

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

ORGANIC FARMING: TECHNOLOGY, MARKETING

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The world community is concerned that degradation processes of nature are increasing, the conditions of human life are deteriorating. This is due to the fact that the content of harmful substances in the air, water, soil, food often reaches critical rates [12]. Therefore the time has come when society begins to realize that environmental protection needs to be put at one level with the economy, the material conditions of life and human health. It is no coincidence that the UN stresses that in the 21st century the main tasks of humanity must be focused on the study and use of environmental and biotechnology laws [6].

In connection with this it becomes increasingly urgent to implement a wide introduction of nature protection manage, the basis of which is organic farming which ensures the preservation and enhancement of soil fertility, the production of ecologically safe food, and the conservation of the planet's biosphere [7].

As defined in the EU Council Regulation 834/2007, «organic production is an integral system of food production and management that combines the best experience, taking into account environmental preservation, biodiversity level, maintenance of natural resources, application of high standards of the proper animals keeping and the method of production, that meets certain requirements to the products got with application of substances and processes of natural origin «.

Thus, organic farming is the most modern trend in agriculture which is based on a harmonious combination of environmental protection and management, the conservation and reproduction of soil fertility, the production of environmentally safe products and raw materials that are an important factor of human health and longevity.

In essence it is a balanced farming system that resembles a natural ecosystem and is based on the maximum use of biological factors, soil fertility enhancement and agrotechnical methods of plant protection that provide ecologically, socially and economically expedient production of agricultural products.

Ukraine has almost forty years of experience in producing environmentally safe crop and livestock products and reproduction of soil fertility. This is PE «Agroecology» in Poltava region in Shishaky district. Based on the ideas, experience and research of Vasylyl Dokuchaev, Volodymyr Vernadsky, prominent agrarian Terenty Maltsev, the founder of the economy Semen Sviridonovich Antonets, Hero of Socialist Labor, Hero of Ukraine, Honorary Academician of NAAS, for the first time in the newest agrarian history of Ukraine created a unique model of the system of organic farming, a philosophical basis of which is the conceptual framework for the development of the biosphere [6].

It is based on preserving and increasing the soil fertility, obtaining environmentally safe products and preserving the biosphere.

Thus the basis of organic farming philosophy of Semen Antonets is based on the creation of agroecosystems as close as possible to natural formations. The system takes into account the basic principle of the development of the planet, since the emergence of life on Earth was ensured by two global processes, which now and in the future will support the development of the biosphere. They include photosynthesis and nitrogen fixation in all its manifestations [7]. Organic farming is submitted to the regulation of these processes to a large extent.

The leitmotif of the organic farming system is the understanding that global environmental problems are solved locally by developing technological techniques that are conducive to the existence of the biosphere.

Scientifically grounded structure of sown areas on the basis of polyculture provides biodiversity in the system of agrobiocenosis. Agronomists define such an approach as the effect of agrophytocenology. The basis of this idea and practice is the desire and the possibility of including in the crop rotation the most expedient amount of crops that form optimal conditions of plant nutrition regime and optimization of the phytosanitary state of crops [3].

Almost throughout the growing season there are flowering plants on the farm's fields that improve the conditions of the existence of local beneficial organisms (entomophages) which contributes to reducing the amount of pests and inhibits the development of pathogens of plant diseases.

Our research confirmed the decrease in the number of pests due to natural regulation of the influence of beneficial organisms. Thus, the infestation of the cereal aphids with afididae in the crops of barley with the sowings of the espresso was 46.8 - 54.2%, whereas in the crops of the same crop for intensive farming, where for the most part 3-4 crops were grown, did not exceed 18.3%.

The absence of pesticide use, the introduction of shallow soil cultivation and the botanical diversity of plants for organic farming stimulate an increase in the species composition and number of predatory turunias. We found that their number in the fields of investigated enterprises was 20% higher than in sowings of cereal grain-crops at intensive technologies. The dynamic density of predatory carbides during the years of research (2013-2015) depending on the species composition

and weather conditions for organic farming exceeded this indicator in fields with intensive technology by 32.6 - 51.2%. In this regard it becomes clear why the number of wireworms larvae and unreal wireworms before sowing corn and sunflower, the main predators of which are predatory turunias as a rule did not exceed the economic thresholds of harm which make up 3 to 5 individuals per 1 m².

According to our research the materials of studies confirm the positive impact of organic farming on determining the intensity of development of powdery mildew on winter wheat and spring barley plants when in the earing phase actual indexes did not exceed the threshold intensity of the disease, 15-20% of the affected plant tissue.

Thus the optimization of the phytosanitary state of crops for organic farming is based on the natural regulation of the influence of beneficial organisms.

According to our data the use of sederal crops and manure provides optimization of plant nutrition and the formation of a positive balance of humus due to perennial legumes, siderates, humus and unproductive fraction of the harvest. The total volume of organic matter entering the agrobiocenosis reaches 24-26 t / ha in terms of crop rotation, and 100-120 t / ha per fertilized area. As siderates sainfoin, spring vetch, vetch - cereal mixture, buckwheat, radish oil, white mustard are used (Table 1).

The materials in Table 1 indicate that the use of sederal crops (as organic fertilizers) provides the accumulation of a significant amount of nutrients that are subsequently used by crops. A large number of organic fertilizers in agriculture are provided by the livestock sector which produces more than 72,000 tons of manure per year, revealing the prospect of genuine harmonization of the «relationship» between livestock and plant production.

Table 1

Agrochemical characteristics of plants - siderates, carried out by the calculation-equivalent method

Siderate	Productivity of green mass, c / ha	Accumulated in total biomass of nutrients, kg / ha			Total kg / ha	In bales, kg / ha 1*
		N	P2O5	K2O		
Sainfoin	275	145	25	75	245	510,4
Spring vetch	250	160	75	200	435	906,3
Vetch-cereal mixture	275	120	35	80	235	489,6
White mustard	250	60	40	90	190	395,8
Oil radish	450	85	65	245	395	822,9

*. The calculation of the active substance amount in the bales was carried out on the base of their content in the complex mineral fertilizers – ammonium nitrate phosphate fertilizer.

Source: author's development.

The main requirement of shallow soil cultivation is the cutting of the root system at a depth of 4-5 cm without removing it from the soil. In this case the

microchannels created by worms and decomposing roots do not break down, the vertical orientation of the aeration pores is formed, the density decreases and the water-physical properties of the soil are improved and in combination with perennial bean grasses the plow sole is eliminated and the natural soil loosening takes place.

In the organic farming system techniques have been developed for maximizing the use of solar energy due to soil coverings with plants during almost the entire growing season. The plants of the main crops, siderates, young growth of the windfall vetch-cereal mixture, cereal crops constantly cover the soil which increases the rate of use of the falling energy of solar radiation due to the maximum activity of their photosynthetic apparatus [2].

Thus the practical significance of this thesis in the organic farming system contributes to maximizing the use of solar energy for the formation of grain and green mass yield and increasing soil fertility. This conclusion is confirmed by the statement of K.A. Timiryazev [13], that every sun ray which is not captured by the green surface of fields, meadows and forests is a lost wealth forever.

In our opinion another statement of the classics of physiology is also important for us: «From the priceless sunlight and air through green leaf plants produce energy of value.» Using the methods of bioenergetic estimation of agricultural production [1] and available experimental materials we have determined that when cultivating the spring vetch as siderate, at a yield of its green mass of 250 centners / ha, after mineralization of organic matter in the soil remains: nitrogen (N) - 160 kg, phosphorus (P) - 75 kg, potassium (K) - 200 kg. Such amount of macroelements due to photosynthesis and nitrogen fixation is formed by 1395 MJ of solar radiation energy. For the production of the same amount of macroelements active substance an industrial method requires 16493 MJ of energy.

Consequently for the cultivation of the following crops in the crop rotation the income of the macroelements due to the energy of solar radiation into the soil is less energy-consuming than the use of energy received industrially (16 493 MJ: 1395 MJ), 11,8 times.

An important link of the system is also the use of environmentally safe agrotechnical measures that restrain the development of harmful organisms through compliance with the regulations of technological measures and the principles of agrophytocenology and allelopathy, contribute to optimizing the phytosanitary state of crops. At first glance these are the known truths of agriculture but in the organic system each of these areas is filled with new measures aimed at creating an ecological situation that inhibits the development of harmful organisms and contributes to the potential productivity of cultivated plants without the use of agrochemicals.

The application of the organic farming system increases the level of soil protection against erosion which is based on two basic principles - the shallow cultivation of soil and the permanent covering of the soil with plants and their residues.

Along with the well-known methods of soil conservation [5,10] the enterprise

uses a number of new measures that are harmoniously included in the technology of field crops growing. These are the widespread use of perennial grasses, shallow soil cultivation, the presence of vegetative cover of the soil during the growing season, sowing across the slopes, leaving behind the stubble in the field after harvesting technical crops and rolls of winter wheat on the stubble across the slope to winter, bucking erosion-hazardous areas.

During the years of organic agriculture application, under the influence of system factors the content of humus, the main indicator of soil fertility and the efficiency of technologies, increased in the fields of the enterprise by 0,53-1,57%. Especially tangible process of earth creation on eroded lands, yields of which during this period almost reached the indicators in the plain fields.

At the same time, it is impossible to overestimate the role of the earthworm in increasing the soil fertility. It should be considered as a great creator of soil wealth. It is the creator of easily digestible nutrients from organic matter. Laying multi-kilometer walks in the ground worms hoe it and enrich with their secretions - coprolites (up to 100 and more t / ha). In an ecologically holistic ground its tracks are not destroyed for three years; his digged tracks and microchannels provide circulation of moisture and air in the zone of the root system creating optimal conditions for the life of cultural plants [4].

«So let's take off the hat in front of the usual worm.» These prophetic words by Charles Darwin as never before are relevant to organic farming. It sounds paradoxically but our well-being on the Earth depends heavily on worms.

In this regard our records of the number of rainworms are given in Table 2.

Table 2

**Population density of the arable layer of soil with rainworms
at different agricultural systems, pc / m.2.**

Inspection Options	Years			
	2014	2015	2016	2014-201640
Technologies of organic farming	40	28	44	37,3
Intensive technologies	5	6	5	5,3

Source: author's development

The data in table 2 indicate that at organic farming the number of rainworms is much higher which may indicate in favour of them to increase the soil fertility at this system.

Confirmation of the system efficiency are economic indicators of the enterprise. At more than 7 thousand hectares of healed land without the use of agrochemicals PE «Agroecology» annually produces 13 thousand tons of high-quality milk, 1.2 thousand tons of meat. The average yield of early grain crops in recent years was 54 c / ha. In many areas the enterprise received harvests of intensive farming level: winter wheat exceeds 70 c / ha, corn for silage - 500 c / ha, for grain -78 c / ha,

spring barley - 51 c / ha, oats - 60 c / ha, sunflower - 35 c / ha. Profitability of the field of plant growing - 42%.

An important condition for farming by the organic farming system is the presence of highly developed livestock breeding. The PE «Agroecology» is a modern branch that allows processing of grain and fodder crops growing on their own fields for valuable end products - milk and meat which increases the economic efficiency of farming. In general, the company has more than six thousand cattle heads of Ukrainian red-coloured and meat Aberdeen-Angus breeds.

Since cows are fed with eco-friendly feeds milk has high levels of quality certified as raw material for the production of dairy products for infant food.

The profitability of milk production in recent years was about 51%, beef - 48.3%.

Thus PE «Agroecology» is an enterprise with a special system of agricultural production where the implementation of the organic farming system contributes to solving agronomic, livestock, economic, social and other problems and provides sustainable development of the enterprise.

At PE «Agroecology» Ukraine has a unique successful long-term organic production experience which proves that the organic farming system in the context of improving soil fertility allows cultivating yields at the level of intensive technologies but the most important thing is to obtain products that are environmentally safe for human health, proves that everyone can solve the global environmental problem of preserving the planet locally at the own farm.

According to the monitoring of marketing research materials the business climate in the agro-industrial complex of Ukraine is stably improving. This is due to the fact that the production and sale of organic products is gaining momentum.

This trend is becoming of particular importance in connection with global climate change, an increase in the role of moisture as a limiting factor in harvesting. In this regard specialization in organic production is the optimal reaction of the agro-industrial complex to drying the soil because this system allows more efficient accumulation and use of moisture due to the shallow tillage of soil and the higher content of organic matter which makes the soil more puffy which increases its ability to hold moisture.

Consequently it is necessary to expand the area of organic farming as one of the important factors in confronting the growing shortage of water supply in agriculture.

In this regard the stereotypes of the assessment of the effectiveness of technologies are changing. And what does economic efficiency of technologies mean? It is an opportunity to produce more products, to get more profit per hectare on the same moisture without increasing its consumption. Organic farming allows you to do this.

If a priori due to lack of moisture it can not be obtained a high yield then the use of mineral fertilizers, herbicides, trace elements or growth substances does not increase the yield. But when the products are certified as organic there is an opportunity to receive an additional 30-50% of the funds from its implementation.

Thus for organic farming there is an opportunity to increase the profitability of production at least 1.5 times due to the higher cost of organic products in conditions of acute deficiency of moisture without increasing its consumption.

In addition, due to drought organic farming brings to Ukraine forgotten or virtually unknown highly profitable, export drought-tolerant crops; Chickpeas, Lentils, Mung, Lathyrus, Spelt, Safflower, Sorghum, Millet, Beans, cultivation of which enhances the marketing potential of the agro-industrial complex.

«Put the Human on the first place - then we will have organic farming and a prosperous healthy state» – is a credo and the essence of the philosophy of organic farming. «The road of the future, the agriculture of the XXI century» is called organic production by scientists who work in this direction therefore the model of organic agriculture created on the farm is a bright page in the latest history of Ukraine and the world and is a higher level of modernization of society aimed at prosperity and sustainable development of civilization.

To solve the problem of widespread introduction of organic farming into the production is by hand for the present-day generation of Ukrainians. There is a unique experience, there are scientific developments, you need a strong desire and the decisive actions of the leaders of the nation. This problem should be placed in the rank of the state program and then all will win: the state, the nation, present and future generations of Ukrainians.

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REALIZATION OF THE CLUSTER MODEL FOR PHARMACEUTICAL DEVELOPMENT IN UKRAINE

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With strengthening of the world economies' innovative component, actualized due to influence of the Industrial Revolution 4.0, cluster formation, as a tool for ensuring their competitiveness and national security, is becoming extremely important. Cluster formations effectively facilitate economic development of any territory, region or country as a whole.

Today, the cluster economy model is implemented in almost all countries of the world; clusters operate in many (and often in innovative) economy sectors. The positive impact of clusters on the socio-economic development of countries and regions of the world has determined the relevance of their activities. Therefore, the study of the cluster model of pharmaceutical industry development in Ukraine is of great scientific and practical significance.

Survey of the of cluster formations functioning is reflected in the works of such foreign scientists as M. Porter [1-3], O. Solvel [4; 5], S. Rosenfeld [6], M. Williams [4], T. Roelandt [7], Den Gertog, G. Svan [8], M. Preveser [8], G. Kergel [9] etc.,

who examined the theoretical and methodological approaches to cluster formation, factors of their occurrence, life cycle and influence on the competitiveness of the economy of the territory within which such innovative-integrated structures arise. Among Ukrainian scientists, examining various cluster aspects, one should note M. Voynarenko [10], N. Komar [11], V. Leshchuk [12],

V. Tolkovanov [13], M. Yaroshchuk [14] etc. Z. Mnushko and O. Posylkina examined the functioning of clusters in domestic pharmacy. However, the state of functioning and prospects of the development of pharmaceutical cluster entities in Ukraine at the present stage are required, firstly, given the effectiveness of the given instrument of sustainable territory development and, secondly, as a factor for ensuring the national state security.

The urgency to create pharmaceutical regional clusters in Ukraine is due to the need for timely provision of high-quality drugs in the required volumes at an affordable price, technological lagging behind domestic pharmaceutical companies in comparison with the activities of enterprises in developed countries, the deterioration of the economic situation in the country as a whole, the creation of new workplaces, the receipt of budget funds in the region, reduction of barriers to access the market of original medicines, increase of the regions' socio-economic development effectiveness, etc.

The purpose of this study is to formulate and implement a cluster model for the pharmaceutical industry in Ukraine under the prism of the actualization of the clustering aspect in foreign countries.

Today, clustering has become widespread in developed countries. The most well-known clusters in the world operate in America, Denmark, India, Italy, Canada, China, Germany, Finland and other countries, and countries such as Hungary, France, Japan, the United Kingdom, Austria, Sweden, etc. and have considerable experience in clusters formation.

The analysis of the EU pharmaceutical sector clusterization has demonstrated that the stable economic growth of the pharmaceutical industry is ensured by creation of clusters in order to combine efforts in the development, production and market introduction of original medicines, the introduction of advanced pharmaceutical production technologies, modern organization methods, their promotion, approaches to managing stream processes, etc. In addition, the cluster should become the point of Ukrainian domestic pharmaceutical market growth, as well as increase the competitiveness of the pharmaceutical industry as a whole and its integration into the world market. The main problems hindering the creation of clusters in Ukraine are the distrust of entrepreneurs to each other, their reluctance to cooperate, imperfect state, regional and local cluster support policies and the legal framework for their functioning, financial barriers, etc.

On the basis of literary sources analysis, the definition of the regional pharmaceutical cluster (hereinafter - RFC) is formulated: RFC is an accumulation of production subjects, distribution and sale of medicines, science and education,

which provide and carry out targeted activities on the development, production and promotion of the domestic and foreign markets of competitive medicines funds on the basis of private-public partnership mechanisms. Taking into account the above, it can be stated that the national economic system is a set of branch clusters with clearly distinct spatial characteristics.

The created RFC are real opportunities for combining the competence and experience of leading pharmaceutical manufacturers, drug distributors, research institutes for the creation of original medicines, manufacturers of medical and pharmaceutical equipment, sectoral higher education institutions, as well as authorities as the coordinator of RFC development.

The economic interaction of the RFC participants is a division and redistribution of resources in the process of cooperation in order to implement its strategy and provide participants with the necessary resources; organizational - creation of an organizational structure that ensures effective interaction of participants; management - the use of RFC resources and potential to achieve synergistic effect; social - creation of the mechanism for timely provision of population with accessible medicines and the development of the region, social responsibility of the subjects of pharmaceutical activities, raising the level of population employment, increasing tax revenues to local and state budgets; legal - improvement of the regulatory and legislative framework, which is the basis for the cluster participants interaction; technological - the possibility to use modern methods and the latest technologies of production, logistics, marketing, information technology; innovative - the possibility to introduce innovations and production of original medicines; informational - timely provision of all participants with the necessary information; ecological - the impact of the subjects of pharmaceutical activities on environment and the provision of environmental and hygienic safety of the region.

State participation implies the compensation of interest on loans for the purchase of foreign high-tech equipment, exemption from value added tax and duties of a certain list of equipment, creation of favorable conditions for lending to participants of the RFC, granting tax privileges, consistent increase of investment attractiveness of the subjects of pharmaceutical activities (innovative pharmaceutical products have a significant export potential and long-term prospects for realization to ensure guaranteed return of investments), direct financial support of RFC, providing administrative procedures, providing facilities or other infrastructure components, organizing public events (fairs, trade missions, etc.), ensuring information transmission, transport links with other clusters or geographic areas.

Thus, the efforts of the government should not be aimed at improving the work of individual subjects of pharmaceutical activities, but on the development of interconnections within the cluster (between suppliers and consumers of objects and means of labor, end users and manufacturers of medicinal products, manufacturers of medicines and authorities). In addition, the state is obliged to maintain a cluster on the part of the technical regulatory bodies (creation of new information

products in the field of technical regulation, collection and analysis of data on available technical barriers, advising on quality and environmental management, facilitating the transition of the subjects of pharmaceutical activities to GkP rules); bodies of state supervision over industrial safety and labor protection (provision of certain informational materials, carrying out preventive works, passing offers on labor protection), since there is an accumulation of sub-objects with different forms of ownership without a legal entity establishment. At the first stage of RFC development, it is advisable for the government to focus its efforts on improving infrastructure and eliminating unfavorable conditions for competition, and then on eliminating obstacles to innovation and promoting foreign investment.

The algorithm of the RFC formation is as follows. At the first stage industrial, innovational and investment, educational, scientific, logistical, regulatory and financial components of the region's pharmaceutical industry potential are analyzed. On the basis of the above, at the next stage the features of clusters, the structure of the RFC and the nature of connections between its participants are determined, and the Council of the cluster is formed. At the third stage, the principles and norms of the RFC participants interaction, as well as its corporate strategy and culture are developed. The following stages define the forms of RFC financing and evaluate the efficiency of the cluster's functioning.

An important element of the scientific and methodological basis of the RFC formation is the definition of their optimal number. To do this, one need to group the RFC according to a number of indicators: the number of pharmaceutical companies, pharmacies, pharmaceutical complexes, sectoral higher education institutions or pharmacies, health facilities, landfills, waste recycling plants, industry research institutes.

Under the taxonomy method, an integrated indicator of the regions' potential pharmaceutical clustering was calculated, what in its turn characterizes the level of readiness of Ukrainian the regions to create pharmaceutical clusters (Table 1).

Under cluster analysis, the regions are combined into three zones:

I zone – regions with high potential of pharmaceutical clustering, i.e. regions that have all the conditions for clusterization;

II zone – regions with an average potential of pharmaceutical clusterization, i.e. those which have clustering conditions, but need to improve certain components (transport infrastructure, modernization of the subjects of pharmaceutical activities, etc.);

III zone – regions with a low potential for pharmaceutical clustering, i.e. those that are not ready for clusterization and require significant development of the pharmaceutical sector or other components, which will be a part of the cluster.

The maximum permissible values of the integral index of Ukrainian regions potential pharmaceutical clusterization (I_{clust}), determined for each zone by survey are:

I zone $0,651448 \leq I_{clust} < 1$;

II zone $0,327925 \leq I_{clust} < 0,651448$;

III zone $0 \leq I_{clust} < 0,327925$.

Table 1

Integral indicator of potential pharmaceutical clusterization regions of Ukraine

Region	The value of the integral indicator of the regions' potential pharmaceutical clustering
Vinnitsia	0,298235
Volyn	0,182287
Dnipropetrovsk	0,583849
Donetsk	0,281676
Zhytomyr	0,301013
Zakarpathia	0,279394
Zaporizhzhia	0,279661
Ivano-Frankivsk	0,27476
Kyiv	0,959033
Kirovograd	0,206526
Lugansk	0,442403
Lviv	0,433704
Mykolayiv	0,20149
Odesa	0,531082
Poltava	0,350311
Rivne	0,170861
Summy	0,327925
Temopil	0,225387
Kharkiv	0,651448
Kherson	0,233453
Khmelnysk	0,217533
Cherkasy	0,23676
Chernivtsi	0,315052
Chernihiv	0,242106

The diagram of the average values of local indicators by the specified zones is demonstrated in Fig.1.

