extent due to the mutual exchange or separation of assets of fields of activity. Specialists note that this is more diversification of capital than production. It is also called «conglomerate diversification (conglomerate mergers)».

Many Ukrainian enterprises choose strategies for unrelated diversification, demonstrating their willingness to diversify into any industry with good prospects for profit. The heads of enterprises deliberately do not look for such types of business that have strategic alignment with other types of business enterprises.

The strategy of unrelated diversification of enterprises provides for penetration into any sectors and businesses, promising monetary benefits. The implementation of strategic correspondence relationships in this case is secondary.

Unrelated diversification companies traditionally enter new markets by acquiring enterprises already operating on them, rather than forming a new branch of the enterprise by the parent company. They are guided by the fact that such growth by the method of purchase is converted mainly to an increase in the market value of shares.

Unrelated diversification is a principled monetary approach, which is aimed at creating the market value of shares, while cognate diversification is a principled strategic approach to creating a market value of shares, as it involves the introduction of links between the structures of various businesses in order to reduce costs, share knowledge, technological experience, and other significant strategic benefits. The main goal is to transform the strategic correspondences that are included in the corporation of businesses into an additional competitive advantage that exceeds the amount of income that could be achieved when the business worked independently of each other.

Enterprises that produce non-core (unrelated) diversification are usually quite interested in finding areas of the activity (or enterprises that carry it out) that have the potential to receive fairly quick financial returns due to their special situation. A. Thompson and A. Strickland distinguish the following three types of enterprises:

a) companies value of which is underestimated, with the opportunity for their purchase at prices lower than market ones, although subsequently it will be possible to sell such a company at a higher price;

b) companies that have financial difficulties, can be purchased at negotiated prices (while their activities are being reorganized using the financial resources of the parent company, managerial know-how).

Typically, such companies are considered as long-term investments in the parent company's investment portfolio (due to high returns and / or potential cash inflows) or they can be sold quickly enough with profit;

c) companies that have the potential for growth, but are deprived of the actual opportunity to invest in them. Such attractive companies with low financial capabilities usually become candidates for diversification in financially powerful, but devoid of attractiveness companies (in terms of growth prospects).

At the same time, unrelated diversification (conglomerate mergers) has positive and negative aspects. The distribution of financial risks in many areas should be attributed to positive ones, when an enterprise can theoretically invest in any enterprise that could potentially provide financial benefits in the future, as well as stabilize its income by participating in areas and industries with different development cycles.

The negative aspects include the following three main disadvantages:

- the difficulty of managing a widely diversified company;

- the inability to use strategic compliance (i.e., matching the accumulated potential with potential opportunities) as an additional source of creating an appropriate competitive advantage;

- the presence of significant risks for the company, which seeks to penetrate the fast-growing areas of activity.

Such risks are mainly caused by the following reasons:

- excess of the allowable number of competitors in the relevant industry market, which ensures its effective functioning;

- current inability of sales channels to sell products of all enterprises;

- changes in forms and methods of marketing due to changes in technologies to which not every company can be adapted in a timely manner;

- deceptive market growth.

There are objective and subjective reasons for unrelated diversification, for example, they that are due to personal ambitions of the executive staff or just a case, which should be taken into account as well.

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