The results of the survey held suggest that the most promising regions for the implementation of pilot projects on the creation of pharmaceutical clusters in Ukraine are Kyiv and Kharkiv regions. The second place for the creation of the RFC are Dnipropetrovsk, Lviv, Odesa, Poltava and Chernivtsi regions, which is

grounded by the location of the subjects of pharmaceutical activities and other components of potential clusters.

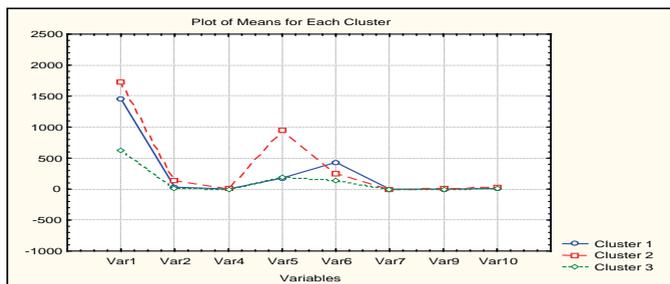


Fig.1. Schedule of average values of local indicators by the specified zones

The advantages of clustering at the regional level are the dissemination of new technologies, knowledge, pharmaceutical products, additional competitive advantages of the RFC participants due to internal specialization and standardization, minimization of costs for innovation, provision of environmental stability, reduction of the regional environmental pollution, harmonization of interests of the RFC participants, consistency of goals with partners (suppliers, consumers, intermediaries, etc.), control and coordination of flow processes, timely consumers' provision with necessary medicines at affordable price.

Thus, the development of clustering processes points to positive effects for the country's economy. This also applies to the situation on pharmaceutical market. The survey held allows to conclude that the implementation of the cluster approach contributes to optimizing the provision of medicinal products to the population at affordable price, enhancing the competitiveness of the subjects of pharmaceutical activities and transparency of relations between the cluster participants, and thus to increasing the social and economic security of the state.

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LOGISTIC MANAGEMENT OF AGRICULTURAL ENTERPRISES OF CHINA IN THE SYSTEM OF FOOD SAFETY

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After more than 40 years of development since the reform and opening up, China is now in a critical period of transformation from traditional agriculture to modern agriculture. In this process of development, the contradiction between the small production of farmers and the large market has become more and more prominent, and the problems of agriculture, rural areas and farmers have become important issues affecting the development of national economy [1].

Agricultural enterprise logistics based on agricultural output content object, and through agricultural postpartum processing, packaging, storage, transportation and distribution logistics links such as, do the maintenance and appreciation

of the agricultural development of agricultural logistics, is to reduce material consumption, improve labor productivity outside of the profit source, agricultural logistics research is on the rise, has received the attention from all sides. Due to the complexity of the research on the logistics of agricultural enterprises, the theoretical and practical research on the logistics of agricultural enterprises is relatively poor, which needs to be further systematized.

This paper will study the development status of agricultural products logistics in China through the theory of agricultural products logistics and the development of agricultural products logistics at home and abroad, analyze the future space for the development of agricultural products logistics in China, and study agricultural products logistics in China from the perspective of enterprises on this basis.

On the system theory, commodity circulation theory, transaction cost theory, and the theory of sustainable development as the backing, from the Angle of modern agricultural logistics general theory, in the advanced experience of foreign developed countries for reference and absorb their own research results, on the basis of in-depth investigation in our country agricultural logistics development evolution and present situation from the perspective of modern agricultural logistics factors breakthrough, discusses the development of modern agricultural logistics mode, system building and organization innovation [2].

This paper proposes to strengthen the innovation of agricultural products logistics in our country, promote the industrialization of agriculture leading enterprises and supermarket chain of agricultural products logistics development, accelerate the development of third party logistics, and to cultivate the market intermediary organization, finally puts forward the related law laws, actively foster the subject of agricultural products logistics, improve the agricultural product logistics infrastructure such as policy recommendations.

Developing modern agricultural products logistics is conducive to establishing a modern agricultural products circulation system and realizing the circulation value of agricultural products. Modern logistics has become the «third source of profit» besides reducing material consumption and improving labor productivity. The logistics of agricultural products can reduce the logistics cost and increase the added value of agricultural products through the post-production processing, packaging, transportation and distribution of agricultural products, so as to improve the profit of agricultural products, increase farmers' income and promote agricultural development.

China is an agricultural country, agricultural enterprise logistics plays an important role in the development of national economy. By studying the agricultural enterprise logistics, therefore, gradually establish a modern circulation system of agricultural products, will effectively solve the contradiction between regional blockades and analyze in circulation of agricultural products, agricultural products structure and the market demand, the contradiction of the velocity of circulation and benefit to promote China's agricultural products, thus greatly improving the

international competitiveness of China's agricultural products, to fundamentally solve the problem of «agriculture, rural areas and farmers» to lay a solid foundation.

At present, China's logistics industry has gradually entered a stage of rapid development. However, as China's agricultural development is relatively backward, the development of agricultural products logistics seriously lags behind, which not only greatly weakens the competitiveness of China's agricultural products market, but also has become the bottleneck of China's entire circulation system. According to statistics, the loss rate of China's agricultural and side lines products such as fruits and vegetables in the picking, transportation, storage and other logistics links is about 26%-30%, more than a quarter of agricultural products are consumed in the logistics links, while the loss rate of fruits and vegetables in developed countries is controlled under 6%, and the loss rate of American fruits and vegetables in the logistics links is only 1-2%. Agricultural product enterprise modern agricultural product logistics consciousness is poor, many only care about production and do not care about logistics, logistics management level is poor, backward logistics technology, logistics efficiency is low. The development of agricultural products third-party logistics is slow, many of which are just the renaming of the original fleet and the lack of special assets, which have greatly affected the development of agricultural products logistics. Facing the competition of foreign high-quality agricultural products and the competition of developed agricultural products logistics, China's agricultural products market is facing great challenges.

Li Yining, a famous economist, put forward that «today we must develop advantageous agriculture, increase farmers' income, establish the concept of logistics and develop the logistics industry of agricultural products». Standing vice President of China federation of logistics and purchasing Jun Fading think developing agricultural products logistics can not only make farmers produce any product to achieve its value and use value, also can make value-added agricultural products in the process of logistics, also can reduce the cost of agricultural production and circulation, improve the overall efficiency of agricultural production. He also thinks the Chinese agricultural products logistics has a large number of agricultural products logistics, many varieties, agricultural product logistics is difficult, the characteristics of agricultural products logistics demanding full attention to agricultural products processing value-added logistics, full attention to foster the subject of logistics in the farmers, the rural and urban construction logistics carrier to full attention in farmers, foster the subject of logistics, logistics carrier in rural and urban construction. Therefore, it is of great significance to strengthen the research on logistics of agricultural enterprises.

At present, the research on agricultural products logistics in China has just started, and many experts have carried out the research on agricultural products logistics from various angles. But overall, the research is still poor, need further research. How to start from the theory of modern logistics and supply chain, draw lessons from the experience of developed countries, combine the characteristics

of China's agricultural economic development to explore the development of China's agricultural enterprise logistics, research on China's agricultural enterprise logistics development countermeasures, improve the logistics efficiency of China's agricultural enterprises, such research in the current has important theoretical and practical significance.

Logistics is of great significance in economic development. Peter Drucker, a leading American business scientist, likens logistics to «a virgin land». Douglas Lambert pointed out that the warehouse cost is the largest part of the total cost of logistics activities. The book circulation cost written by Waseda university professor Xizeshu calls improving the logistics system as the «third source of profit» that still needs to be excavated. In the book logistics war of major societies, he elaborated that the current logistics cost is like an iceberg, most of the potential seabed, so it can be seen that the cost is only a small part of the surface [3].

Yan Duanwu, Huang Chunjuan, He Yunfeng et al studied the foreign logistics mode, especially the American logistics mode. Wang Ling and Cao Hongrui analyzed the impact of economic globalization on China's logistics industry organization from the perspectives of China's entry into China's logistics market and transnational logistics companies' entry into China's logistics market from three aspects: the market structure, enterprise behavior and market performance of China's logistics industry [4].

In recent years, many scholars have begun to pay attention to the logistics of agricultural products. Arlo Biere believes that agricultural trade logistics is a separate course in agricultural trade courses. The importance of logistics and supply chain management makes it very important. He has designed the teaching syllabus for this purpose. Li Xuegong and Liu Weifang believe that the marketing of agricultural products needs to introduce modern logistics thoughts. The marketing of agricultural products is not a simple summary of production, preliminary processing, storage, warehousing and transportation, but needs to be solved with the help of modern logistics and its supply chain thoughts. Wang Xinli studied the relationship between agricultural logistics and agricultural industrialization and believed that one of the important reasons for the slow development of agricultural industrialization in China was that he neglected the role of agricultural logistics in the process of agricultural industrialization and the backwardness of China's agricultural logistics system [5].

The particularity of agricultural products production and circulation determines that agricultural products need modern logistics.

From the perspective of specific research, Yu Jusheng introduced the logistics and wholesale market of agricultural products in Japan. Taking Cheng Du as an example, Liu Xuexue in the Qin dynasty analyzed the current problems of agricultural products logistics, and put forward countermeasures to accelerate the development of agricultural products logistics industry and improve agricultural competitiveness. Wang Ya believes that China's WTO accession requires further

liberalization of the domestic grain market and its integration into the international grain market with trade liberalization as soon as possible. Accordingly, it is necessary to adjust the current grain industry policy and accelerate the scientific construction of grain logistics [6].

The key to realizing scientific grain logistics is to optimize and adjust the grain economic structure, rationalize the grain flow direction and improve the regional production and marketing balance mechanism by means of macro-control and market mechanism. Xia Wenhui studied the operation mode of agricultural products logistics under the e-commerce platform. Alan McKinnon analyzed the transportation efficiency of the British food supply chain, etc. [7].

Oleksandr Velychko from the Angle of the agricultural industry logistics management at the same time, put forward agricultural industry logistics management should through the agricultural materials chain management and distribution management, agricultural industrialization management and to develop agricultural products logistics management, and puts forward the class in our country agricultural logistics operation mode of agricultural materials enterprise chain operation mode, order pattern, the industrialization of agricultural production, agricultural products wholesale [8].

From the enterprise point of view, Xie Peixiu proposed speeds up the agricultural logistics need to transform state-owned grain enterprises with modern enterprise system, cultivate a variety of ownership agricultural logistics enterprise, cultivate construction of modern logistics enterprises, improve and cooperate with the regional distributor of organization and distribution pattern of agricultural products, and on the basis of modern logistics and marketing operation system of food security [9].

Taking the first batch of leading agricultural product processing enterprises in China as the object, He Feng made a preliminary study on the basic situation and development trend of agribusiness supply chain practice in China, and emphatically analyzed five important driving forces and general mechanism of promoting agribusiness supply chain practice [10].

Zhang Zongcheng proposed that the grain circulation industry should restructure its assets, expand its functions and develop itself into a modern logistics center and distribution center [11].

The research of Alan McKinnon shows that logistics capability has a positive effect on the performance of agricultural product supply chain, and the external integration and internal integration of enterprises are highly correlated [12].

The research results also show that internal integration and external integration have a positive impact on the logistics capability and performance of enterprises. On the influence of supermarkets on the circulation of agricultural products in China.

Taraniuk L. proposed the methods and rules of economic reengineering of enterprise operation [13].

Hu Dinghuan et al. proposed that leading supermarket enterprises could adopt the mode of agricultural product supplier farmers in China to guide thousands of

small-scale farmers into the supermarket supply chain and accelerate the pace of popularization of safe and high-quality agricultural products [14].

From the above analysis, China's logistics research is developing to the depth, the research of agricultural logistics is emerging. Due to the complexity of agricultural logistics research, the theoretical and practical research on agricultural logistics is relatively poor, which needs to be further systematized. Research on agricultural products logistics is a hot topic at present, but the current research is scattered. From the perspective of enterprise research, comprehensive research on agricultural products logistics is weak in both theoretical and empirical analysis, which requires in-depth research.

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FOOD SECURITY AS A FUNDAMENTAL FACTOR OF NATIONAL SECURITY

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Almost the problem of food for a person has always existed. The hunger that is observed in Ethiopia, the Sudan and other areas south of the Sahara is the most well-known form of food insecurity. The causes of hunger are multifaceted: natural, political cataclysms, civil war, reduced consumption and uneven distribution of food. Consider the level of food security in Ukraine.

Food security is a constant problem for both low-income countries and developed countries that are constantly improving food security mechanisms. The country's food security at the macroeconomic level is a guaranteed public support, regardless of the circumstances that may arise, with the full set of complete foodstuffs.

At the microeconomic level it is the individual's confidence in the ability to satisfy, from available sources, his physiological needs and his family in food. And this is possible only on condition of production in the farms and enterprises of the agrarian-industrial complex of the country of competitive products [1].

In accordance with the draft Law of Ukraine «On food safety of Ukraine» food safety socio-economic and ecological state in the state at which all its citizens are stable and guaranteed provided with food in the required quantity; assortment and quality [2].

First of all, let's determine what food security is and what it is about.

To assess the level of food security in the country, refer to the Global Food Security Index, which is being prepared by the research department of The Economist. The index takes into account such indicators as physical and financial affordability of food, its quality and safety [3].

The Global Food Security Index, developed by the Economist Intelligence Unit and sponsored by Corteva Agriscience, the Agriculture Division of DowDuPont, considers three core pillars of food security - Affordability, Availability, and Quality & Safety-across 113 countries.

The index is a dynamic quantitative and qualitative benchmarking model, constructed from 28 unique indicators, that provides an objective framework for evaluating food security across a wide range of countries worldwide.

Ranking Global Food Security Index, 2018

OVERALL			1) AFFORDABILITY			2) AVAILABILITY			3) QUALITY AND SAFETY			4) NATURAL RESOURCES & RESILIENCE		
Rank	Score	Δ	Rank	Score	Δ	Rank	Score	Δ	Rank	Score	Δ	Rank	Score	
1	85,9	+0,9	1	94,3	+0,6	1	88,8	+1,6	1	87,3	-2,3	1	81,7	
							United Kingdom						Slovakia	
2	85,5	-1,2	2	92,9	-0,3	2	86,1	+3,8	2	86,5	-2,2	2	81,5	
							Netherlands						Denmark	
3	85,0	+0,6	3	87,8	+0,6	2	86,1	+1,4	3	86,0	0,0	3	80,9	
							Switzerland						Czech Republic	
4	85,0	+0,1	4	87,0	+0,2	4	84,4	+1,8	4	85,4	-1,0	4	80,2	
							United Arab Emirates						Austria	
5	84,7	+1,6	5	86,8	+0,1	5	84,3	+1,3	5	85,4	-1,3	5	79,2	
							Norway						Hungary	
6	83,7	+0,2	6	84,3	-0,1	6	84,2	+4,2	6	85,1	-1,0	6	78,5	
							Finland						Switzerland	
7	83,5	+0,6	7	84,0	-0,1	7	83,8	+1,9	7	84,8	-1,2	7	77,7	
							France						Poland	
8	83,3	+2,0	8	83,5	0,0	8	83,6	+0,5	8	84,5	-0,6	8	77,3	
							Austria						Sweden	
9	83,2	+0,7	9	82,9	-0,1	8	83,6	-2,9	9	83,9	-1,5	9	76,0	
							Germany						France	
10	82,9	+0,4	10	82,8	0,0	10	83,2	+0,5	10	83,7	-2,6	10	75,7	
							Ireland						Germany	
63	55,7	+1,8	66	54,1	-0,9	73	53,8	+3,6	46	65,2	+4,0	76	57,5	
							United States						Ukraine	
106	33,0	+0,5	106	22,5	-0,3	106	40,4	+1,0	106	29,2	-0,6	106	48,2	
							Niger						Yemen	
107	32,4	+1,6	107	22,3	-0,1	107	39,6	+2,8	107	29,0	-0,5	107	46,9	
							Chad						Oman	
108	31,5	+2,2	108	21,8	-3,6	108	39,5	+1,9	108	28,3	-0,7	107	46,9	
							Sierra Leone						Saudi Arabia	
109	29,2	0,0	109	19,9	-0,1	109	38,6	+5,6	109	27,5	-0,5	109	46,6	
							Zambia						Bahrain	
110	28,5	+1,4	110	18,0	+2,9	110	36,1	+2,9	110	27,0	+0,1	110	45,0	
							Malawi						Congo (Dem. Rep.)	
111	27,0	+0,2	111	14,7	0,0	111	35,9	+3,4	111	22,5	+1,2	111	43,9	
							Madagascar						Indonesia	
112	26,1	+1,1	112	14,3	-0,1	112	31,0	+3,3	112	20,3	-0,1	112	42,6	
							Yemen						Peru	
113	23,9	-1,4	113	12,4	-1,2	113	30,0	-2,7	113	16,6	-0,1	113	40,7	
							Burundi						United Arab Emirates	

The model, in addition to assessing food affordability, availability and quality, includes a category on natural resources and resilience. The Natural Resources & Resilience category measures a country’s exposure to the impacts of a changing climate; its susceptibility to natural resource risks; and how a country is adapting to these risks. When applied, it acts as an adjustment factor on countries’ food security scores [7].

Ranking Global Food Security Index, 2018: This module displays the overall results from the index. It provides the overall and category rankings across all 113 countries. This module provides the most in-depth view of the individual metrics (called “indicators”) across the Affordability, Availability and Quality & Safety categories and their definitions.

Users can explore the Top and Bottom ten performers in each category and across each indicator. They can also see the ten most improved and the ten most declined countries between the 2017 and 2018 indices. In the Data & Scores sub-tab, the overall results, category results and indicator results are presented for all countries, as are year-on-year score changes and the raw data (where applicable).

Ukraine has set 63 minceted rated by the Global Index of Food Safety. Susidami of Ukraine in the rating of opinilis Vietnam (62-g misce) and Morocco (64-te mistea).

I will find the position of the rating index on Seinpur Singapur, I will leave - Burundi (113-th of the month). Country EU, above all, be at the top of the list.

At that, I am ready to talk, just a general demonstrator of Ukraine has grown by 1.8 points. The water show is a demonstration of security and safety of food products that were 4 bali before the 46th season. Indicator of accessibility was 3.6 ball to 73rd match.

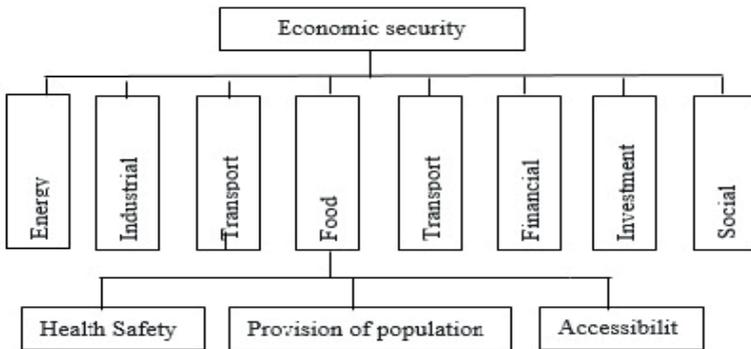


Fig. 1. Food security in the structure of economic security of the state

Fodding without security power state important warehouse part of economic security (Fig. 1), a in his charge with a part of suspended security without power. Food security state – tse stupny software population of the country is ecologically clean and healthy for health products with food products for the purposes of scientific

standards and affordable pricing at the same time as well as our students. Food and food for people living in people play a special role. Experts believe, just for the life of an important generation food problem can outgrow Global international crisis [6].

According to estimates by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), the average nutrition rate per person should be between 2300 and 2400 kcal per day.

The central element of food security is the supply of food, and in its structure, it is necessary to allocate four components.

The availability of food is manifested in three forms. Physical accessibility involves the simple availability of vital products on the consumer market, economic availability includes a financial opportunity to get them, and social - the minimum differentiation in consumption of main product groups among different segments of the population. If we assess the state of food security of Ukraine in the next time on the above criteria, then it can be assessed as catastrophic. The level of consumption of meat and dairy, fish food by the population of Ukraine is at a rather low level (Table 1).

The country's population is supplied by 50% of domestic food. Large administrative and industrial centers are 70-80% dependent on external supply. In this case, the products supplied from the West are far from environmentally friendly.

They have preservatives and additives that are prohibited for use in the producing countries. It must be remembered that with full food dependence on food supplies from abroad, under the threat of artificially initiating hunger by external forces.

Table 2

Household food consumption (as a primary product) per year per person per year (excluding the temporarily occupied territories the Autonomous Republic of Crimea and the city of Sevastopol)[4]

Foodstuffs consumed by households	Norm	2013	2014	2015	2016	2017
meat and meat products, kg	83,0	61,2	58,8	55,2	56,4	56,4
milk and dairy products, kg	380,0	243,6	243,6	237,6	235,2	231,6
eggs, pcs.	290	240	240	228	228	240
fish and fish products, kg	20,0	21,6	1,6	1,2	1,2	1,3
sugar, kg	38,0	36,0	36,0	33,6	32,4	33,6
oil and other vegetable fats, kg	13,0	20,4	20,4	19,2	18,0	18,0
potatoes, kg	124,0	85,2	82,8	79,2	80,4	76,8
vegetables and melons, kg	161,0	112,8	108,0	105,6	110,4	102,0
fruits, berries, nuts, grapes, kg	90,0	49,2	44,4	37,2	39,6	44,4
bread and cereal products, kg	101,0	108,0	108,0	102,0	99,6	100,8

Excluding a part of temporarily occupied territory of the Donetsk and Luhansk regions.

The importance of food security in the national security system lies in the fact that it is closely linked to environmental safety. Agricultural activities have a decisive impact on the environmental situation in the world, which, on the one hand, impedes the growth of agricultural production as raw materials for food, on the other - leads to the production of products contaminated with various toxic substances. In the XX century. With the development of intergovernmental trade food began to be used as a weapon of political pressure from some countries to others.

The degree of food security of the country depends primarily on the basic potential of agricultural production, which, in turn, is formed, supported and regulated by the state with the help of the corresponding agrarian policy, in particular measures aimed at supporting the domestic producer of agricultural products [5].

In addition, this is a direct impact on other types of economic security, and as a consequence of the threat of national security. Well, food security is a fundamental factor in national security.

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CREATE ENERGY SECURITY STRATEGY BASED ON SPACE-ANALYSIS

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Energy security is one of the key factors in ensuring the country's economic growth. However, low levels of economic security show energy dependence on neighboring countries, high energy production and social instability in the country and low environmental economics. The positive trend in the world's energy instability, depletion of conventional sources of energy, global warming and related regulations in the field of environmental protection, diversification of energy supply in the European energy market against the backdrop of violation of territorial integrity are the relevance of this issue for Ukraine. The economic literature is a common formula for energy security [1]: energy saving and energy efficiency + availability of own energy resources (natural gas, coal, oil, renewable energy sources) + diversification of energy imports + strategic reserves formation + integration into the energy area (in the case of Ukraine – synchronization with the ENTSO-G and ENTSO-E energy networks). The problems of energy security evaluation involved scientists such as A. Zaverbnyi, A. and dry Diyak I., M. Zemlenyy M. Kovalko, A. Shydlovskyy A. Corinne J. Sapir, A. earrings, Vorontsov A Sidorenko, as well as international institutions: UN, World Bank, International Energy Agency, International Atomic Energy Agency, European Union and others. Topical issue guidance most methods of evaluation of energy security for the technical component of energy security by establishing indicators crisis level or threshold of a security aspects and drawing up a list of administrative decisions under the condition specified object. At the same time, the lack of consideration by these methods of the uncertainty factor, the so-called VUCA-characteristics of the management environment, makes it impossible to form qualitative scenarios of the state of the country's energy security. In the area of evaluation of economic security are three approaches: indicative, and taxonomic expertise [2; 3; 4], each of which consists of groups of methods with indicators in accordance with the functional purpose.

The authors proposed to use Dynamic SPACE-analysis to create a list of possible strategic initiatives for specific recommendations to enhance energy security [5, 6] that efficiently complement along with indicative figures expert component or

managerial factor in the formation of energy security strategy (Fig. 1).

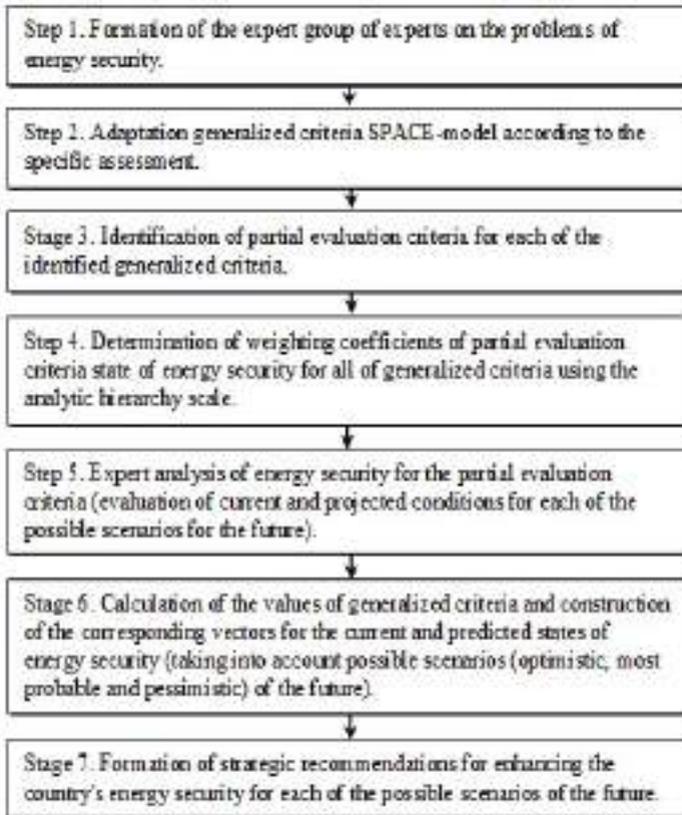


Fig. 1. Scheme of formation of strategies for strengthening the energy security of the country based on the SPACE-model

According to the general criteria for assessing the level of energy security for the formation of strategies, energy security indicators have been selected on the functional aspect of the formation of Ukrainian scientists M. Zemlianyan, A. Doroshkevych, V. Barannikov [7] and the short-term energy security assessment model (MOSES) [7] (Table 1).

At the first stage, the selection of experts and analysts who are experts in the country's energy security issues is being carried out.

The second stage requires a certain transformation of the SPACE model in accordance with the specificity of the problem and the evaluation, namely the modification of the generalized criteria in order to reach as exhaustively as possible the exogenous and endogenous aspects of the analysis of the state of energy safety.

At step 3 according to the methodology SPACE-analysis is necessary to determine the proportion of evaluation criteria for each of the identified generalized criteria. This requires the participation of experts and analysts, since the decomposition of generalized criteria requires a thorough knowledge of the specifics and characteristics of the energy market.

The fourth stage involves determining the weighting factors of partial criteria. To do this, you must use the scale proposed by T. Saati [8] As a result, it is possible to obtain the corresponding matrices of pair comparisons of these criteria: ,

$\|a_{ij}^p\|_{n_p \times n_p}$ here the index p – is the designation of a generalized criterion, and n_p – respectively the number of partial evaluation criteria for a p generalized criterion.

The weights of the partial criteria for each of the criteria can be generalized to calculate the approximate formula:

$$w_i^p = \frac{n_p \sqrt[n_p]{a_{i1}^p \times a_{i2}^p \times \dots \times a_{in_p}^p}}{\sum_{i=1}^{n_p} n_p \sqrt[n_p]{a_{i1}^p \times a_{i2}^p \times \dots \times a_{in_p}^p}}, \quad i = 1, 2, \dots, n_p$$

Because of the considerable amount of numerical information from the paired comparison of partial criteria for each of the generalized criteria in Table. 1 shows the values of the already calculated weighting factors of all partial criteria.

At the 5th stage, the expert assessment of the 6-point scale assesses (for the current state and possible scenarios of the future) the energy security of the country for each of the selected partial criteria (on a scale from 0 – the worst value to 6 – the best value), Table 1. Note that this table shows the average values for each of the partial criteria, calculated on the basis of estimates by several experts.

Stage 6. «Weighing» of expert assessments within each group of partial criteria for each business unit for the current status is carried out using the formulas:

B – base (initial) period, F – Forecast period, O – Optimistic, Mp – Most probable, P – Pessimistic) scenario.

$$EC_i^B = \sum_j w_j^{EC} \times EC_j^B; \quad IS_i^B = \sum_j w_j^{IS} \times IS_j^B$$

$$ED_i^B = \sum_j w_j^{ED} \times ED_j^B - 6; \quad SS_i^B = \sum_j w_j^{SS} \times SS_j^B - 6$$

(2)

Table 1

**Results of expert evaluation of the level of energy security
of the country by the method of SPACE-analysis**

Partial criteria			B	Forecast			Weigh-ing cuffs
				O	Mp	P	
Energy Consumers (EC)	1.	Availability of supplies	4,2	4	4,1	4,5	0,11
	2.	Explored reserves	4,0	3,8	3,9	4,2	0,22
	3.	Depreciation of fixed assets	3,9	3,7	3,8	4,1	0,11
	4.	Energy efficiency	4,3	3,9	4,0	4,5	0,22
	5.	Investing in energy saving	4,1	3,9	4,0	4,3	0,11
	6.	Investments in fixed assets	4,5	4,2	4,1	4,6	0,11
	7.	Power reserves	4,2	4	4,1	4,4	0,11
Energy Dependence (ED)	1.	Import share in power supply	1,6	1,5	1,7	1,9	0,1
	2.	The share of monopoly imports in the supply of energy	1,7	1,6	1,8	1,9	0,2
	3.	Interdependence	1,8	1,6	1,9	2,1	0,2
	4.	State regulation of markets	1,6	1,5	1,8	1,9	0,2
	5.	Level of supply monopoly	1,5	1,4	1,7	1,8	0,1
	6.	Balance of ownership in the fuel and energy complex	1,6	1,5	1,7	2,1	0,1
	7.	Level of monopoly type of fuel	1,5	1,4	1,6	1,8	0,1
Stability of the industry: the environmental impact (IS)	1.	Relative ecological damage	2,3	2,2	2,4	2,6	0,21
	2.	Environmental cleanliness of energy production	2,6	2,4	2,7	2,8	0,11
	3.	The level of investment in the environment	2,1	2	2,4	2,5	0,21
	4.	Efficiency of investments in modernization	2,4	2,2	2,5	2,8	0,15
	5.	The share of renewable sources (biofuels, «clean» electricity) in the total consumption of thermal energy	2,3	2,1	2,5	2,7	0,11
	6.	GHG emissions from the fuel and energy sector and transport sector in the region	2,5	2,3	2,6	2,8	0,11
	7.	Emissions of pollutants by the energy system of the region	2,6	2,4	2,7	2,8	0,11
Social stability of industry (SS)	1.	Sufficiency and reliability of supply	3,5	3,3	3,4	3,7	0,12
	2.	Cost of energy and heat	3,4	3,3	3,4	3,7	0,2
	3.	The growth rate of service cost	3,4	3,2	3,3	3,6	0,10
	4.	Energy component in the value of goods and services	3,6	3,4	3,5	3,9	0,28
	5.	Environmental impact on the population	3,9	3,7	3,8	4,0	0,10
	6.	Salary arrears	3,7	3,5	3,6	4,0	0,10
	7.	Strike movement in the fuel and energy complex	3,3	3,1	3,2	3,6	0,10

B – base (initial) period, F – Forecast period, O – Optimistic, Mp – Most probable, P – Pessimistic) scenario.

$$EC_t^B = \sum_j w_j^{EC} \times EC_j^B; IS_t^B = \sum_j w_j^{IS} \times IS_j^B$$

$$ED_t^B = \sum_j w_j^{ED} \times ED_j^B - b; SS_t^B = \sum_j w_j^{SS} \times SS_j^B - b$$

At the 7th stage using analysis of possible «trajectories» (Fig. 2) will form strategic recommendations to enhance energy security for each of the possible future scenarios.

Overall, as a result of the analysis identified that energy security is a conservative state that needs to take measures to stimulate the development of energy infrastructure with the aim of transition to a competitive position.

It is also necessary to review policies to encourage the generation of renewable sources in order to reduce import dependence. Diversification of supply of energy resources will make it possible to increase the competitive level of the Ukrainian economy and reduce the energy intensity of GDP. Reducing the share in generic fossil energy generation will make it possible to reduce CO2 and contribute to raising its rating positions within the framework of the Framework Climate and Energy Policy for the period from 2020 to 2030.

Strategic recommendations for enhancing the country's energy security in conservative state [9;10]:

1. Optimistic scenario (conservative state):

- minimization of imports due to the intensive growth of hydrocarbon production;
- improvement of the critical infrastructure protection system based on the best practices of the NATO and the EU, the creation of a crisis management system in the energy sector;
- the application of best practices in the protection of the environment.
- transparent and non-discriminatory mechanism of tariff formation and distribution of capacity for cross-border trade, simplification of procedures for organizing transit on the principle of freedom of access to transit capacities;
- implementation of requirements of the EU acquis in the legislation regulating activities and promoting the development of the energy sector;
- conducting a stable and predictable investment attraction policy;
- implementing communication policies to encourage international strategic and financial investors to enter the market.
- creation of conditions for the formation of technological innovation parks using modern, science-based solutions, technologies and equipment in the energy sector;
- improvement of the energy management system in accordance with the

requirements of the standards and international agreements.

- support of a healthy competitive environment, unimpeded access to markets and existing infrastructure;
- formation and regular monitoring of the energy balance of Ukraine, its evaluation according to efficiency criteria.

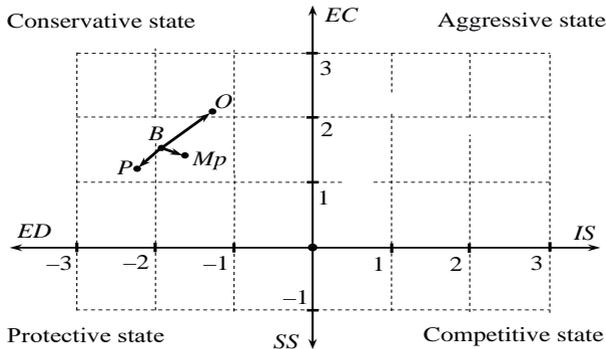


Fig. 2. Matrix of dynamic SPACE analysis taking into account possible scenarios of the future

2. Most possible scenario (conservative state):

- ensuring the reliable functioning of the energy infrastructure, carrying out the necessary modernization measures, reducing the accident rate, prolonging operation in the regular mode;
- Integration of the Ukrainian Energy System to the Continental Europe Synchronous Energy System ENTSO-E.
- processing the question of refusing to formulate price and tariff policy on the principle of cost plus, in particular by moving to stimulating tariff regulation with the subsequent transition to market mechanisms.
- introduction of strategic management system, including based on scenario modeling of markets;
- transparent formation of tactical decisions that are projected to correspond to the determined long-term goals.
- improvement of the corporate governance system at the fuel and energy complex enterprises, the share of the state in which exceeds 50%, in particular taking into account the Principles of corporate governance of the OECD;
- introduction of a system of public-private partnership in reserving energy resources and a system of strategic stocks of energy resources.

3. Pessimistic scenario (conservative state):

- provision of guaranteed conformity of generating capacities to volumes and modes of electricity consumption in the UES of Ukraine, in particular with regard to the availability of regulatory capacities;

- reduction of dependence on coal supply of anthracite groups;
- from one source Ukraine should receive no more than 30% of primary energy resources.
- promoting the development of local energy initiatives, in particular small and medium enterprises in the energy sector and energy co-operatives, generating and supplying electricity and heat taking into account regional features and development of distributed generation;
- ensuring the independence of the NCCREC and the Antimonopoly Committee from any influence, their financial independence and independence in decision-making.
- Implementation of the principles of resource management in the management of the extractive industry;
- Elimination of excessive restrictions for the efficient and flexible functioning of the energy infrastructure for the supply and transit of hydrocarbons;
- formation of the basic principles of the state sector policy on the basis of interaction of the state with society, based on the principles of effective management, delegation of authority and division of responsibilities.
- stimulation of energy saving at the level of consumers, formation of energy-efficient consciousness among citizens.
- increase of energy efficiency at the stage of generation of electricity and heat energy, reduction of energy losses in the future with its transmission and distribution;
- ensuring the completeness and transparency of accounting for all forms of energy and fuel and energy resources (electricity and heat energy, natural gas).

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ENERGY SECURITY MANAGEMENT AT REGIONAL LEVEL: ECONOMIC AND ENVIRONMENTAL ASPECTS

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Ukraine has a great potential of alternative and renewable energy, but in order to use and implement it, it is necessary to involve both state and foreign investments on the basis of developed national and regional programs and regulatory acts.

Along with the modernization of the existing energy sectors of industry (coal, atomic, oil and gas, etc.), the introduction of alternative energy sources will increase the economic well-being of the state.

The most important tools for implementing state policy in the area of energy efficiency and energy efficiency in developed countries are the regulatory framework and the system of standards, as well as price and tax policies aimed at economic stimulation of energy efficiency and energy efficiency improvement. International cooperation on standardization in the field of efficient use of energy resources is widely developing. In the world energy sector, based on current national standards, the practice of developing and improving international energy

standards is implemented, while unification of international standards of the ISO series is carried out. International standards include European standard EN 16001: 2009 Energy management system - Requirements for use guidance; ISO 9001 - international quality standard; ISO 14001 - international standard of ecology; ISO / IEC 27001 - International Standard for Information Security; ISO / IEC 20000 - International Standard for Information Services; ISO 28000 is an international safety standard for supply chains and, finally, an international standard ISO 50001: 2018 Energy Management Systems (Energy Management). The standard addresses issues related to the organization and management of energy efficiency, energy efficiency and energy management.

Among the main measures of energy saving is the promotion of investment in thermo-modernization of residential buildings and the construction of buildings with close to zero energy consumption; adaptation of fuel standards and technologies of its use to European ones; introduction of certification of energy efficiency of buildings, energy audit and energy management, as well as ensuring 100% commercial accounting for gas, electricity, heat and water consumption.

Ukraine has national standards that regulate activities in the field of energy management, energy audit, energy saving and energy efficient lighting. These include the National Standards of Ukraine regulating activities in the field of energy management, energy audit, energy saving and energy efficient lighting DSTU 4065-2001 (ANSI / IEEE 739-1995, NEQ) State Standard of Ukraine. Energy Saving. Energy audit. General technical requirements. DSTU 4472: 2005 National Standard of Ukraine. Energy Saving. Energy management systems. General requirements. DSTU 4715: 2007 National Standard of Ukraine. Energy Saving. Systems of energy management of industrial enterprises. The composition and content of works at the stages of development and implementation. DSTU 5077: 2008 National Standard of Ukraine. Energy Saving. Systems of energy management of industrial enterprises. Checking and controlling the effectiveness of the operation. DSTU 4713: 2007 National Standard of Ukraine. Energy Saving. Energy audit of industrial enterprises. Procedure and requirements for the organization of work. DSTU 4714: 2007 National Standard of Ukraine. Energy Saving. Fuel and energy balance of industrial enterprises[1].

The European Union pays great attention to improving the prevention of natural hazards in the energy sector. In particular, Early Warning Systems (PMU/WAMS) is a project in which new algorithms are developed to foresee and select control actions to prevent power system instability and security risks. The project builds up early warning system awareness and real time operation using PMU-WAMS technologies. SAFEWIND is the project in EU developing progressive tools for wind power forecasting, with a focus on difficult weather situations and extremes that can have a crucial effect on power system reliability. The deliverables of the project are innovative solutions to assist in large-scale integration of wind energy, tools for predicting loss of power, alarm systems for large forecast models, and applications

that use distributed measurements to improve wind power prognosis [2].

The European Union climate/energy policies today mark a tipping point with the Energy Union Communication, placing the EU citizens at the centre.

The power system must be secure and safe through better controllability, which requires more observability. On the other hand, the customer will be involved in demand response. This will require innovative solutions such as automation of the system operation, substation digitalisation, and the use of optical or nanotechnologies etc. Some of other functional objectives are knowledge sharing to maximise synergies, standardisation.

SWOT-analysis of the development of the energy industry in the Mykolaiv region. Mykolayiv oblast belongs to energy-intensive regions. On its territory, electricity production is carried out by a nuclear power plant, five hydroelectric power plants, four cogeneration units, a heat and power plant, three wind power plants, two solar power plants. The actual power of the three operating power units of the Yuzhno-Ukrainskaya NPP is 3000 MW, Oleksandrivska HPS - 2 hydropower units at 11.5 MW, Tashlyk PSPP - 2 hydroelectric units of 320 MW. Energy companies of the oblast produce over 14 billion kWh / year of electricity, which exceeds its consumption by 5.6 times (consuming almost 2.5 billion kWh / year) [3, 4].

On the basis of socio-economic and environmental analysis, as well as the study of sources [5, 6, 7, 8], we have identified such strong and weak factors (sides) and possible external influences (opportunities and threats) for the further development of the energy sector of the Mykolaiv region.

In a project of the “New energy strategy of Ukraine until 2035”, developed by the Cabinet of Ministers of Ukraine, the scenario of a significant reduction in the transit of Russian gas through the territory of Ukraine is considered [8]. This will reduce the state’s revenues from paying for transit, but building several gas pipelines around Ukraine will expand the opportunities for gas purchases from third countries. Nevertheless, the overall vector of Ukraine’s energy development is changing, especially given the need to move to European standards in the energy sector and reduce emissions of CO₂, SO₂, NO_x and dust. In this regard, it is proposed to provide civil protection facilities for energy from renewable sources (bio-pellets, household rubbish, etc.) and to replace carbon fuels with other types where it is economically justified and technically feasible.

Nuclear power is considered as the most favorable in these circumstances type of alternative energy. At the same time, Ukraine has the potential to develop most types of alternative energy: bioenergy, solar, wind, small hydropower and thermal (including discharges of technogenic origin) energy. It should be noted that those energy sources can be considered strategic, which over time (with technology development, optimization of localization) will generate net profit even if the green tariff is abolished. It is also advisable, where necessary, to develop alternative energy sources that will not be considered as a source of revenue, but will provide

backup energy supplies in case of emergencies with the least economic losses. At the same time, careful selection of the location of power plants should be conducted in order to avoid the withdrawal of the use of suitable agricultural land.

Given the rapid development of renewable energy sources and the need to adapt the electricity infrastructure for decentralized generation and maximally efficient use of energy resources, it is necessary to create new effective shunting capacities, first of all, gas turbine power plants, combined heat and power (CHP) plants, block stations according to the best modern technologies. Projects of utilization of the associated combustible gases in industry (metallurgical and chemical) should be the most priority, since they provide the opportunity to reduce harmful emissions and reduce energy intensity of production at the enterprises of these industries [9].

Additionally we offer the promotion of small-scale solar and hybrid solar-wind power plants in the private sector in relevant places [11], considering them as an additional and backup energy source, not a complete replacement of other types of sources. In general, the sustainable development of the energy market in the near future is possible only with the gradual introduction of new types of energy supply, the use of all available sources and routes of energy supply, but without sharp reforms of the energy complex and without abandoning the verified sources.

Since in these conditions nuclear power is considered as the most favorable type of alternative energy in Ukraine, special attention should be paid to emergency management in this area. Having many advantages, nuclear energy can cause significant losses to the health of the population and the economy of the country in the event of disasters, which requires a minimum reduction of time for early response to an emergency. The experience of the Chernobyl accident has been used for improving the emergency response system, which should include clear procedures, necessary devices and equipment, pre-defined criteria and decision-making mechanisms.

Today, the South-Ukrainian NPP uses an automated radiation control system. Radiation control is carried out on the territory of the industrial site of the NPP, in the sanitary protection zone (radius of 2.5 km) and in the observation zone (radius of 30 km). When monitoring the natural environment, the radiation (gamma) level is monitored at 44 stations in the 30-kilometer observation zone and at the control station in the village Ryabokonevo (33.5 km from the South-Ukrainian NPP). In the framework of the reconstruction of the radiation control system of the nuclear power plant a new system of automated control of individual doses of personnel was put into experimental operation [12].

As with monitoring of meteorological parameters, in the future, it would be useful to organize a radiation monitoring system or network in which the population of the region would be involved and which could supplement the measurements organized by the enterprise.

Main directions of strategic development of energy of Nikolayev blast taking into account environmental consequences

Strengths	Weak sides
<ol style="list-style-type: none"> 1. The city of Nikolaev has a unique geographic location at the intersection of waterways and within one of the European automobile transport corridors, has a number of potentially attractive businesses. 2. Local support authorities to develop investment activities and improve the investment climate. 3. Presence of objects investment infrastructure («Mykolayiv Regional Center for Investments and Development», business centers through which the educational advisory activity of entrepreneurs is carried out, work with potential investors is carried out). 4. Availability of investment passports of cities and rayons of the region as investment plans for the development of territories. 5. Freedom of conduct entrepreneurial activity, activity of the private sector, desire to engage in private affairs, development of new mechanisms for supporting small business. 6. Multidisciplinary economy. 7. Opportunities are revealed to build a competitive economy; 8. Achievement of level energy self-sufficiency; 9. Improvement without Peck measuring the economy, energy and the environment; 10. Promotion of internal reforms in the context of integration of EU networks; 11. Creation of an energy-efficient society; 12. Development of scientific potential; 13. Creation of jobs; 14. Creation of the possibility of re-equipping both the energy industry and industry in the region as a whole; 15. Development of renewable energy sources. 16. Highly skilled labor resources, including in the field of IT, and high scientific potential. 17. Availability of skilled managerial staff at enterprises and institutions. 18. Lack of flood, including storm floods. 19. Ecology of available alternative energy sources for the region (zero carbon dioxide balance) 20. Ability not to use; 21. Decentralization of energy production; 22. Economic stimulation of rural regions; 23. Simplicity in servicing many renewable energy sources (RES) 24. The separation and possibility of accumulation of energy produced by RES; 25. The possibility of using solar energy on an industrial scale through its conversion into chemical energy 	<ol style="list-style-type: none"> 1. Political instability; 2. Hard implementation of EU standards in the energy sector; 3. An outdated energy complex; 4. Increase in the cost of energy resources; 5. Weak use of natural resources; 6. Lack of investments, in particular from the private sector; 7. The complexity of economic transformations; 8. Complexity of achievement of strategic goals in the field of energy in Ukraine; 9. Technological backwardness; 10. Wear of power supply systems; 11. Non-transparency and high level of corruption; 12. De-professionalization of the energy industry; 13. The frivolity of a number of legal acts; 14. Lack of information on the real situation in the fuel and energy complex in the bodies of state power. 15. High level of energy intensity of production. 16. Low level of introduction of innovations in production. 17. The unsatisfactory condition of roads. 18. Low employment in rural areas, lack of jobs in small towns and villages. 19. Inter-regional disproportions in socio-economic development. 20. Possibility of emergencies as a result of natural cataclysms and the presence of potentially dangerous objects. 21. The problem of utilization of wastes (including radioactive ones). 22. Lack of natural population growth and depopulation of the rural population. 23. A significant distance from the European powers. 24. Underdeveloped land irrigation system, which inhibits the attraction of investments in the agricultural sector in the climatic conditions of southern Ukraine. 25. Insufficient development of small business infrastructure, insufficient investments, cheap credit resources. 26. Inappropriate use of natural resources, including subsoil. 27. Low provision of land management documentation. 28. Insufficiently favorable state policy, lack of state support 29. Lack of information for potential consumers 30. The constant nature of the current produced by some RES, which necessitates its transformation into a variable for production needs 31. High cost of electricity received from RES 32. The need for large areas for the placement of photovoltaic panels, wind farms; 33. Inappropriate use of solar power stations in small farms 34. Low efficiency of many RES

Opportunities	Threats
<ol style="list-style-type: none"> 1. Integration with the energy sector of the EU; 2. Innovative update according to world standards; 3. Reformation of the power system; 4. Strengthening global communication; 5. Attraction of foreign investments; 6. Increasing energy saving and energy efficiency; 7. Proper use of own resources; 8. Diversification of import of energy resources; 9. Creation of strategic reserves of fuel and energy resources. 10. Creating a favorable investment climate. 11. Reducing energy consumption through the active introduction of energy-efficient technologies. 12. Improving the efficiency of scientific capacity. 13. Increase of international technical assistance. 14. Formation of a positive international image of the oblast through systematic information activities with the use of various means of communication and appropriate measures. 15. Creation of favorable conditions for attraction of foreign investments in the region's economy aimed at modernization of industrial production, development of promising sectors of the economy capable of giving a powerful impetus to economic growth, the creation of new competitive products and technologies; promotion of long-term (strategic) foreign investments. 16. Implementation of innovative technologies that provide for a significant reduction of the use of material and energy resources. 17. Coherent support of entrepreneurship by local authorities, which will enhance the viability of this region and increase the number of entrepreneurs who are economically capable of reforming the energy sector at their own level. 18. Technical re-equipment of housing and communal services, reduction of specific indicators of the use of energy and material resources necessary for the production of housing and communal services, including the creation of an efficient and transparent mechanism for the promotion of the use of alternative sources of energy and fuels. 19. Favorable natural conditions for most of the territory of the region 20. Availability of waste technologies with RES 21. Shifts in the Ukrainian legislation 	<ol style="list-style-type: none"> 1. External aggression of the supplier of energy resources; 2. It is difficult to ensure the stability of transportation of energy resources; 3. Dependence on foreign energy resources; 4. Offshore the economy; 5. neglect of the «decarbonising» rule; 6. Possible loss of transit status; 7. Self-isolation after non-compliance with EU rules or their inadequate implementation. 8. Aggravation or spread to the Mykolayiv region of the military conflict in the east. 9. The volatility of the exchange rate of the national currency. 10. Monopolization of markets, lack of competition. 11. Increase in energy prices. 12. Outflow of labor outside the oblast. 13. Pollution of territories by waste. 14. Withdrawal of the moratorium on the sale of agricultural land. 15. Strengthening centralization in the adoption of key management decisions in the field of regional policy. 16. Lack of reasonable forecasts of market development in the region. 17. The need to pay VAT and duties when importing new equipment. The transit potential of the region may not develop, because the increase in prices for goods and equipment will significantly reduce demand for them. 18. Insufficient solvency of the population to pay for studies in order to achieve the appropriate scientific and educational level for the development of the region. 19. Significant deterioration of heat generating equipment and heating networks of communal heat power engineering, high dependence on consumption of imported natural gas. 20. The beginning of a new wave of the economic crisis in the face of increasing tax pressure on entrepreneurial structures can lead to a reduction in the number of small enterprises in the region by closing them, merging them, and creating medium and large entrepreneurial structures. This process should not be considered absolutely negative for the impact on the economy. In the agrarian sector, for example, it can ensure the emergence of more effective agriculture and livestock (which will require the introduction of energy efficiency measures). 21. Increased competition in the energy products market 22. Necessity of removing from agricultural land agricultural land for the needs of solar and wind power plants

Also, the obvious component of iodine prophylaxis in the areas of the NPP is the regular consumption of iodine-containing products (sea kale, etc.), since the accident may occur unexpectedly, and the most affected by radioactive iodine are those who currently have a deficiency of this element in the thyroid gland.

Conclusions. 1. Sustainable development of energy in Ukraine and in the

world in the near future can be ensured by the gradual introduction of new types of energy supply, the use of all available sources and routes of energy supply, without abandoning the tested «traditional» hydrocarbon fuels. When placing new energy objects it is necessary to take into account the strategic consequences of their construction, all risks for the population of the region and indirect losses of other industries (removal from the use of tourist routes, agricultural land, etc.). In particular, wind and solar power can be recommended for territories, unsuitable for agriculture and other needs.

2. It is necessary to deepen cooperation within the framework of European and international standardization bodies in the field of energy, certification and standardization, as well as on technological and commercial development of renewable energy. As a result of the adaptation of national legislation to EU standards, households in all regions can access new technologies and energy efficiency programs that will reduce household energy consumption.

3. Creating a competitive environment in the energy market will help to attract new investment both in the introduction of alternative energy sources and in more modern ways of using, transit, and selling traditional sources. In order to further improve the efficiency of Ukraine's economy, it is necessary to create and develop energy management systems in all enterprises, institutions and organizations. The scientific approach to strategic energy management in the regions will promote intensive (instead of extensive) development of both the energy sector and the science itself, of the universities involved in these processes.

4. At the level of work with the population it is necessary to use wider educational methods. They are important because they envisage the impact directly on the consumer and form a new consumer culture, based on the conscious choice of energy-saving technologies, a careful attitude to the environment. It is appropriate to begin with preschool age and systematically apply to representatives of all generations. Regular surveys among the public on the relationship to changes in energy infrastructure, state and local energy policies will help ensure rapid response to any undesirable changes and dangers, as well as the support of the local population for public policy.

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CLASSIFICATION OF RISKS AND THREATS TO THE ECONOMIC SECURITY OF THE SMALL BUSINESS SECTOR

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Economic threats and risks emerge from the occurrence of conflicts between business entities in general and small business in particular, as well as under action of external and internal environmental factors.

The higher the level of economic development of an enterprise is, the higher the level of threats and risks in the process of the realization of its own economic interests, which lead to destabilization of economic security and violation of laws and norms of competitive struggle.

In order to avoid economic threats and risks, small business representatives should identify them by features and content. In particular, by [1, p. 272]:

- the place of occurrence of threats against the enterprise (endogenous, exogenous);
- time range (real, potential);
- the frequency of existence (random, permanent);
- degree of evidence (evident, latent);
- fact of existence (preposterous, real);
- degree of influence (active, passive);
- degree of influence on threats (those that can be neutralized, those that cannot be neutralized);
- the sphere of origin (political, economic, legal, social, manmade, environmental, competitive, counterparty, etc.);
- the structure of economic security (threats from personnel, from me-too products, due to loss of information, pressure on personnel, impact on customers);
- predictability (predictable, unpredictable);
- origin (objective, subjective);
- the possibility of prevention (foreseeable, force majeure);
- level of losses (insignificant, significant, substantial, catastrophic);
- degree of probability (improbable, low-probable, rather probable, probable, inevitable);
- the period of execution (direct execution, in the short term, after a long period);
- spatial attribute (micro-, macro-, internal environment);
- the method of execution (theft, industrial espionage, information gathering,

bribery) [1, p. 272].

The listed features of economic threats and risks are peculiar to small business, among which the most significant influence is represented by threats by their place of occurrence and are considered classic [2-4].

It should be noted that the enterprise cannot predict exogenous (external) threats and risks, and also cannot predict the level of losses and the degree of their damage. The exogenous threats include: unreasonable decisions by state authorities on entrepreneurial activities; political instability; the presence of the Operation of the Joint Forces (OJF) in the country; monopolization of resources, including political; orientation of public authorities to large industrial and financial groups; inflation; decrease in the level of business activity; decrease in the purchase power of the population; high dependence on energy resources, etc.

On the other hand, endogenous (internal) factors are related to the financial and economic activities of an enterprise and, accordingly, the level of occurrence of such risks is high due to a simplified procedure of an access to the available information (for example, by bribing the staff by competitors) [5]. Endogenous threats include: insufficient staff skills; limited financial resources; dependence on borrowed capital; increase in production costs; lack of information and its late delivery, etc.

According to Professor Vasylytsiv T.G., the problems of economic security support for small business are of utmost importance and require the implementation of a specific plan of actions by the state: the creation of an environment for the development of small business – maintaining an adequate level of «viability» of the enterprise's primary level – creating an adequate level of economic security of the existing enterprise – preservation of national security and its components [7]. In our opinion, this algorithm is based on the exclusive role of the state and narrows at the same time the possibilities of the representatives of the small business.

We suggest that the algorithm for countering exogenous and endogenous threats and risks should be as follows: monitoring the external and internal environment – identifying existing threats and ways to eliminate them – predicting the development scenarios of existing threats and the period of their existence – developing an economic security management strategy for an enterprise – determining the necessary level of financial resources to eliminate existing threats and possible losses – the improvement of existing security tools – processing the necessary amount of information in order to prevent other threats and risks – control over the activities and elimination of the threats in case of their occurrence.

It should be noted that the typing of threats depends on the type of enterprise, its organizational and legal form, activities and so on. It is the ability to identify threats and risks that underlies management decisions to eliminate them [8].

In turn, it is appropriate to classify system risks of economic security, that pose a threat to small business, by:

- the implementation of corrupt practices (for example, lobbying);
- the illegitimacy of the acquiring property process (for example, «non-

transparent» privatization);

- conflict of the institutional interests (for example, excessive politicization of the economy);

- obstruction of business activities (for example, an increase in the payment of taxes in case of legalization of its own activities);

- the level of economic transformational changes on the part of state (for example, a decrease in effective demand);

- the level of unfair competition (for example, imperfect tax policy).

The existence of systemic risks for the economic security of small business leads to the strengthening of institutions of both private and state corporatism and clientelism, followed by obtaining exceptional competitive advantages and, as a result, such actions lead to an increase in tax pressure on other enterprises (including small business) which stay out of this system [9].

At the same time, there are small enterprises that have registered business activities, but given the inadequate level of control a desire appears to carry on the activities that refer to unfair competition against competitors or consumers and thus create new threats to economic security and are considered as the systemic risks, that are endowed with factors such as: «off-side game»; «transparent» relations with government representatives; infringement of guarantees; limited access to loans; imperfect financial and credit policy of the state, etc. [10].

The lack of effective reforms that would motivate for qualitative changes in tax, investment, credit policies; complex system of benefits, preferences, subsidies; change of authorities with the «cancellation» of the decisions of their predecessors; modification of ineffective solutions contribute to the decrease in the competitive level of the business environment and the attitude of the ordinary citizen to their activities encourage the use of closed competition, the establishment of corrupt ties, etc. [11].

No less threatening for small business representatives are actions of a discriminatory nature, raider and criminal one on the part of competitors, that is a result of not only the lack of a quality market for buying / selling a business, but also existing subjective burdens and restrictions (including of economic and political nature), which drastically reduces the level of investment activity, leads to the closure of small enterprises, freeze of resources and creates a «ballast» of inefficient enterprises [12].

With correct identification of threats, it is possible to apply effective methods for forecasting and eliminating them upon condition of establishing a common economic security system at an enterprise using its functional components (financial, political-legal, personnel, intellectual, technical and technological, environmental and power ones).

All of the above mentioned determines the systemic nature of the threats and risks of the functioning of small enterprises and requires an understanding that measures to support the development of small business cannot be a tool for unfair

competition (including lobbying interests) and violate their rights.

In general, it should be mentioned that the implementation of economic activities by small business entities is accompanied by risks and threats to economic security.

At the same time, objective risks and threats may become the insurmountable problems in the development of small business (increasing energy intensity of the economy, reducing level of solvency of the population, reducing production capacity, the emergence of similar products, etc.) and lead to destabilization of its activities, loss of ties and market outlets. Such a situation is most likely at the post-transformational stage of economic development and it is the classification of systemic risks that is especially necessary.

The classification and typology of risks and threats to the economic security of the small business sector promote to their identification; detailed elaboration contributes to the establishment of a systematic approach to their further forecast and prediction; elimination of possible adverse effects; provides for the possibility of the formation of systemic risks of entrepreneurship.

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MAIN ASPECTS OF TECHNOLOGICAL & INNOVATION DEVELOPMENT STRATEGIES (SECURITY BASED APPROACH)

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One of the most important ways of national security research deals system approach which is successfully used in studying processes in society, and therefore is of particular importance for theory of national security.

The main idea of system approach is that the activities of the individual, society and state to ensure national security are considered as an open dynamic system in the totality of its most important internal and external relationships in order to obtain the ways to optimize this system.

Therefore the system approach allows to establish the state of national security through the study of its specific types (external and internal), spheres of manifestation (economic, political, social, informational, defense, environmental, etc.).

In this research the application of system approach we consider based on innovation component of national security.

In modern conditions of technical & economic paradigm change the search for new development strategies is of particular importance. That's why along with the traditional policy of infrastructure creation for innovation business supporting, the implementation of modern strategies of innovation development ensures the formation of different, especially network, structures for interaction of innovation enterprises with government authorities, scientific and educational institutions, civil society institutions and other stakeholders. The interdependence and interconnectedness of modern innovation development processes, as well as increasing the efficiency of innovations generation and commercialization processes, represents a new economic pattern, which allows national economic

systems to remain competitive in the global markets.

The focus area «Boosting the effectiveness of the Security Union» [7] deals with the fact that researches and innovations are needed to develop new technologies and ways of working that can make practitioners more effective: those who are directly called upon to respond to security challenges, as well as those working on prevention. Study [8] points out the factors dynamics of technological innovation related to security issues and considers the non-defence firms (technologically based start-ups) and their approaches to security sector.

This part deals with global experience in analyzing the priorities based on their importance for country development and on national and international criteria using algorithm for the selection process. The main aspects of the process of development and implementation of international technology strategies are considered. We believe that through the analysis of innovation systems at macro level decision about the priorities in optimization with the aim to improve regulations in science, technology and innovation is provided. The main techniques and decisions were considered based on foresight-studies.

Today the competitiveness of state in global space is provided by innovation technological imperative, which demands modernization of production system according to the requirements of scientific and technological progress and postindustrial Industry 4.0 development. Thus, it is necessary to highlight the priority sectors that are material basis for the functioning of most important areas of human life and ensure the development and implementation of advanced technologies.

In some cases such strategic initiatives have even further importance. World experience illustrates that the greater the lag in the development of a country, the greater is the role of government in infrastructure development, resource mobilization, identifying priorities, reaching proportions and relationships in national economy and national innovation system. Given the fact that the economy is a selection of best possible, there is a need for effective prioritization of socio-economic, scientific-technical and innovation development.

In several countries despite the existence of national regulatory selection process of priorities, resources for its implementation do not meet the real needs. Also unlike the technologies of choice of priorities in other countries, international criterion of development is not considered, which requires an appropriate organizational and economic security.

Today the main policy issue of countries is integration to the global innovation system for using of its potential and achieving long-term economic growth through innovations. Also the creation of education, research and development system components for the foreign investment through the public-private partnerships is in priority areas. Already in the report of World Economic Forum “Global Competitiveness 2000” embeddedness in world economic relations system is one of the three main factors that determine the competitiveness of the economy.

The study is based on the idea, that innovation system development requires

an interrelated definition of performance indicators and priorities, strengthening of intersectoral coordination, changing of operation principles of development institutions, formation of domestic demand for innovation.

To achieve the aim of the research it was necessary to consider the existing experience of foreign states in innovation development policy, especially identifying the opportunities in international cooperation and international economic activities, based on the selection of innovation priorities and the development of appropriate system support mechanisms.

All these problems have to be solved within the framework of interaction of national and global innovation systems and as a science and industry compound, which is oriented on providing faster and more efficient management in «science – production» cycle in the priority sectors of scientific and technical progress, acceleration of new idea development and its most effective application in practice (transfer).

The development of each priority is based on system approach of social and economic conditions as a result of integration and cooperation of different agents of innovation system (enterprises, research institutions, industry, society). In this context the effectiveness of coordination at cross-sectoral level and innovation interaction are proposed to be determined based on competitiveness of production and economic development based on innovations at meso- and micro level.

According to EU and US approach [7; 9] research and innovation is also needed to better understand societal developments and individual life styles that lead to insecurity. The results of such research can help us design better policies at all levels of government. In [10] these issues are considered within the coordinated process for prioritising national security science and innovation activities, resources and the development of capabilities, building on our strong base of dedicated expertise.

Therefore the area of the main factors (determinants) of innovation policy, which are considered in the analysis of national innovation priorities, includes the follows:

- market and resource factors, including consumer preferences;
- relationship between consumers and producers which is often intense within the national system;
- research system that generates scientific and technological innovations;
- technological interdependence in the country which is most significant in the early stages of innovation processes and within the system policy;
- communication and public policy in different areas (for example, scientific and technological policy and defense researches), as well as the conditions for technological and economic activity (as defined within the framework of the policy) such as legislation and regulation;
- education and training system, developing skills, abilities and competencies required for innovation;
- national institutions, that support innovations, such as industry and engineering associations.

In Fig. 1 the main components of technological & innovation development strategies related to security issues are shown.

We can note the importance of improving the methodological foundations for effective management of the resource potential and processes of economic systems innovation development. In these conditions there is an objective demand for new theory of institutional advantages, which will aggregate the national institutional matrix and will support the development strategy.

We investigated that when estimating technology strategy efficiency of following groups of the development indicators (institutional based components) need be considered:

1. National priorities, that reflect orientation of actions to achieve technological competitiveness in some sector (sectors).
2. Social and economic infrastructure (institutions, which support resources, necessary for modern economy, based on high technologies).
3. Technology infrastructure (technology support system) – institutions and resources, influencing ability of the country to investigate, produce and introduce new technologies.
4. Producing capacity – quantitative criterion (physical and human resources, used in goods producing) and their application effectiveness criteria.

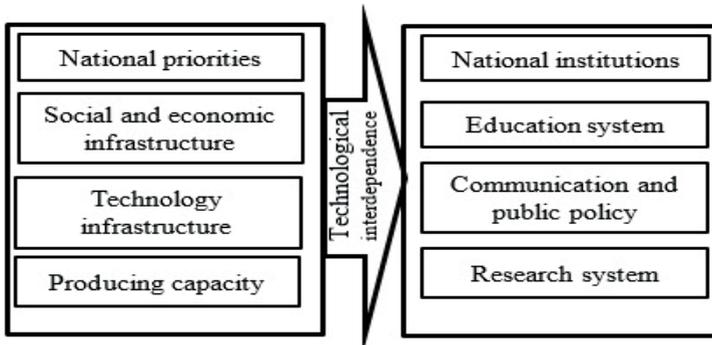


Fig. 1. Technological & innovation development strategies

In this context, the institutionalization of processes we can determine the situation when the management practices (which have become successful) of innovation processes become sufficient and long-term, so that they can be represented in the form of economic institutions. So we came to necessity of obtaining efficient management practices at various levels and innovation processes, which will provide the necessary level of competitive advantages to protect the national security through the new quality of development.

So in order to create an institutional environment as an favorable environment for different innovation processes and their combinations, we propose to use institutional designing methodology. It is based on the idea of technological specifics

of individual technological areas analytics application. Also when implementing the methodology of institutional designing of innovation system we propose to use the specialization & evolution concept, which can help to combine the technological areas analytics application with the strategically analysis of economic development trajectories.

The basics of can be found in research [6], which underlines the role of institutions for innovation development. In order for market agents to take risks, associated with the commercialization of innovations, specialized institutions should be present in the economy, and information about them should be objective and accessible, enabling to use the potential of these institutions. At the same time, market agents, commercializing innovations, ultimately themselves form institutions. From this it follows, that the institutionalization of innovation processes is two-sided dynamic process of the formation, development and improvement of institutes for the innovations development, which simultaneously acts both as a stimulus and an incentive to institutionalization, as well as existing institutions are the result of commercialization and incentive to it.

Another approach is given in study [2]. The institutionalization of the development of innovation entrepreneurship is carried out on the basis of working out the procedures for the coordination of economic interests and socially significant goals of the community, the authorities and entrepreneurs, the adoption of organizational and legal and political norms that harmonize the interests of participants in these relations while clearly identifying them with the need for social partnership to achieve them.

Within the all certain trends we see an expansion of innovation communications range and therefore the wide range of different factors. Under these conditions institutions (formal and informal) form an institutional environment that provides a certain level (quality) of interactions (innovation communications) between innovation-oriented economic agents and their various partners. This in turn results in transaction costs of new product development, intellectual property rights protection, costs of scientific and technical information searching, negotiating and contracting costs, product and process innovations market monitoring costs, etc.

In order to understand the whole point of institutionalization process, let us turn to the study [3], in which the necessity of creation an effective institutional environment for the interactions of participants in integrated models is underlined. The general task of this environment is connected with the creation of appropriate prerequisites for resolving the contradictions between the relations of cooperation and competition, between the relations of the intra-firm hierarchy and horizontal market interrelations, between the processes of territorial (regional) and cluster development, between the interests of agents and principals within the framework of agency relations.

In the development of sectors, which provide national security, we can consider the institutional capacity to generate radical innovations. This aspect we propose

to realize through the system & evolutionary approach. It has developed from the intersection of various sciences scientific methodology and considers economy as an open, evolving self-organizing system.

The methodological significance of the system approach for the purposes of studying socio-economic phenomena of innovation development is difficult to overestimate, since it involves the consideration of processes in interaction and reciprocity, that reproduce the integrity of the national economic system and allows considering the role of innovations.

Within the framework of these sciences, general principles and mechanisms for the emergence, organization, disorganization, management and improvement of the system are determined, which makes it possible to analyze the evolution of its elements from the point of view of influence on the state of the system as a whole. Thus the importance of the theoretical description of the interaction of institutions is based on the fact that the functioning of the national economic system is determined by a set of formal and informal rules and mechanisms, which fix them. For the purposes of the evolutionary campaign, the dynamics of the institutions of the national economy are monitored to identify their interaction and mutual adaptation with the rest of the elements (individual and other endogenous factors) of the national economic system. As a result of the synthesis of institutional and evolutionary approaches, a highly informative methodological basis of state economic policy can be formed, designed to ensure the maximum possible sustainable and synchronous development of all elements of the national economic system.

These points can be realized in the institutional design through the next steps, which allows identifying a special instructional & innovation trajectories (instructional projects) for each sector development:

1) analysis of technological patterns and technological dynamics of sectors providing national security;

2) development of theoretical approaches for the application of technological trajectory methodology for forecasting the state of national security using the technological evolution analytics;

3) selection of tools for implementing the principle of system optimization through the integration of functions of innovation networks in high-tech sectors.

The publication was publicly funded by Ministry of Education and Science of Ukraine for developing of research project № 0117U003855 «Institutional and technological design of innovation networks for Ukraine national security systemic providing» and research project «Development of scientific and methodological foundations and practical tools for evaluating of the product innovations commercial (market) prospects».

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METHODOLOGICAL BASIS FOR ENSURING THE ENVIRONMENTAL SECURITY OF THE TERRITORY

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One of the components of the national security of the country is environmental security. This category can be considered in global, regional and local contexts. Ensuring environmental security consists in providing environmental balance and protecting the environment where the population of Ukraine lives. Therefore, there is a need to maintain a balance between human existence and potential risks of environmental hazards.[1].

An essential element of studies on environmental security is defining the concept of environmental risk, which until now has been interpreted ambiguously. In a broad sense, risk (R) is the value defined in monetary units and is calculated as the product of the probability of the risk situation (P) and the value of the possible environmental and economic damage from it (Y)[2,3,4,5,6].

Many authors consider that not only the public health risks, but also a number of other types of risk refer to the environmental risk issues. In particular, S.I. PyrozHKov [7] distinguishes the following types of environmental risk: 1) the risk of natural systems destruction; 2) public health risk; 3) the risk of man-made systems for a particular industrial enterprise; 4) risk of natural resources management; 5) the risk of natural disasters; 6) the risk of regional military conflicts; 7) the risk of environmental terrorism.

Environmental security is achieved by a system of measures (forecasting, planning, advance preparation and implementation of a set of prevention measures) providing the minimum level of adverse effects of nature and the technological processes of its resource development on the human health and activities while maintaining sufficient rates of development of industry, communications and agriculture.

According to Schmal A.G. [8], the environmental security system includes three main components, namely:

- integrated environmental assessment of the territory (identification and assessment of a complex of environmental hazards factors that occur in a given territory; zoning of a territory according to the degree of resistance to environmental hazards, compiling and maintaining the cadastre of environmental impact objects, determining the level of anthropogenic pressure, compiling and maintaining the

cadastre of “polluted” areas);

- environmental monitoring (standardization of environmental impacts, control of sources of environmental impact, quality control of environmental components);
- managerial decision-making (the formation of environmental policies; the prevention of manifestations of anthropogenic factors of environmental hazard; minimization of the consequences of natural factors manifestations of environmental hazard; the development and improvement of environmental legislation and methods for the formation of environmental outlook).

Figure 1 shows the algorithm of determining the environmental security level of the territory.

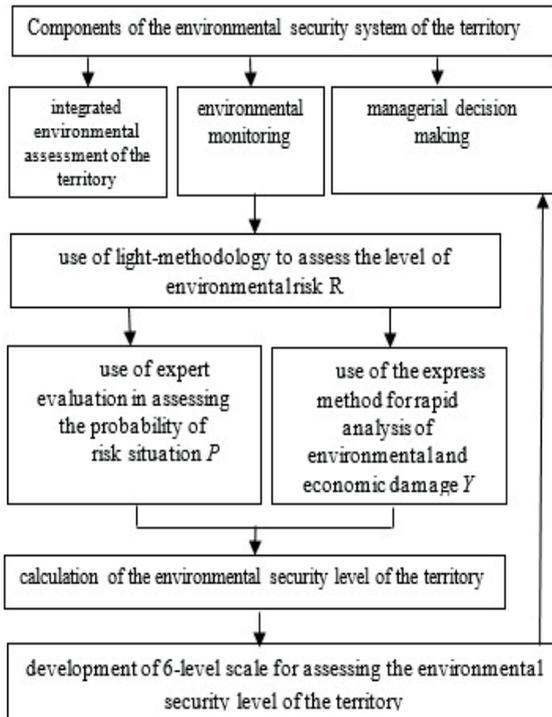


Fig. 1. Algorithm of determining the environmental security level of the territory

We suggest using the “light”- methodology of environmental risk assessment to monitor current values of environmental risk levels. This methodology provides analysis and assessment of environmental risks for quick respond and managerial decision-making in critical situations. For this, first of all, a high rate of risk assessment and pre-prepared options for action in various situations are needed. We suggest the use of expert evaluation in assessing the probability of a risk situation P.

Experts are suggested to assess (by point scale) the impact of environmental risk factors on a limited number of main recipients by the following parameters: frequency of manifestation; intensity of impact; losses for the last 5 reporting periods. In addition, experts consider 2 groups of recipients: objects of the business environment and objects of social infrastructure. In more detail the methodology is presented in [9].

Let us look closely on the determining the value of the environmental and economic damage Y. It is especially relevant in case of unpredictable emergencies. Environmental and economic damage from natural hazards at the global level is characterized by the following major trends:

- there is no a single region in the world, wherever the largest natural disasters occur;
- the total number of victims of the main types of natural disasters for 35 years amounted to 4,4 billion people, that is, 50% of the population of the planet;
- there is a relation between the level of socio-economic development of countries and the tendency for natural disasters.

In recent years, natural and man-made emergencies are characterized by an increase in environmental and economic damage. In addition, disasters not only pose a danger to the population, but can also create a long-term cumulative impact on the state of the environment of the region, the country and the planet as a whole.

The dynamics of occurrence of natural, man-made and social disasters on the territory of Ukraine over the past 10 years is shown in Figure 2. There is the dynamics of decrease in number of disasters from 2008 to 2013. A further increase in their number is caused by the unstable situation in the east of Ukraine [10]. Unfortunately, there is a steady tendency for an increase in damage from disasters, both natural and man-made, even against the background of a decrease in their number [11].

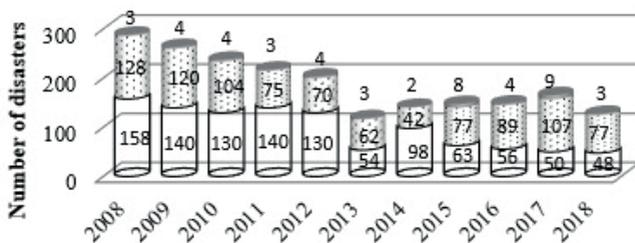


Fig. 2 . The number of natural, man-made and social disasters for the period 2008-2018 in Ukraine

It is suggested to use the express method for the rapid analysis of the environmental and economic damage from disasters with a minimum amount of

initial information. The assessment is carried out by the following stages: selection of the industry; determining the type of disaster; identification of the region where the incident occurred; determination of climatic conditions; determining the generalized characteristics of the active impact zone; defining the area of pollution; identification of the zone of active pollution; identification of recipients in the zone of active impact; determination of environmental and economic damage caused by an incident.

Environmental and economic damage from man-made disasters can be determined with the use of the concepts of damage per unit and the zone of active impact. The principle of calculation on determining the environmental and economic damage by the express method is reduced to the formula:

$$Y = \sum_{i=1}^n y_i \cdot Q_{reci} \cdot M_{cond} \cdot K_{regi},$$

where y_i – damage per unit caused to the i -th recipient (UAH/cond.ton*No. recip.); Q_{reci} – number of the i -th recipient in the zone of active impact [12].

$$Q_{reci} = \rho_{iZAI} \cdot SZAI,$$

$SZAI$ –area of zone of active impact (km²); ρ_{iZAI} – density of the i -th recipient in the zone of active impact (units/km²); M_{cond} – number of conditional emissions that affects the i -th recipient, (tonnes).

$$M_{cond} = \sum_{j=1}^m M_j \cdot A_j,$$

M_j – mass of the j -th emission (tonnes); A_j – indicator of the relative aggressiveness of the j -th substance in relation to the i -th recipient; K_{regi} – regional correction factor for the i -th recipient, that characterizes the deviation of territorial damage forming indicators from their average in Ukraine; n – number of types of recipients in zone of active impact; m – number of types of hazardous substances generated as a result of disaster.

$$K_{regi} = \frac{\rho_{iz}}{\rho_{iy}}$$

where $\rho_{i\bar{z}}$ – density of i-th recipient in z-th region; ρ_{i0} – density of i-th recipient in Ukraine; i – recipient; z – region.

The matrix of indicators of damage per unit y can be developed by the results of their detailed calculation for each recipient by several hazardous objects located in these economic regions. The calculation of damage per unit was carried out on the basis of the “Methodology for assessing the damage from the consequences of man-made and natural emergencies” [13] that is approved at the state level. The level of detail of the damage per unit depends on the condition of the recipients, averaged over the regions of Ukraine. The algorithm for the implementation of the express method and the main calculation indicators are presented in the study [14].

Based on the suggested methods for calculating the probability of occurrence of risk situations (P) and the value of environmental and economic damage (V), we calculate the level of environmental security of the territory (country, region, city). We assess the level of environmental security of the territory by comparing the obtained value of environmental risk R and the value of weighted average risk for the studied territory Rt.

We suggest 6-level scale for assessing the environmental security level of the territory for managerial decision-making:

- A – (maximum level) more than 90%
- B – (high level) from 71 to 90%;
- C – (average level) from 51 to 70%;
- D – (acceptable level) from 31 to 50%;
- E – (insignificant level) from 11 to 30%;
- F – (neglected level) less than 10%.

Using an alphabetical scale for the assessment of the environmental security level of the territory has several advantages: simplicity of perception of the results; simplicity of relations of assessment results with specific management decisions and the necessary actions due to the results of assessment. An early warning system should be established for risks of A and B categories.

Thus, expert assessment methods and express methods are widely used while developing the programs for managing environmental security. The suggested methods can be used for quick and approximate assessment of damage due to risky situations, which will allow:

1. to study the most important environmental risk factors that may affect the vital activities of the global community;
2. to establish permissible risk thresholds, the violation of which leads to a decrease in the environmental security of the territory;
3. to develop the approaches for early recognition that will allow to quickly make adequate decisions in accordance with a certain level of environmental security of the territory;
4. to expand the international cooperation in searching ways for more effective

use of existing agreements, programs and institutions to solve the challenges of global environmental security.

For that reason, the prevention measures are necessary precondition for ensuring the environmental security of the territory. International experience shows that the costs of forecasting and readiness for natural disaster are almost 15 times less than the costs of eliminating the consequences.

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FEATURES OF THE INSTITUTIONAL AND ECONOMIC MECHANISM FOR ENSURING COMPETITIVENESS OF THE AGRICULTURAL ENTERPRISES AS PRINCIPLES OF ECONOMIC SECURITY

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The enterprise managers' ability to form the motivational mechanisms in the company and to offer the personnel incentives to encourage them to work better are important qualitative characteristics of the enterprise progress potential and greatly influence the development of the mechanism of its competitiveness. The effective functioning of competitiveness mechanism requires the coherence of the interests of the interacting parties. It is achieved through the selection of priority methods and resources in accordance with the nature of the control factors that are influenced by them. In the case of discrepancy of interests, it is impossible to influence effectively on the internal and external factors and to achieve the strategic goals. As a result, the inconsistency of interests violates the economic security of the enterprise.

In recent years researchers have become increasingly interested in the issues of the institutional and economic mechanisms for provision of the enterprise competitiveness. Namely, V.Boyko in his studies paid attention to the government regulation of the economic mechanisms to reduce the risks [1]. L. Sytnyk conducted this study in the direction of crisis management [2]. In their works, Y. Lysenko [3], G. Kozachenko [4] and O. Trydid [5] considered this trend as an opportunity to implement strategic plans for enterprise development. V. Kozlovsky [6] and I. Tsyhylyk [7] considered these issues as a local phenomenon, that is, as an internal mechanism of the enterprise. In general, the researchers highlight the institutional mechanisms and economic mechanisms separately.

Scientists O. Ivanytsky and V. Kosenko assume that the economic mechanism is a mechanism of the objective economic laws acting in practice according to the specifics of this or that stage of the society development. It manifests itself through a system of socio-economic production relations. The totality of all basic relations, which depend on the level of development of the productive forces in society largely determine the second integral part of the economic mechanism – the institutional mechanism. The scientists define institutional mechanism as a complex of bodies

and organizations, legislative and regulatory acts, methods of management and regulation of the economy. Depending on the nature of functioning of the economic relations, the institutional mechanism can stimulate or hinder the development of the economy, leveling its level of protection [8]. The synergistic interaction of institutional and economic subsystem components transforms into the formalization of the institutional and economic mechanisms for regulating economic relations that arise in the process of socio-economic interactions. The institutional and economic mechanism of ensuring the competitiveness of an agricultural enterprise (AGE) with a focus on the rational use of its natural resources potential in the context of interaction with the factors of the external market environment, all together form the preconditions for strengthening the competitive advantages of the enterprise.

The institutional component of this mechanism includes a set of formal and informal restrictions on the parameters determining the development of domestic production and commercial business processes of AGE, basic rules for its market environment functioning and its relationships with contractors. The formal restrictions include the current legal acts, technical regulations, standards, norms and requirements, institutional infrastructure of the internal and external environment of the enterprise, which determine the mandatory rules of competitive struggle in a market situation and the violation of which inevitably leads to the imposition of clearly defined sanctions. Informal constraints are represented by the rules and norms of behavior in society, customs and traditions and generally accepted approaches to resolving disputes.

At the same time, violation of informal restrictions does not entail imposing obligatory sanctions and fines but can be condemned only from the standpoint of human morality and the norms of corporate ethics, which differentiate depending on the specifics of the personnel of a particular enterprise.

The institutional component of the mechanism providing the AGEs competitiveness is intended to help minimize their transaction costs in the following interdependence: the higher the level of adequacy of the institutional component to the requirements and needs of the market and economic relations - the stronger is the proximation of the transaction costs to zero - and vice versa. Therefore, it is expedient to ensure a continuous process of qualitative changes improvement and updating of the institutional parameters for the formation of competitiveness of the AGEs in accordance with the challenges of their market environment.

In its turn, the economic component of the mechanism of ensuring the competitiveness of the AGEs is interpreted as a resource-management unit for coordinating the interests of subjects of social-market exchange. An economic mechanism is a combination of forms and methods of economic activity, the use of which ensures the implementation of the fundamental economic laws under the conditions of constant resource limits, scientific and technological progress, and strengthening the competitive environment of the functioning of the AGE. The economic component of the investigated mechanism, as well as the institutional

one, includes the internal and external over-structures. The internal over-structure is aimed at optimal use of the available resource potential of the AGE and is formalized on the basis of such components as a financial subsystem, production and technological block, technical component, personnel support, logistic subsystem, environmental block. The external superstructure is formalized via the marketing policy of the enterprise, establishing beneficial business relations, searching the opportunities for additional available channels of the products distribution.

The effectiveness of the institutional and economic mechanism for ensuring the competitiveness of the AGE is, on the one hand, the result of the purposeful management influence, and, on the other hand, it is a result of the synergetic interaction of the political-legal, financial-economic, socio-psychological, technical- technological, natural-ecological and other factors.

The resource-functional ability of the institutional and economic mechanism is characterized by certain features, the fundamental among which are as follows: 1) stability (characterizes the ability of the institutional and economic mechanism to withstand the destabilizing effects of the risks and threats in the face of aggravation of competition on the agrarian market); 2) reliability (the ability of the mechanism to ensure uninterrupted effective functioning a long time); 3) evolution capability (the ability of the mechanism to adapt and implement structural changes in accordance with the changing conditions of the market and economic environment of the enterprise); 4) efficiency (the property of the mechanism in an appropriate manner to analyze, process and systematize information data for the design of alternative scenarios for the development of events); 5) hierarchy (horizontal-vertical distribution of functional duties and powers and differentiates the levels of responsibility between the components of the institutional and economic mechanism); 6) balance (availability of a rational distribution of managerial influence between the institutional and economic components of the competitiveness mechanism); 7) coherence (the property of the institutional and economic mechanism to minimize the risks of failures, dissimilarities and conflicts).

The study of the content-based characteristics of the institutional and economic mechanism of ensuring the competitiveness of AGE contributes to better understanding of the notion and provides the theoretical framework for the specification of the definition of this concept. This concept should be understood as a combination of forms, methods, tools and means of managerial influence, aimed at streamlining the internal and external business processes of the enterprise in order to increase the efficiency of using its natural resources potential, optimizing costs, improving the quality and safety of food staff, supplying ecologically safe agrarian production, strengthening the market position of the AGE, which ultimately transforms into an increase of its competitiveness.

The effective functioning of the institutional and economic mechanism for ensuring the competitiveness of the AGE depends on the interaction of its functions, the most significant among which are: system-forming, regulatory, generating,

commercial-promotional, simulating, socially-oriented, anti-crisis and rational natural resources management.

There are three main strategic approaches to the organization of the institutional and economic mechanism for ensuring the competitiveness of the AGE. The emphasis is laid on them since they are the most essential for this study. The first - process-oriented approach- involves a focus on situational management components of the production and economic cycle. The second - resource management approach- is strategically aimed at increasing the efficiency of utilizing the natural resource potential of the AGE under the conditions of their low financial liquidity, the abandonment of the material and technical base and the limited resources supply. The third - inter-functional approach- focuses on the systemic development of horizontal-vertical inter-branch connections of the enterprise, activation of which will ensure the effective utilization of the functions of the institutional and economic mechanism of ensuring competitiveness at all structural links of the production and distribution chain.

It is obvious that the appropriateness of this or that approach to the formation of the institutional and economic mechanism for ensuring competitiveness depends on the specificity of the AGE production, its tactical and operational goals and objectives, and the trends on the agricultural market.

The study has revealed that the most reasonable is the application of the inter-functional approach, as the basic one, with the simultaneous possibility of tactical re-orientation on the principles of process-oriented and resource-management approaches, depending on the challenges of the market environment. This will provide the basis not only to promote the integrated structure of the institutional and economic mechanism but also to improve the controllability of the enterprise production-economic processes in the context of the strategic course for increasing its competitiveness.

The mechanism of ensuring the competitiveness of the enterprise comprises technical, economic, social, psychological, legal, commercial, organizational and other aspects. Although they are the elements of a single system of ensuring the competitiveness of the enterprise, they function in a certain succession, depending on their importance and priority for a specific period of time [9, p. 64, 66].

Obviously, the effectiveness of the resource-functional approach to the institutional-economic mechanism for ensuring competitiveness formation depends on the level of its structure relevance to the objective requirements and needs of the market environment of the AGE (Fig. 1).

An important structural feature of the investigated mechanism of ensuring the competitiveness of the AGE is its over-structure component, which reflects the interaction of institutional and economic blocks. Its functioning is aimed at transforming the existing resource potential of enterprises taking into account the influence of the factors of their internal and external environment into strengthening the competitive advantages of enterprises, conquering new segments of the agrarian

market, forming a positive enterprise image, which in totality determine the growth of the level of competitiveness of the AGE.

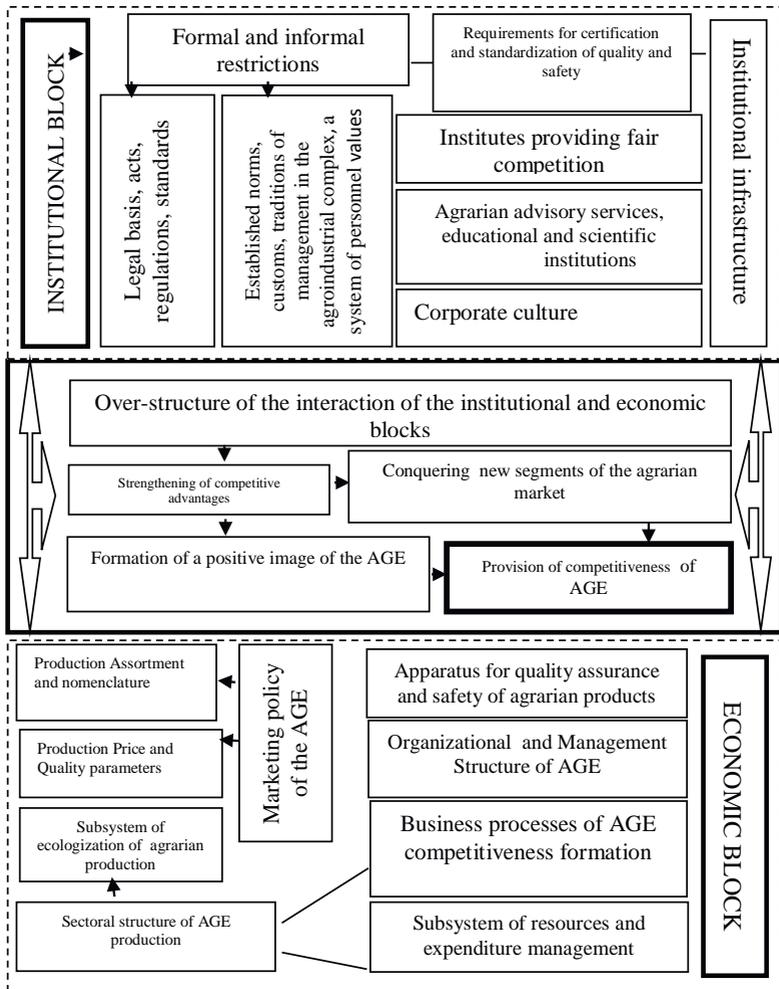


Fig. 1. The structural scheme of the institutional and economic mechanism for ensuring the competitiveness of the AGE (Author's design)

In this regard, it seems expedient to design the over-structure of the interaction of institutional and economic blocks of the investigated mechanism taking into account the following three components interaction: 1) the input apparatus (ensures the organization of the systemic coherent interaction of resources and determinants of institutional and economic nature, helps to avoid conflicts of interest in the

market and economic exchange and minimizes the probable transaction costs of the enterprise); 2) analytical and project subsystem (focuses on assessing the real prospects and opportunities of positioning the company in the market, diagnostics of the competitive environment and its forecasting, which is the basis for developing the strategy of competitiveness of the company and tactical and operational measures to support its achievement); 3) organizational and decision-making unit (provides financing and management support for the phased implementation of priority measures aimed at increasing the competitiveness of the AGE in the food market).

Functioning of the mechanism of ensuring the competitiveness of the enterprise requires the availability of regulatory, methodological, resource and scientific means of support.

They interact on the basis of balancing the economic and managerial relations in order to achieve the pre-defined market, financial, economic, production and social goals [10, p. 203, 204]. The management element of the mechanism of ensuring competitiveness is responsible for working out the strategies of creating favorable prerequisites for the effective realization of the company's goals in the market under the conditions of limited resources. In this regard, the mechanism of ensuring the competitiveness of the enterprise uses such components of management as price policy management; logistics management; marketing management; management of technical and technological support; quality management; assortment management [11, p. 97].

Expansion of the enterprise products competitiveness is achieved via the utilization of the economic, techno-technological, socio-labor, organizational, marketing and adaptive methods of the managerial influence [12, p. 35, 36]. The study of the content-structural characteristics of the mechanism for ensuring the competitiveness of the AGE brings us to the conclusion that the institutional and economic mechanism in the system of competitiveness performs the role of: 1) the regulator of the internal and external business processes of the enterprise aimed at their improvement to strengthen the competitive advantages of the products in the market and provide support for expanded reproduction; 2) managerial over-structure of the use of resource support of the enterprise, optimization of its costs and the conquest of new segments of the agrarian market; 3) socio-ecological component of balancing interests of subjects of social and market exchange, ecologization of agrarian production and formation of the principles of rational utilization of natural resources. The key findings of this research state, that the institutional and economic mechanism for ensuring the competitiveness of the AGE is a complex concept, the interpretation of which requires further substantiation of the theoretical-methodological and applied principles, especially in the context of transformation of this notion in the conditions of the agrarian market liberalization and strengthening of the European integration processes.

The study of the institutional and economic mechanism for ensuring the

competitiveness of the AGE from the standpoint of a managerial approach is of great importance. There exists an objective need for controllability of the processes related to the formation of competitive advantages and the functioning of enterprises in the agrarian market. At the same time, the managerial influences of the institutional and economic mechanism for ensuring competitiveness must be directed not only at the subsystem of resource support and organization of economic activity of the AGE, but also to the sphere of internal and external social-psychological relations that arise in the process of competitive struggle and determine the rating of the enterprise economic security. The institutional and economic mechanism is designed to transform the existing competitive advantages of the AGE into increasing the competitiveness of agrarian products, which will eventually form the preconditions for ensuring dynamic secure competitiveness of the company in the market.

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ENVIRONMENTAL SECURITY MANAGEMENT AS FUNCTION OF STATE INSTITUTIONS

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A prerequisite for a system security deviation is dissatisfaction with its subsystems requests. This dissatisfaction consists in imbalance between the actual level of needs fulfilling and the expectations. Actually, the forms of such dissatisfaction may significantly vary for different economic agents. From the point of view of economic security violation, the problem of inconsistency of actual and official social factors deserves special attention.

Social and demographic deformations that take place in the country are important factors in the aggregate demand's change. As a consequence, there are threats to a state's macroeconomic security, that are especially dangerous through the production decline in a problem regions and individual industries decline, as well as threats to mega economic security, connected to the country's place in the world economic relations. Dissatisfaction with social needs leads to the growth of a shadow economy, unregistered entrepreneurial structures, illegal employment, capital outflow (including human resources), illegal exports of capital and products, corruption.

Socio-environmental factors have indirectly impacted the worsening of the demographic situation in the most country regions, provoking an unprecedented wave of migration. The consequence of this trend is an average life expectancy reduction, the population aging of all the regions in the state without exception. The manifestation of this threat is strategically dangerous, which is due to the growing role of high-tech technologies in modern post-industrial society and the unceasing need of the world market in numerous innovative developments. The low quality of domestic intellectual capital is an essential prerequisite for the national security depravation not only at the meso- but also at the macro- and mega- levels.

System analysis of ecological and economic problems of regional development should be based on a system of indicators. The main disadvantage of a wide range of indicators is their focus on measuring only the one life sphere, and at this very time social processes are mostly ignored. This leads to regular violation of a systematicity principle. The category of economic efficiency in terms of the regional aspect quantitatively depends on a number of specific purely regional factors, where the use of resources is the main one.

The importance of the «security concept» defines the real situation and protection degree of any subject, its ability to stand against changes in functioning conditions.

State policy in the areas of national security and defense is aimed at ensuring military, foreign policy, state, economic, informational, ecological safety, cybersecurity of Ukraine etc. National security is a complex concept and a system that encompasses economic, military, environmental, political, information and other types of security as some subsystems, which are subsystems in turn [1].

Types of security for which the functional components system can be exuded can be represented as shown in Figure 1.

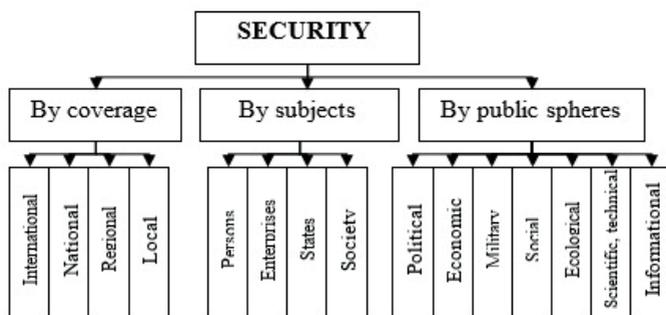


Fig.1. Types of security for which the functional components are exuded [2]

Subjects of state institutions (antitrust institutions, law enforcement, bodies of justice, environmental control, currency expert operations, tax and customs control) and security services of private organizations (banking institutions, security companies, auditors, insurance, leasing companies) provide economic security in different forms. These forms are the components of the state security (Fig. 1).

Functional components of corporate security are a set of core areas, which are quite different in their components significance: financial, intellectual and human resources, technical and technological, political and legal, informational, power and environmental components [3, 4].

A market component of a corporate security is protection against inefficiently chosen behavior patterns in the market, mistakes in marketing policy, pricing policies and non-competitive products manufacturing. This component reflects the level of correspondence of an enterprise internal production capabilities with

external, which are formed in a market. It reveals how much research, production, and marketing activities of an enterprise are relevant to market demands and specific needs of consumers. The significance of this economic security component lies in the fact that it is responsible for bringing the manufactured products to a specific consumer. It is known that all production efforts will be nullified if the product is not sold.

Each of the functional components is characterized by its own content, a set of functional criteria and ways of activity providing. To ensure economic security, an enterprise uses a set of its corporate resources.

Environmental safety is the protection from the devastating effects of natural, man-made factors and the consequences of enterprises economic activity. Floods, earthquakes, tornadoes, landslides, avalanches can cause huge damage to an enterprise property and workers' health [5].

In practice, it is almost impossible to predict natural disasters. We should take all possible steps to minimize the effects of landfill pollution. Technological catastrophes arise as a result of physically depreciated fixed assets usage, unplanned energy turn off or because of employees' low professional skills and irresponsibility.

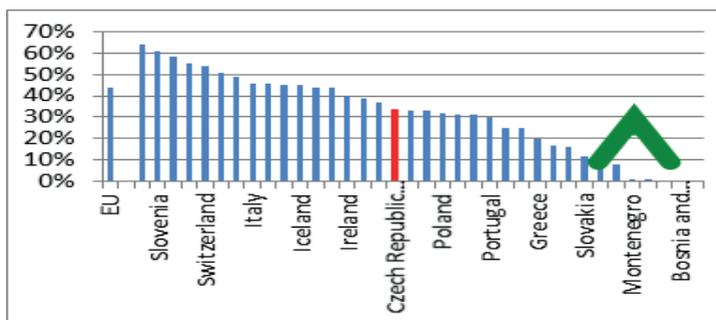


Fig. 2. Recycling of municipal waste EU 2017 [6; 7]

Resources are the business factors of the countries that are used to achieve the goals. Ecological goals: high coefficients of product safety, «ecological balance» of rational waste usage, environmental pollution retraction, profitability growth from products from waste, stiff fines imposition for environmental legislation violation. Market goals: the coefficient of market return on assets, products competitiveness, an enterprise market share, the coefficient of innovation costs, the rhythm of sales, the efficiency of advertising policy.

The definition of the economic security structure of the enterprise characterizes it as a complex system. The assessment of this system's development level consists of its sublayers analyzing. In turn these sublayers are complex assessments by groups or by a group of output indicators [4].

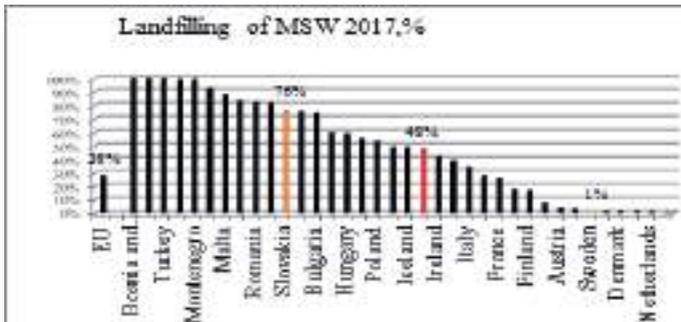


Fig. 3. Landfilling of municipal waste 2017 [6; 7]

What is increase (Figure 3) of landfilling tax for? 1) Clever and smart waste management (D2D, PAYT [9]). 2) Start-up circular waste and reverse material flow management. 3) Build up recycling industry. 4) Turn off the landfilling.

Collecting center's - secondary raw materials are redeemed.



Fig. 4. Increase of landfilling tax

PAYT [9] – new financing of waste management: 1) Start Door-to-Door collection of separable. 2) Measure amount of produced waste. 3) Weigh the waste. 4) Promote Pay-As-You-Throw principles. 5) Increase landfilling taxes.

The presence of regional development disproportions is determined with objective and subjective reasons. The first ones include the differences in the natural and climatic conditions that define one or another structure of the regional economy.

Subjective factors depend on the development strategy and productive forces placement, which in practice are implemented by regional management structures. Therefore, each region is distinguished from the other by socio-economic indicators and by average country indicators [8]. Waste Hierarchy – priority order in waste prevention, management legislation and policy: prevention; preparing for reuse; recycling; energy recovery; disposal. Environmental damage can have a significant effect on the enterprise's financial position. For example, such events as a lawsuit for

violating environmental legislation, an accident with environmental consequences in an enterprise can be transformed into losses that belong to the category of financial and environmental and are measured in monetary terms [10].

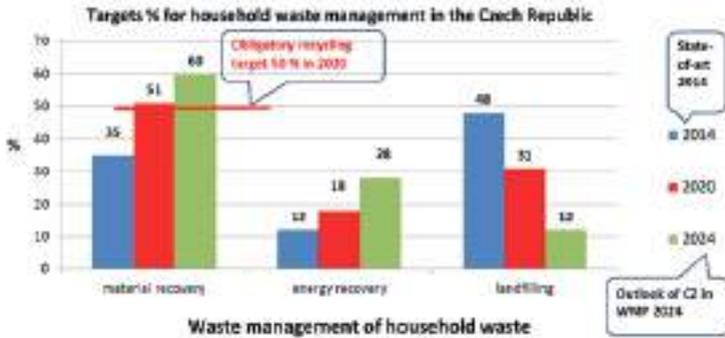


Fig. 5. Forecast of the household waste management [9]

Environmental damage caused by the health loss of a company’s employees, the reduction of production and sales affect the financial position of the company a little bit slower.

Environmental damage such as suffering due to a health loss can’t be measured in cash. Compensation for these losses is determined subjectively. Environmental damage can be uncovered or partially covered. This is a significant source of danger for an enterprise. State institutions can minimize environmental damage as well as partially monetize the processes of recycling and utilization through legislative regulation and management of reverse material flows [9].

As a result of economic activity, the enterprise itself can become a source of danger to the environment. Internal factors that impair an enterprise’s environmental safety include: mistakes made at the design stage of new products that are harmful to human health, as well as at the stage of new technologies development and introduction, fines for environment pollution and illegally created landfills.

The concept of company’s security is the officially approved document. It includes the system of views, requirements, terms of organization, personnel security measures, security of ownership. The aim of the security is to impact potential and real threats of the enterprise. The formation of economical security mechanism at the micro- level involves changing environment; guarantee of the company’s sustainability; functioning of its financial, human and information resources. The mechanism of economical security guarantee of the companies acts at the operational, tactical and strategic levels of management. It provides a strategic set of control mechanisms that affect economical security elements management. It is necessary to use strategic analysis, strategic planning (including budgeting), auditing and controlling.

Destabilizing safety factors can be classified according to their influence on functional environmental subsystems. The main groups of them are the following: 1) Natural or man-made disasters. 2) Failure to comply with current environmental norms and standards. 3) Fines imposition and licenses abolition for violation of environmental norms etc.

Waste Czech Policy 2020-2024 [9]. Fulfils 50 % of recycled municipal waste in 2020. Minimize landfilling of biodegradable waste in 2020.

CZ Ministry of the Environment and the Circular Economy: 1) Waste Management Plan 2015 – 2024 adopted in 2014. 2) Obligatory separate collection of paper, plastic, paper, glass, metal and bio-waste in all municipalities. 3) Landfilling ban on mixed municipal waste, recyclable waste and recoverable waste since 2024. 4) Financial support from the cohesion funds of the EU available OP Environment 2014 – 2020 (2023) cca 460 mil. EUR including W-2-E installations [9]. 5) New waste law proposals. 6) Economic tools and increase of landfilling taxes proposals. Keep 2024 ban on landfilling of recoverable, recyclables and mixed municipal waste alive. Reach 60 % of recycled municipal waste in 2024.

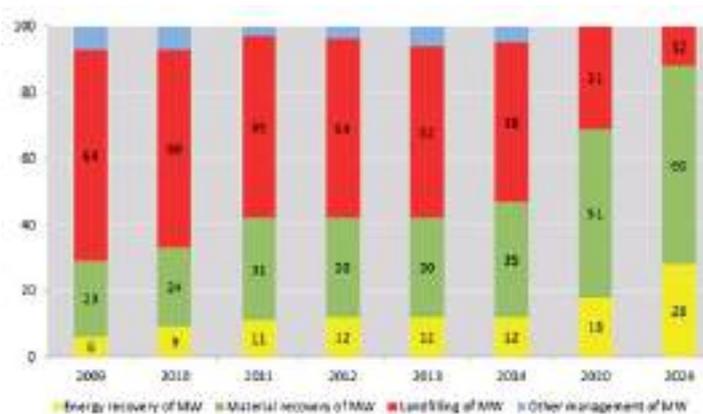


Fig. 6. Municipal waste management and outlook for 2020 and 2024 according to the Waste Management Plan of the Czech Republic, % recycling targets in CZ, calculation method Nr. 4 of CD 2011/753/EU, data MŽP [6; 7]

Priorities of European Union in the waste management for experience the Ukraine: 1) Land filling reduction. 2) Waste prevention. 3) Increase recycling. 4) Energy recovery of waste must be the part of waste management. 5) Reduce consumption of primary sources. 6) Support and motivate businesses to invest in European union and increase the waste process activities in European union. 7) Set up the real recycling targets of waste. 8) Increase land filling taxes to start up Circular Economy. 9) Unification of calculation methodology and reporting.

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BENZAPYRENE CONTENT IN THE ENVIRONMENT AND FEEDS

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In our time the problems of onco-ecology, in which the research of oncogenic factors' impact on biocenoses is conducted, are becoming especially topical. This new approach presupposes the investigation of the population effects of circulating carcinogenic substances with the aim of integral evaluating the condition of various ecosystems, determining organisms-indicators of environmental pollution with carcinogens and the control of their content [3, 14].

Benzpyrene, or benz(a)pyrene is the aromatic compound, the representative of the family of polycyclic hydrocarbons, the first-class substance of carcinogenic dangerous agents.

About 7thousand tons of benz(a)pyrene, the substance, which is extremely stable and has a high ability to accumulation in the organism and environment, comes gets to the world environment yearly.

Benz(a)pyrene is mainly accumulated in soil and sometimes in water. The soils on the territories, which are near to highways, are regularly polluted with heavy metals, petroleum products, and polycyclic aromatic hydrocarbons that are mainly contained in gas-dust emissions of automobile transport. The situation is complicated by the fact that road passages outside highway grass plots are actively used as parking places for automobiles usually for short periods of time. As it is known, exhaust gases of the warming up automobile engine have more toxic substances, especially poly-aromatic hydrocarbons (PAHs) (including benz(a)pyrene). That is why the level of chemical pollution of these plots is rather high.

It gets to plant tissues from the soil and continues its movement further on in the trophic chain, moreover, the content of benz(a)pyrene in natural objects grows a sequence higher at each stage [17].

Polycyclic aromatic hydrocarbons. A great number of poly-aromatic hydrocarbons (PAHs) are known. The compounds of this group are ubiquitous and they are met practically in all spheres of the human environment [9].

Benz(a)pyrene, cholantrene, perylene, dibenz(a)pyrene are the most carcinogenic PAHs. Anthracene, phenantrene, pyrene, and fluorantene are less toxic substances.

PAHs are well studied on the example of benz(a)pyrene, the indicator compound of this group of carcinogens. Benz(a)pyrene is characterized by maximally relative stability at different physical-chemical impacts. It is always detected everywhere together with other carcinogenic hydrocarbons, being one of the most widely spread and powerful carcinogenic agents [15].

The ways of benz(a)pyrene getting in the environment. Benz(a)pyrene (BP) has indicator meaning for all PAHs. For the first time this statement was formulated in 1966 by L.M. Shabad and his school (A.P. Ilnytskyi, H.A. Bilytskyi, A. Ya. Khesyn, A.B. Lynnyk, and others).

At present the indicator role of BP is supported by the majority of scholars and it is substantiated by the following observations:

- 1) BP is always found in places together with other PAHs;
- 2) comparing to other PAHs, BP has the most relative stability in the environmental objects;
- 3) BP is distinguished by the marked biological, in particular, carcinogenic activeness;
- 4) the existing physical-chemical methods of BP indication in different environments are the most sensitive among the methods of detecting PAHs. The fact that PAHs are extremely widely spread in biosphere enabled to distinguish the background pollution with PAHs, which was also introduced by L.M. Shabad (at the beginning for soil and water reservoirs) [6].

Volcanic activity, the processes of petroleum, coal, and shale formation are referred to natural abiogenic sources, forming the natural background of PAHs.

It was established, that BP and other PAHs appear as a product of abiogenic origin as a result of volcanic activity. Examining the samples of volcanic ash and lava, A.P. Ilnytskyi and his colleagues revealed different (as a rule, differing not more than a sequence higher) levels of PAHs content. For example, the concentration of BP in the ash of the Tiat volcano (Kamchatka peninsula) was 0.4 mcg/kg, of Plosky Tolbachyk (Kamchatka peninsula) – up to 5.5-6.1 mcg/kg. The authors calculated that at the existing level of volcanic activity, about 24 tons of BP comes yearly to the Earth biosphere with volcanic ash, and, probably, from several tens to hundreds tons with lava. The mechanism of “volcanic” BP formation has not completely been studied. On the grounds of experimental research the possibility of different PAHs formation by methane and isoprene pyrolysis at high temperatures is admitted. The consequences of the processes of petroleum, coal, and shale formation are other natural sources of PAHs. For example, benz(a)pyrene in the concentration of 75 mcg/kg is found in brown coal extracted in Beresovsk deposit, 342 mcg/kg – in coal

extracted in Irsha-Borodino deposit, and from hundreds to thousands of mcg/kg of BP can be found in petroleum of different origin. It is supposed that the formation of PAHs in the entrails of the Earth takes place as a result of thermobaric factors' impact on resinous and sulfur components leading to disintegration of the latter ones and catalytic formation of hydrocarbons. The possibility of PAHs synthesis by various microorganisms and plants has been experimentally proven. Yearly, up to 1000 tons of BP gets to the atmosphere due to such synthesis. Other factors also participate in the formation of BP natural background – for example, forest fires. Modern background level of BP in the biosphere is given in Table 1.

Table 1

Modern background level of benz(a)pyrene in the biosphere

Object	BP content, mcg/kg of dry matter
Atmospheric air, mcg/cubic m: over the continent	0.0001-0.0005
Atmospheric air, mcg/cubic m: over the ocean	0.00001
Soil	up to 1-5 *
Vegetation	up to 1-5
Freshwater reservoirs: water (mcg/l)	0,0001
Bottom sand	up to 1-3
Aquatic plants	up to 1-3

For some soils (black soil, peat bog) a higher level of BP (15-20 mcg/kg) is characteristic, and it is determined by the specific composition of these soils (a high content of organic substances, microbial structure, etc.) [12, 17].

As it is stated in the yearly Government reports “About the condition of the natural environment in the Russian Federation”: “The pollution of soils with petroleum in places connected with its extracting, processing, transporting, and distributing, exceeds background by tens of times [9, 12, 17].

The soils are greatly polluted with oil and oil products in the regions, where oil extraction and oil processing enterprises are concentrated, and also in places of accidents on pipelines. The infiltration of oil and petroleum products led to the formation of large underground oil deposits in the following cities and towns: Grozny, Angarsk, Mozdok, Tuapse, Yeisk, Orel, Novokuibyshevsk, Ufa, Komsomolsk-on-Amur, and others” [4, 6, 12].

The epidemiological analysis of tumors among some fish populations enables to connect the raising of the frequency of tumor formation with the degree of water reservoirs' pollution with industrial, domestic sewage water, petroleum products, and also to reveal the natural fish populations, which are the most sensitive to the impact of carcinogenic factors in water eco-systems. The similar research give the notion of the integral effect of all both blastomogenic and modifying factors during long-term period, while physical-chemical analysis of water samples enables to detect only separate substances [3, 8, 15].

As a result of human activities, biosphere pollution with carcinogenic PAHs has greatly increased, and in industrial regions it exceeds their natural background level by hundreds and thousands times. The main anthropogenic sources of polluting the atmosphere with PAHs are industrial emissions and automobile exhaust gases, surface transport, mainly automobiles, aviation, and water transport. It was established, that gas-turbine engine of modern plane blows up in the atmosphere 2-4 mg of BP per minute of operating. Even approximate calculations show, that yearly over 5000 tons of BP are emitted from this source in the atmosphere. BP and other PAHs are mainly formed in the process of burning various combustion materials (coal, wood, shale, petroleum products) at temperatures about 80° C and over 500° C. PAHs get to the atmosphere together with resinous substances (smoke gases, soot, etc.).

BP is identified in tobacco smoke (20-40 mcg/cigarette), marihuana smoke (29 ng / cigarette), city air (0.05-74ng/m³), exhaust gases of gasoline engines (50-81 mcg/l of fuel), diesel engine exhausts (2-170 mcg/kg of extract), used engine oils (5,2-35,1 mg/kg), polluted water reservoirs (0.2-13000 ng/l), tea (3.9-21.3 mcg/kg), culinary food products, etc. [8, 11].

BP and other PAHs are included in bio-sphere circulation of substances, they pass from one environment to another (for example, from the air into soil, from soil into plants, from plants into feeds for animals, and, at last, into food for people), they undergo different transformations, including destruction (for example, under the effect of photo-oxidizes or soil microorganisms) [19, 8]. These processes of translocation and transformation also take place in the atmosphere, hydrosphere, and lithosphere. In all these environments PAHs practically do not exist in molecular-disperse state, as a rule, they are connected with other pollutants (in the air – with solid particles of atmospheric dust, in water – with other surface components). In the air environment (in this case ground atmospheric layers are the most interesting, because they contain a large part of pollutions) the spreading of PAHs is characterized by dispersiveness of the particles, on which they are absorbed, the remoteness of the emission source from the ground and such climatic factors, as wind, moisture, temperature, atmospheric precipitations. Fine-dispersed dust remains on the upper layers of the atmosphere, while the medium-dispersed particles (1-10 mcm) persist in the breathing zone of human, animal, and plant organism for a long time. Larger particles over 10 mcm as a result of sedimentation fall from the air with precipitation and pass into the soil, plants, and water. The spreading of PAHs, as well as air pollutions in general is also largely stipulated by the degree of remoteness of the emission source from the Earth surface. In other words, the higher the chimney flue is, the longer is the distance of its emissions. According to volcanologists' calculations, volcanic ashes are as a rule blown-out at the height of 1-5 km and carried over great distances. In 1956 at the eruption of Kamchatka volcano Bezymennyi the height of emission was 45 km and its ashes reached London [5, 8].

In aquatic environment the translocation of PAHs includes both their redistribution between separate objects (water, plankton, bottom sediments, and others) and their accumulation and spreading with water.

A part of PAHs in the soluble state is carried over considerable distances. The major part of PAHs adsorbed on the medium- and large-disperse particles is settled on the bottom, forming the level of bottom depositions' pollution and penetrates into plants. The concentration of BP in water is considerably lower than in bottom depositions. Moreover, the latter are the peculiar depot for the secondary water pollution with BP. Some part of PAHs, being evaporated with water, may penetrate in the atmospheric air. PAHs in plants and phytoplankton may be accumulated in them and penetrate in other aquatic organisms, first of all, fish, which are the upper element of the trophic chain [14].

The substances of this group get into soil with atmospheric precipitations, plant residues, and in the recent years, with different domestic and industrial wastes used as fertilizers and containing PAHs. Many soil microorganisms turned out to be highly sensitive to the effect of PAHs, which results in changing the formed micro-biocenoses and influencing soil biological productivity. For example, applying BP in the soil in concentrations 40-100 mcg/kg immediately suppresses the growth of saprophytic microorganisms, but stimulates the generation of *E. coli* and fungi, mainly, actinomycetes. It is from the soil that PAHs penetrate in underground parts of plants, which is confirmed by the established ratio between BP content in soil, and, for example, in potato bulbs [7].

Benz(a)pyrene destruction. The circulation of PAHs in the atmosphere depends on disperse particles, by which PAHs are adsorbed, the degree of the remoteness of PAHs source from the Earth surface, the intensity of solar irradiation, the presence of natural photo-oxidants, contributing in benz(a)pyrene and other carcinogenic PAHs destruction. The destruction of carcinogenic PAHs can take place under the influence of ultra-violet rays and ozone.

BP, which is accumulated in the upper layers of soil (up to 3 cm), is destructed, and the speed of destruction depends on the amount of BP, soil pH and humidity, but, first of all, on the composition of micro-biocenosis. Biological soil purification from PAHs is ensured by some bacteria, which are widely spread in soil and water polluted with PAHs. The processes of PAHs transformation also take place in all the environmental objects. BP degradation in the air takes place owing to ultra-violet irradiation and different photo-oxidants, first of all, ozone and also nitrogen oxids, formaldehyde, acroeline, organic peroxides, which are accumulated in urban atmosphere. PAHs' degradation in the soil takes place both under the impact of ultra-violet (the surface layer) and, mainly, microorganisms' enzyme systems. Oxidative degradation of BP and other PAHs in water also proceeds under the impact of ultra-violet irradiation (the depth of penetration depends not only on irradiation intensity, but also water muddiness, coloring, temperature, etc.), the micro-flora of water reservoir, and also under the influence of other chemical compounds, getting in

these water reservoirs [14].

The impact of benz(a)pyrene on the organism of plants, animals, and people. Biological impacts of BP have been widely investigated on different organisms. It has been established, that PAHs can intensify the growth and propagation of a number of plants. For the first time it was shown on algae *Obelia geniculata* 60 years ago. Since that time numerous researches have confirmed, that BP and other PAHs in small concentrations have growth stimulating effect. The peculiar impact of PAHs has been noticed in inferior vertebrates. At applying some PAHs on the body surface of planaria lighter spots appeared which were explained differently by various authors – as the signs of teratogenic, organogenic, or carcinogenic effects. On the whole, as the carcinogenic effect of PAHs was revealed relatively a long time ago (when pure substances of this group were not singled out or synthesized), that is why their tumorigenic impact was investigated most of all [12].

According to the evaluation of the IARC experts there are no direct proofs about PAHs' carcinogenic impact on human and the indicator substance of this class - BP is considered to belong to group 2A, that is the category of potentially dangerous. But the Ukrainian specialists consider BP as belonging to group 1 – absolute carcinogens for people. At present, probably, it should be stated, that tumors in people appear under the influence of the PAHs' complex. These are coal-tar pitches and coal tars, shale and mineral oils, and also coal smut. Besides, such production processes and branches of industry, in which certain groups of workers are exposed to the impact of PAHs, received as a the result of coal or petroleum processing (the production of coke, cast-iron and steel, aluminium, coal gasification) are also included in carcinogens of group 1. The majority of the enumerated factors cause tumors of skin and lungs. There are also results of epidemiological investigations, testifying to their causing neoplasms of the urinary bladder, gastro-intestinal tract, blood formation system, kidneys, larynx, and mouth cavity. More than 130 PAHs, which can cause tumors in the experiments on animals, have been presently identified in the atmospheric air. Though, the IARC experts consider only 13 substances out of 42 compounds of this class to be absolutely carcinogenic for animals (BP, benz(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, dibenzo (a,h)anthracene, dibenzo(a,h)pyrene, dibenzo(a,e)pyrene, dibenzo(a)pyrene, dibenzo(a,e)fluoranthene, 5-methylchrysen, dibenzo(a,j)pyrene, and indeno[1,2,3-c,d]pyrene). In the human and experimental animal organism PAHs undergo metabolic transformations (mainly, in the liver) forming diol epoxides – the terminal metabolites, reacting with cell DNA and are eliminated as glucuronic and other conjugants [1, 9, 2].

BP and many other PAHs have mutagenic effect. In particular, BP causes DNA reparation and bacteriophage induction in microorganisms, induces direct and reverse mutations in tester bacteria strains, drosophila mutations, and also sister chromatic exchanges, chromosome aberrations, point mutations in vivo, in vitro, and also a number of other genetic changes. Besides, BP has embryo-toxic

and teratogenic effect, and it can induce the systems of microsomal oxidation. In production conditions, as a result of people being exposed to PAHs, depending on the way of contact with them and the kind of substance, such diseases may be caused: dermatitis, keratoconjunctivitis, and also a higher risk of ischemic heart disease, chronic lung diseases and other diseases of the respiratory system. For example, huge smog in London on December 5-13, 1951 resulted in 2850 deaths. BP content in this smog was up to 222 mcg/ 100m³ [16, 2, 18].

Taking into account really ubiquitous connections of this group of chemical substances in places of human habitation, their ability to accumulation, the presence in different elements of the trophic chain and variety, PAHs should be considered to be the most important ecologically dangerous factors [6].

Contaminating food products with benz(a)pyrene. The contamination of food products with PAHs takes place in the process of their technological processing, in particular, at smoking and some kinds of frying in meat, fish, sometimes in large amount (from 1 to 100 mcg/kg) [20, 10]. Roasting food products in deep-fry is especially dangerous. PAHs were also found in tea from Turkey. Considerable contamination of food products takes place at storing in polymer packaging material (milk fat extracts 95% of benz(a)pyrene from paraffin-paper packages or glasses) [13, 4].

It was proven, that smoker receives benz(a)pyrene with the products of smoking even the so called light cigarettes, and the amount of BP, one of the most dangerous carcinogens, is several times higher, than the inhabitant of a large industrial city can breathe in maximally with the air; after smoking one common cigarette the amount of BP is 5-6 times higher. The dose, which causes the minimal effect according to epidemiological indices is 3-4 times less, than that received by the above mentioned smoker. Not much lower doses are received by people, being in the zone of smoking products effect, the so called passive smoking [11].

Especially high air pollution with benz(a)pyrene is observed in Ukrainian industrial cities. It is not sufficiently soluble in water (units of mcg/l), a sequence higher – in human blood. BP is light at room temperatures, but its main amount in the polluted air is always bound with hard particles (this also concerns polluted water). Rain sufficiently and quickly purifies the air from this substance washing it down in the soil [15, 5].

The concentration of benz(a)pyrene in food raw products, obtained from ecologically pure plants, is 0.03 – 1.0 mcg/kg. The conditions of thermal processing considerably increase its content to 50 mcg/kg and more. Polymer packaging materials also contaminate food products with PAHs to a large extent.

The adult person receives about 0.006 mg of benz(a)pyrene a year with food. This dose is 5 times and more in intensively polluted areas. Maximal permissible concentration (MPC) of benz(a)pyrene in the open air is 0.1 mcg/100 m³, in the water of water reservoirs – 0.005 mg/l, and in soil – 0.2 mg/kg.

As it was mentioned above, BP can be synthesized by plants, penetrate their

underground organs from the soil and ground plant parts from the atmosphere. It has been noted, that the content of BP in plants in industrial districts is considerably higher, than in the same species, gathered in “clean” district, and exceeds the background level. Moreover, it was established, that medicinal plants, growing near busy automobile roads contain the increased amount of BP. The contamination of food plants with BP greatly depends on anthropogenic factors (industrial wastes) and the degree of remoteness from the source of emission.

The accumulation of PAHs in plants, fish, and shellfish stipulates the probability of contaminating food products and feeds with them, and, thus, penetrating the human organism [6, 14, 3].

Soil, water, green corn, and silage for feeding animals on the farms in the outskirts of Poltava were examined.

The investigation of penz(a)pyrene content indices in water was conducted according to the State Standard of Ukraine (SSU) ISO 17993:2008. Water quality. The determining of 15 polycyclic aromatic hydrocarbons in water by the method of highly effective liquid chromatography with fluorescent detecting after liquid extraction. (ISO 17993:2002, IDT).

The sensitivity of detecting benz(a)pyrene by using the given method is 0,01 mcg/dm³.

Benz(a)pyrene in soil was examined by the method of liquid chromatography.

Benz(a)pyrene in silage and grass was determined by the method SSU 4689:2006. Food products. The methods of detecting benz(a)pyrene weight fraction [11, 15].

The work was conducted on the farms, located in the outskirts of Poltava at the distance up to 1 km from the highway Kyiv – Kharkiv.

Laboratory investigations were held on the base of the state enterprise “Poltava Standard Metrology”.

The state enterprise “Poltava regional scientific-technical center of standardization, metrology, and certification” is subordinate to the Department of Technical Regulation of the Ministry of Economic Development and Trade of Ukraine.

Farm animals, cattle and rabbits, are kept on the private farms under investigation. The animals are mainly fed with silage and hay, and in the summer period – with meadow grass.

The samples of silage and corn green mass from the places where the mass is taken for ensilaging (four private farms) were taken for our research.

Thus, as we can see from Table 2, the content of benz(a)pyrene in silage varied from 6.2 to 7.5 mcg/kg. MPC of benz(a)pyrene was not established for silage in the SSU, that is why for comparison we took maximal permissible content of benz(a)pyrene in food products, which is 5 mcg/kg. In fact, the content of benz(a)pyrene in silage is 1.5 times higher than maximal permissible rate for food products.

Table 2

Benz(a)pyrene content in silage

№ of sample	Amount of benz(a)pyrene, mcg/kg	Benz(a)pyrene rate , mcg/kg
1	7.5	is not standardized
2	6.7	is not standardized
3	6.2	is not standardized

Benz(a)pyrene gets into mammals' organism, where it is neither destructed, nor excreted with urine and feces, but has the property of bio-accumulation, which increases its danger.

Examining corn green mas used for ensilaging and then animal feeding, we also received considerably high indices of benz(a)pyrene content - 9.6 – 10.5 mcg/kg. That is why it can be stated, that benz(a)pyrene in silage is not formed as a result of technological processing, but it is contained in the green mass from the very beginning.

The obtained results are given in Table 3.

Table 3

Benz(a)pyrene content in corn green mass in the outskirts of Poltava

№ of sample	Distance from the highway, m	Amount of benz(a)pyrene, mcg/kg	Benz(a)pyrene rate , mcg/kg
1	25-50	10.50+ 0.45	is not standardized
2	100	9.73+ 0.45	is not standardized
3	250	9.69+ 0.45	is not standardized
4	350	9.62 + 0.45	is not standardized
5	500	9.60 + 0.45	is not standardized

It is evident from the obtained results, that benz(a)pyrene content in corn green mass fluctuated from 9.6 to 10.5 mcg/kg, almost twice exceeding the rate fixed by the regulations for food products.

Corn green mass, taken at the distance 1000 m from Kyiv-Kharkiv highway contained 1.5 mcg/kg (sample 6).

The following stage of our research was the determining of benz(a)pyrene content in water, used for farm animals on the same farms and surface spring water near Kyiv-Kharkiv highway.

We have examined the well water (of the private farms), spring and drinking water from Poltava town public water supply.

The investigation results are presented in Table 4.

According to our research it was established, that benz(a)pyrene weight fraction in drinking water from the wells on the private farms and public water supply water in the town of Poltava do not exceed 0.005 mcg/ dm³ , thus, such water is safe for using.

Benz(a)pyrene content in the town of Poltava

Samples	Benz(a)pyrene content mcg/ dm ³	Benz(a)pyrene rate mcg/ dm ³
Drinking water from bore №1 in the town of Poltava	0.00123	0.005
Drinking water from bore №2 in the town of Poltava	0.00291	0.005
Drinking water from bore №3 in the town of Poltava	0.0042	0.005
Drinking water from public water supply in the town of Poltava	0.0031	0.005
Surface spring water in the town of Poltava (near Kyiv-Kharkiv highway)	0.098	is not standardized

Surface spring water contains 0.098 mcg/ dm³ of benz(a)pyrene, and though the limits of benz(a)pyrene content in spring water are not established, we consider it to be unsafe for consuming.

Soil has the property of accumulation. The highest content of polluting substances is mainly observed in soil upper layers, which are the principal medium for plant growth.

As soil layer is the buffer zone between the atmosphere and entrails of the earth, and this layer gets the main part of the loading from all kinds of human economic activities, including the contamination with PAHs, we conducted the examination of benz(a)pyrene content in soil.

To determine soil pollution with benz(a)pyrene the samples at the distance up to 700 m away from Kyiv-Kharkiv highway in the area of the township Nyzhni Mlyny were selected.

As it can be seen from Table 5, our research established, that benz(a)pyrene content in soil, taken at the distance of 100-400 m away from Kyiv-Kharkiv highway in the area of the township Nyzhni Mlyny, where grass for livestock is grown, varied from 25 to 50 mcg/kg, which twice exceeds the maximum permissible rate. Benz(a)pyrene content in the control sample, taken at the distance of 500-700 m away from the highway was 15 mcg/kg, which does not exceed the rate.

As it is known, benz(a)pyrene is formed at burning hydrocarbon fuel. BP is mainly found in the emissions of automobile transport, and, according to the results of our research, the nearer are soils to the highway, the more they are polluted with benz(a)pyrene. It is practically not found in the free form, but always settles on particles present in the air. Falling down together with solid particles (for example during precipitations), benz(a)pyrene gets to the soil and water reservoirs. Then BP penetrates plants, which later are fed to livestock or used as human food. Thus, benz(a)pyrene concentration in plants in separate cases may be higher, than its

content in soil, and in food products (or feeds) it may be higher than in the starting raw products for their manufacturing.

Table 5

Benz(a)pyrene content in soil

No of sample	Distance from the highway	Benz(a)pyrene amount, mkg/kg	Benz(a)pyrene rate, mkg/kg
1	25-50	50	20
2	60-100	30	20
3	150-450	25	20
4	500-700	15	20

So, it can be confirmed, that the source of contaminating animal feed with benz(a)pyrene on the private farms in the outskirts of Poltava is gas-fuel emissions of automobile transport on Kyiv-Kharkiv highway with intensive traffic, and the safe distance for ensilaging corn green mass and then feeding livestock must not be less, than 1000 m away from intensive highways.

Taking into account the facts presented above, we consider, that:

- benz(a)pyrene content in green corn depends on the distance from the highway with intensive traffic, where exhaust gases from automobiles are accumulated in the atmosphere. For example, at examining corn green mass samples, taken at the distance of 25-500 m away from Kyiv-Kharkiv highway, the weight fraction of hydrocarbon was 9.6 – 10.5 mcg/kg, and in grass samples, taken at the distance 1000 m it was 1.5 mcg/kg, which is seven times less;

- accumulated benz(a)pyrene amount in silage was 6.2 – 7.5 mcg/kg, which is almost equal to BP weight fraction in corn green mass samples, gathered near the highway;

- benz(a)pyrene amount in water from the bore and public water supply in the town of Poltava does not exceed the rate 0.005 mcg/ dm³ admissible by the regulations, and the exceeding of the mentioned rate by 20 times was observed only in the samples of spring water, taken near the highway;

- benz(a)pyrene content in the soil, taken at the distance of 25-50 m away from Kyiv-Kharkiv highway varied from 25-50 mcg/kg, which is twice higher, than maximum permissible rate. Benz(a)pyrene content in the soil, taken at the distance of 500-700 m away from the highway did not exceed 15 mcg/kg (within the limits of MPC);

- gas-fuel emissions of automobile transport on Kyiv-Kharkiv highway, having a very intensive traffic, are the sources of contaminating feed for livestock with benz(a)pyrene on the private farms in the outskirts of Poltava.

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PECULIARITIES OF PUBLIC MANAGEMENT OF ENVIRONMENTAL AND ECONOMIC SECURITY OF A REGION

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Global changes in nature revealed their rigid connection with the pattern of the modern development of civilization – the development at the expense of and to the detriment of nature, without due regard to the danger of disturbing the rational balance of the four main components that determine progress: economy, ecology, social status of people and their spiritual world. Market economy requires radical

changes in the existing mechanism for the formation of rational use and protection of land, water resources, waste accumulation, which calls for the adoption of perfect environmental-economic and legal mechanisms.

The stable state of economy as one of the most important conditions of national well-being, autonomy, independence specifies the basis of security, since production, distribution and consumption of material wealth determine viability, vital activity of society. The study of economic security depending on the environmental component is a relatively new phenomenon. Hence there is a problem of identifying the interaction of economic and environmental security. The basis of economic security is created through the provision of environmental security. The transition to sustainable development of civilization will result in a variety of acute conflicts, which will increasingly affect the struggle for markets, resources, ecological reserves and living space.

The urgency of the research is due to the fact that under the conditions of internationalization of commercial and business activity and strengthening of negative anthropogenic impact on the environment, there is an objective necessity to develop an effective mechanism for managing the economic potential of a region, taking into account the requirements of its environmental and economic security.

The problems of economic security at the regional level are considered in the works by Bohan A. V., Demykhina O. I., Karaeva N. V., Korpan R. V., Kubatko, O. V., Iskakov A. A., Malyshev N. A., Wozniak V. At the same time, scientific and methodical approaches to the formation of an organizational and economic mechanism for managing the economic potential of a specific region, taking into account the requirements of environmental and economic security, are underdeveloped.

Providing insight into environmental and economic security, it is necessary to point out various aspects of this complicated political and economic category, and that its most important feature is the capacity of the economic system for sustainable maintenance of the basic values of economic, financial, social, environmental and other indicators in the parameters that provide the basis for its functioning [3].

The determination of importance of the category “environmental and economic security” in the system of economic relations involves specifying the spheres of economic activity by allocating the objects of environmental and economic security, which are the kinds of resources – mineral resources, fixed and circulating assets, etc.; differentiated parts of the security subjects – district, city, region, social group; qualitative characteristics of processes (reproduction of population, resources, age of fixed assets) and types of activities (rates of technological development) [4, 6].

The notion of environmental and economic security has a number of features that are typical in whole to the system of natural resource use as a form of interaction between nature and society. The need for security, protection against unwanted external influence and internal changes on the life of an individual, family, their property, various associations of people, including society and the state, refers to the type of basic needs. Environmental security is, firstly, the security of the

functioning of the environment, the absence of significant threats to its existence, and, secondly, the lack of environmental threats to the lives of individuals and their different communities and organizations at the macro level. Similarly, economic security covers both a low level of probability of threats to the functioning and development of the country's economy, as well as a low level of probability of threats to the development of society on the part of its economic subsystem, that is, those processes occurring in the national economy.

The results of various studies show that in the modern economic system, under the conditions of globalization and internationalization of economy, it is necessary to try to achieve a state in which the impact of any economic activity does not go beyond the limits of environmental and economic security. Under these conditions, it is necessary to use such an economic indicator which enables simultaneously to characterize both the current state of interconnections of socio-economic and environmental subsystems of a region, as well as to construct a reliable model for their development in the future. In our opinion, as an economic notion that characterizes the ability of socio-economic and environmental subsystems of a region to develop in a given direction, their ability to ensure the achievement of certain results under the existing conditions and the level of use of this ability, such a notion as "economic potential of a region" can be used. From the point of view of the systematic approach, this notion is considered as the "economic characteristics of a territory ... a complex, dynamic, polystructural system of possibilities and capabilities generated by the regional system" [5].

The important problems for Ukraine related to the relationship between economic growth and environmental conditions are defined in "The Conception of the National Environmental Policy of Ukraine for the period up to 2020" [2]. In accordance with "The main directions of the state policy of Ukraine in the field of environmental protection, use of natural resources and provision of environmental security" [1] approved by the Verkhovna Rada of Ukraine, the current ecological situation in Ukraine is recognized as a crisis one, and the main directions of its improvement are outlined.

N.A. Malysh [7] believes that the ecological situation in Ukraine is considered as a crisis one due to a number of factors: weak control of the use of natural resources potential; a low level of environmental security of natural management subjects; extensive nature of social and productive activities; a super-high degree of deterioration of fixed assets; insufficient investment in the development of advanced production and environmental technologies.

Ukraine is an integral part of the world socio-economic system, the activity of which is based on the unlimited use of natural resources in economic turnover, which results in the environmental pollution and the depletion of natural resources potential of the country, contributes to the aggravation of the environmental crisis, the emergence of global environmental and economic dangers in Ukraine. These factors are the root cause of the emergence of additional costs of business entities

and promote the loss of the gross domestic and gross regional product.

Environmental and economic security can be considered as a state of the balanced development and protection of the socio-economic subsystem of a region against real and potential threats posed by the impact of both anthropogenic and natural factors on the environment.

The conception of management of environmental and legal regulation (ELR) should join together the three main regional subsystems (institutional, socio-economic and environmental) and reveal basic principles of their interaction (Fig.1).

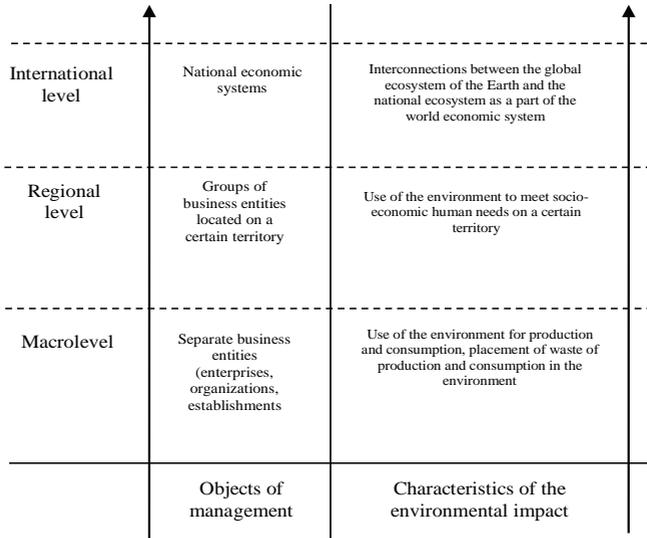


Fig. 1. Levels of environmental and economic interconnections in the system of management of the economic potential of a region [developed on the basis 5, 10]

In the context of the conception of ELR, attention should be focused on the study of environmental and economic interconnections between the elements of institutional, socio-economic and environmental subsystems of a region.

In general, taking into account the requirements of the ecological and economic security of a region will lead to a structural adjustment of the socio-economic subsystem of a region towards its ecologization.

It should be emphasized that for the successful practical implementation of the concept of ELR management, the first-order condition is obligatory expression of all interconnections between the elements of the environmental and socio-economic subsystems of a region in monetary terms, which may be characterized by the volume of income and expenditure of the socio-economic and institutional subsystems of a region. The nature of such interconnections depends on the degree of anthropogenic pressure of the socio-economic system on the environment.

Under the market conditions of economy management, one of the main conditions for taking into account the requirements of the environmental and economic security of a region is non-exceeding the integral anthropogenic load of the renewable capacity of its environmental subsystem on the environment.

Every region has its own individual maximum permitted values of anthropogenic load on the environment, which are conditioned by the individual ability of its environmental subsystem to assimilate the placement of pollutants and self-restoring.

Taking into consideration the requirements of the environmental and economic security of a region will help to coordinate the rate of the economic growth of a region and the individual capabilities of its environmental subsystem. That is, the rate of economic growth of a region should be within the range of the permitted values – to meet the individual rates of assimilation of pollutants and self-restoring of the environmental subsystem of a region. A well-known fact is that market mechanisms do not always work in terms of taking into account the requirements of environmental and economic security.

Therefore, the urgent task is to form an organizational and economic mechanism for managing the economic potential of a region, taking into consideration the requirements of environmental and economic security, and assessing the economic effect of its introduction on the basis of the system approach. With regard to the above-mentioned, we think that it is necessary to propose for consideration of interested individuals the procedure for taking into account the requirements of ecological and economic security in managing the economic potential of a region (Fig. 2).

The development of society at the present stage insistently requires the introduction of a balanced approach to solve economic, social and environmental problems. This should be considered as a logical stage in the development of human civilization faced with such global problems as depletion of natural resources, environmental pollution and signs of an ecological catastrophe. It is impossible to solve environmental problems without clear identification of the place and role of economic interests of people, their synchronization with environmental imperatives as well as formation of an ecological and legal culture, especially of those individuals who are involved in management and production.

With regard to Ukraine, it is promising to determine a new role of the state in the context of aggravating the environmental problems of its development at the regional level. The last decade has shown that it is premature to reject administrative opportunities in this sphere. The economic levers of ensuring environmental requirements in the economic activity of regions underperform without effective management, administrative control and influence. Therefore, the implementation of the environmental strategy under the modern conditions should be based on an effective economic and legal mechanism for environmental protection developed on the interaction of administrative and economic means to solve environmental problems and ensure sustainable development of regions.

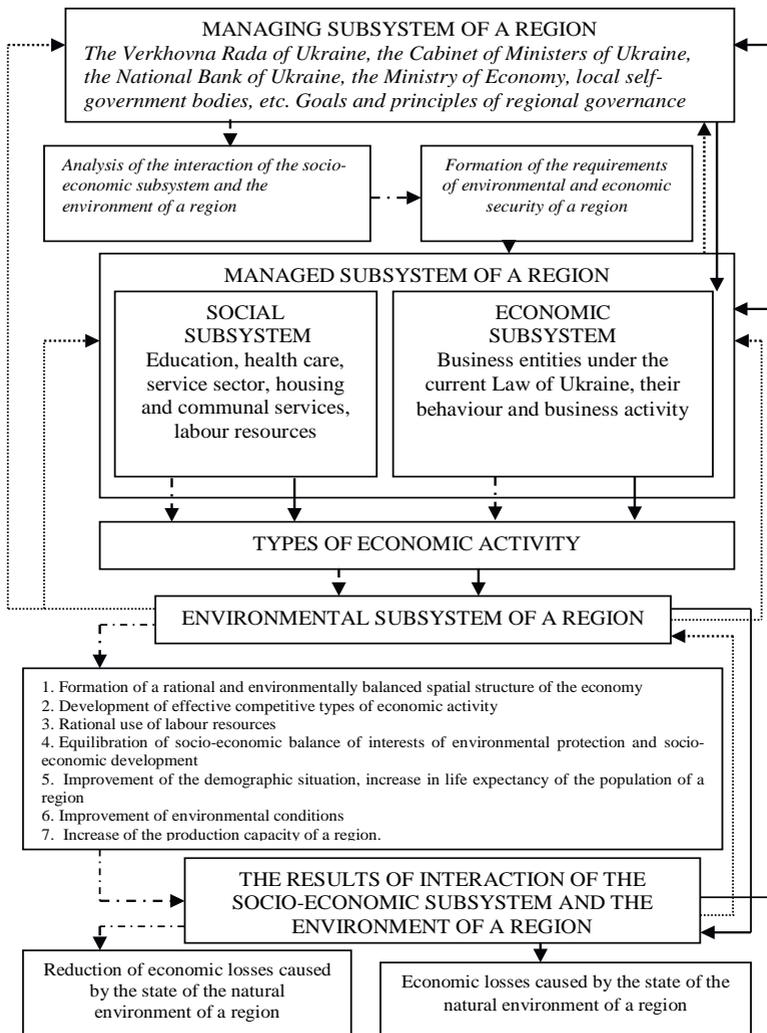


Fig. 2. Consideration of the requirements of ecological and economic security in the management of the economic potential of a region [6, 8, 9]

The task of legal regulation in this context should be, first of all, to help bring about resolution to the dispute of economic and environmental interests making environmentally incorrect activities unprofitable also economically and keeping environmental requirements in economic activities economically sound.

The economic and legal mechanism of environmental protection at the regional level provides the state policy in this area with a clear sense of purpose, formal certainty, general obligation, promotes the proper regulation of relations in the field

of ecology, the application of preventive, operational, expansionary and coercive measures to legal and private persons for the use of natural resources and their waste and legal liability for violation of environmental legislation. It is closely connected with and naturally depends on the economic, political, legal system of society, on the peculiarities of the construction and functioning of the state mechanism, as well as on the ecological and legal culture of society.

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QUALITY AND SAFETY OF FOOD AS A COMPONENT OF FOOD OF SAFETY

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As you know, food safety is one of the most important components of economic safety. In legal acts, scientific literature, international documents provide definition of food safety from different points of view. In scientific literature, food safety is treated as an economic category that defines food safety. For example, at the World food conference the term «food safety» was defined as «the availability, at any time, of adequate, nutritious, varied, balanced and moderate world food stocks of basic foodstuffs in order to ensure a steady increase in food consumption and the compensation of production fluctuations and prices» [1].

This definition is also enshrined in article 2 of the Law of Ukraine «On state support to agriculture of Ukraine» [2], which stipulates that food safety is the protection of human life interests, which is expressed in guaranteeing the state of unimpeded economic access of a person to food products in order to maintain its normal life activities.

Scientists also put forward various interpretations of food safety. So, for food safety, Pylypenko K. [3] understands such a state of the economy, in which, irrespective of the world market conditions, a stable supply of people by food is in a quantity corresponding to scientifically substantiated parameters (proposal), on the one hand, and conditions are created to maintain consumption at the level of medical standards (demand) – on the other.

Nemchenko V. [4] defines food safety as an ability to provide the population by food in the conditions of limited financial and environmental capabilities of the state in accordance with scientifically subjected norms, individual characteristics of person and his solvency and price level.

In Goychuk's O. work [5] the food safety is a level of food supply to the population that guarantees socio-political stability in society, the survival and development of the nation, individuals, families, sustainable economic development.

Thus, the analysis of literary sources indicates that food safety in these works is considered as an economic category.

Also, scientists are considering the most important conditions for achieving food safety. So, the work of Pilipenko K. [3] outlines such conditions as the potential physical availability of food for each person (their availability and supply in sufficient quantities); the economic opportunity to purchase food by all social groups of the population, including the poor (the solvency of consumer demand); consumption of high quality products in quantity sufficient for rational nutrition.

According to Ulyanchenko A., Prozorova N. [6] is such conditions as: the population of the country is provided with ecologically clean, full and healthy food products of useful production according to scientifically substantiated norms, and rationality of their consumption, taking into account age, sex, working conditions, climatic conditions and national traditions.

The availability of safe food contributes to the development of the national economy, trade and tourism, food safety and safety of food, and is one of the factors of environment development.

In the context of globalization, urbanization and changes in consumer behaviour, the demand for an ever-widening range of food products is increasing. In order to meet this demand, there is an increase in the intensity and volumes of industrial production in the crop and livestock sectors, which creates both new opportunities and new threats in terms of food safety.

Taking into account the current challenges facing food manufacturers and food industry workers, there is an additional responsibility for ensuring the quality and safety of food [7].

Consequently, besides the established economic conditions of the present, the problems of quality and safety of food products are highlighted.

One of the sources of consumer satisfaction in food is cereals, among which cereals are popular. As the object of the research were oats extra flakes «The Power of Hercules» produced by Ltd. «Hercules and K» (Ukraine, Dnipro), then for conducting research it is necessary to analyse normative documents (ND) that regulate the quality and safety of these products. At present, in the territory of Ukraine, the following standards apply to the quality of flakes (Table 1).

The organoleptic method for assessing the quality of food products is based on an analysis of the perception of reality by sensory organs (vision, hearing, smell, touch and taste) without the use of measuring instruments. According to GOST 21149 [9] in oat flakes the following organoleptic parameters are checked: appearance, color, smell and taste, and consistency. The results of the research of the organoleptic parameters of oat flakes «Hercules' Power» are represent in Table 2.

Table 1

Updating of the NS on the quality and safety of flakes

Normative document	The object of standardization and the area of distribution of activities	Actualization
DSTU 4634: 2006 [8]	Concentrates for food breakfasts dry. Flakes of cereals. General technical conditions are valid in Ukraine	from 01 July 2007
GOST 21149-93 [9]	Oat flakes. The specifications are valid in Ukraine	from 01 January 1995
DSTU 4518: 2008 [10]	Food products. Labeling for consumers is valid in Ukraine	from 01 November 2008
from 01 November 2008 GOST 26791-89 [11]	Grain processing products. Packing, marking, transportation and storage is valid in Ukraine	from 01 July 1990
SanPiN 2.3.2.560-96 [12]	Hygienic requirements for the quality and safety of food raw materials and food products are valid in Ukraine	from 24 October 1996
State sanitary norms and rules [13]	Medical requirements for the quality and safety of food products and food raw materials is valid in Ukraine	from 29 December 2012
State hygiene rules and norms [14]	State hygiene rules and norms [14] Regulations of maximum levels of certain pollutants in food products is valid in Ukraine	from 13 May 2013

Table 2

Determination of organoleptic parameters of oat flakes «The Power of Hercules»

Name of the indicator	Characteristic of the indicator	
	according to DSTU 4634: 2006	example
Appearance	Thin, roasted, of various shapes, with a surface with shallow bubbling bloating	Flakes of different shapes, evenly fried with small blobs
Color	From light brown to dark brown of various shades	Flakes of different colors and shades from cream to brown
Smell	The scent is inherent in this type of product with the taste and smell of the additives used - for flakes with additives	A pleasant cereal smell
Taste		Peculiar cereal, not sour, not bitter
Consistency	The consistency crisp, not rigid	Flakes are crisp, not rigid

Thus, extra oat flakes, «Hercules Power» produced by Ltd. «Hercules and K», according to organoleptic parameters, correspond to the requirements of GOST 21149 [9].

According to GOST 21149-93 [9] in oat flakes the following physical and chemical parameters were determined: mass fraction of moisture, acidity, weldability. The results of research are presented in Table 3.

Table 3

Results of researches of physical and chemical indices of oat flake oven extra production quality produced by Ltd. «Hercules & K»

Indicator	Value		Relevance
	normative	measured	
Humidity,% not more than	12,5	11,5	corresponds
Acidity, ° not more than	5,0	4,34	corresponds
Weldability, min.	15	15	corresponds

Thus, corresponds to GOST 21149-93 [9] oat flakes extra produced by Ltd. «Hercules and K» meet the physical and chemical performance.

Food products – the most dangerous from a medical point of view source of harmful substances for a person. The main pollutants of food include a significant amount of substances of chemical nature. Such toxic elements as lead, cadmium, copper, can accumulate in the human body and cause diseases appear gradually, without pronounced symptoms. They are distinguished by high biological activity, oligodynamic action, cumulative properties, the presence of specific, including distant, effects on the body [15].

According to Tkachuk O. and Yakovets L. [16] about 90% of heavy metals, from their total incomes in agroecosystems with mineral fertilizers, accumulate in the soil. The rest can be included in the cycle and enter the crop production, and then to the person. The most widespread heavy metal, which can migrate from the soil to human body – lead, cadmium, arsenic. It is during the introduction of nitrogen fertilizers to the soil (mg / kg): lead – 174,4; copper – 201,9; zinc – 186,4; cadmium – 1,3; mercury – 0,4; and during the introduction of phosphorus (mg/kg): lead – 138,1; copper – 155,1; zinc – 1230,1; cadmium – 2,7; mercury – 4,6. These compounds accumulate in cereals and fodder crops. The most tolerant of heavy metals is winter rye, winter wheat, oats, barley.

Since grain crops are used to produce a significant amount of daily food products for Ukrainian consumers, such as cereals, flour, pasta, bakery confectionery products, the issue of their safety in the content of toxic metals remains important. Only constant control over the content of lead, cadmium, arsenic, mercury, copper, zinc in these food products can protect you from their negative effects, which often does not immediately occur, but is the result of prolonged accumulation (accumulation) of one or another compound to the body of person. The least protected category of the population needs special protection – children whose body is most affected by low-quality and harmful food products.

The most dangerous toxic element is cadmium, in relation to which it can

be said that it is a carcinogen that kills slowly. To its negative action, first of all, include damage to the central nervous system, liver and kidneys, negative effects on phosphorous-calcium metabolism and causing the destruction of bone tissue, etc. Almost inferior to cadmium for their toxicity, mercury and arsenic. Mercury is a submersible metal, if for a long time, gradually, about 200 mg, comes to the human body, one can cause of early symptoms of poisoning – a defeat of the sensory part of the nervous system, which may be accompanied by a loss of sensitivity of the skin. Also, mercury can cause hearing impairment, blindness, coordination problems. Arsenic is the most affected by the digestive and nervous systems. Copper and zinc are the micronutrients that are needed by a person for normal livelihoods, but they become dangerous when they get an excessive amount of body. In this case, they poison the human body and cause it a series of negative changes – accelerated process of aging, there is a mental retardation, etc [16].

Oat flakes can undoubtedly be called the leader when we speak about the daily breakfast of Ukrainians. The speed of cooking, a wide assortment of products with a different price, many recipes, high consuming value make them very popular in the diet of adults and children. Therefore, the research of the content of toxic metals in oat flakes is the most actuality in present.

The content of toxic elements in oat flakes should not exceed the permissible levels established by medical and biological requirements and sanitary norms of quality of food raw materials and food products. No. 5061-89 dated August 1, 1988 Sanitary regulations and norms SanPiN 2.3.2.560-96 «Hygienic requirements for quality and safety food raw materials and food products»[12].

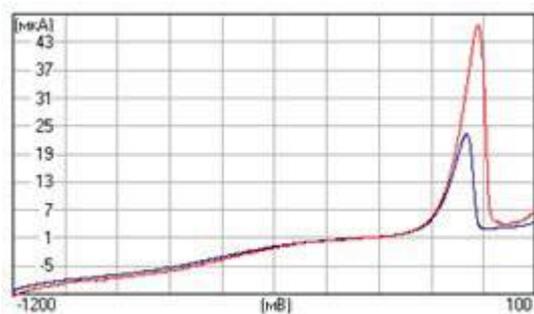


Fig. 1. Voltamperogram of the analyzed solution of flakes

Voltammetric method was used to determine the content of heavy metals in experimental samples of oat flakes based on the registration and research of the current dependence flowing through the electrolytic cell from the external superimposed voltage. Graphic representation of this dependence is called voltamperogram. At the first stage, preliminary preparation of a special solution from experimental flakes was carried out, and in the second stage – an own voltammetric research was

conducted. Voltamperogram analysis provides information on the qualitative and quantitative composition of the solution analyzed (in particular, on the content of lead, cadmium, copper) (Fig. 1).

The results of determination of the content of toxic elements in oat flakes extra «Hercules Power» produced by Ltd. «Hercules and K» are given in Table 4.

Table 4

Results of determination of the content of toxic elements in oat flakes, mg / kg

Name	Value	
	permissible levels [12]	measured
Contents: - lead	0,5	0,0758
- cadmium	0,1	0,0345
- copper	10,0	3,32

The test example is fixed 0,0758 mg/kg of lead (acceptable level – 0,5 mg/kg), 0,0345 mg/kg of cadmium (acceptable level – 0,1 mg/kg) and 3,32 mg/kg copper (acceptable level – 10,0 mg/kg). Thus, a test sample of oat flakes contains lead 6,5 times lower than acceptable level, cadmium – 2,8 times less, and copper – less than 3 times.

Consequently, the analysis of the results of the research of the content of toxic elements in the oat flakes of extra production by Ltd. «Hercules and K» showed that this food product meets the requirements of GOST 21149-93 [9] and SanPiN 2.3.2.560-96 [12] according to measured safety parameters.

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DEVELOPMENT OF THE PLANT GROWING INDUSTRY AS A PREREQUISITE FOR ENSURING FOOD SECURITY OF UKRAINE

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Plant growing plays exceptionally an important role in Ukraine's food security formation as it provides the population with food products, livestock raising with forage, food, processing and light industry -with raw materials, foreign trade - with export products. In particular, in 2017, compared to 2010, the specific weight of products of plant origin in the structure of exports of agricultural and food products increased by 12 percentage points and is 52%. At the same time 70,4% falls on grain crops, and 22,3% - seeds and fruits of oil-bearing crops [6, p. 31]. However, to date, some plant growing industries are in crisis, are low-profitable, which requires the development of measures to improve their efficiency. Under market conditions the economic instability of production is manifested not only in the productive but also in the cost component of the production efficiency. Therefore, an important place in the study of food security is the issue of economic efficiency of plant growing products production. The resolution of this issue should be carried out not only at the state but also at the regional level, where the issues of food supply to the population are solved.

Stability, productivity and efficiency as well as the level of competitiveness of an enterprise of any form of ownership are caused by the following main factors: the size of land, the level of technical and technological equipment and management. Under such conditions those entities of entrepreneurial activity, which organically combine the entrepreneurial and organizational talent of the manager with other production resources, are more effective.

The gross agricultural output in Ukraine for 2010-2017 varied, as indicated by the chain growth indices. Thus, in 2017, compared with 2016, production decreased by 3,2%, including plant growing production - by 3% [6, p. 38-39]. It should be noted that in the period from 2013 to 2017, the share of agricultural enterprises in the production of agricultural products increased from 54% to 56.4% [9, p. 47].

In the structure of the gross output of agricultural enterprises the steady predominance of crop production is 77.3%, respectively, livestock products account for 22.7% of gross output [6, p. 47].

The development of the crop sector is determined by the dynamics and structure

of the crop area, yield, the dynamics of gross fees, cost indicators - the dynamics of outlay, cost, profit, as well as relative indicators - the level of profitability and the rate of profit used to compare the effectiveness of the industry of different management entities.

During 2013-2017 there was a decrease in the area from which the harvest of grain crops in agricultural enterprises was collected by 9% and equals 10509,7 thousand hectares (66,2% of the sown area). In this case, the harvested area of sugar beet increased by 35.5% to 294.1 thousand hectares or 1.9% of the sown area of commodity crops. At the same time the harvested area of sunflower increased by 20.4% to 4980.6 thousand hectares, the specific gravity of this crop increased to 31.3%, which indicates the irrationality of the structure of the crop area [6, p. 103].

In Ukraine a steady decrease in the harvested area of potatoes, vegetable crops, fruit and berry crops is observed.

In the structure of the sown area of crops in agricultural enterprises of Ukraine the largest specific gravity is occupied by crops of grain and leguminous plants - 54.9% (Fig. 1). Among grain and leguminous crops the main place belongs to wheat - 46.2%, corn for grain - 32.8%, barley - 12.3%, while grain legumes account for 4.3%.

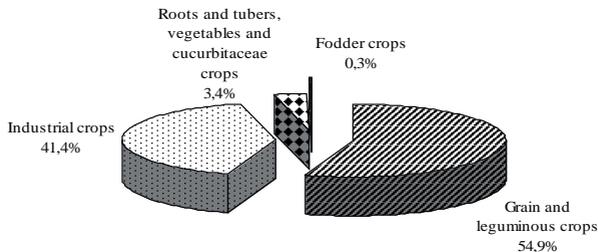


Fig. 1. Structure of sown area under agricultural crops in 2017, percentage of total area

Source: built according to the data [5, p. 13]

The second place in the structure of sown areas is industrial crops - 41.4%. Among industrial crops the main place is sunflower growing - 63.0% and soybeans - 23.0%, rape and colza have less value - 9.7% and sugar beet - 3.7%.

The share of fodder crops due to the reduction of the livestock sector is constantly decreasing and in 2017 it is 3.4%. Among the fodder crops, the largest specific gravity is fodder corn and perennial grasses for the hay and green feed.

An important condition for the growth of the economic efficiency of plant growing sectors is to increase the productivity of all agricultural crops and to reduce the material and monetary costs for the production and sale of output. Possible

reserve of improvement of the first order factors testifies experience and significant differences in the level of productivity between individual enterprises which are comparatively in identical conditions (Table 1).

Table 1

The dynamics of crop productivity in agricultural enterprises of Ukraine, 2013 – 2017

Indices	Years					Average annual growth rate, %
	2013	2014	2015	2016	2017	
Grain and leguminous crops	43,0	47,5	43,8	50,0	45,6	1,5
Factory sugar beet	419,4	490,2	448,2	494,0	484,1	3,7
Sunflower	22,8	20,5	23,0	23,5	21,3	-1,7
Potatoes	221,2	256,4	198,6	212,1	238,4	1,9
Vegetables	312,3	346,4	363,4	382,7	435,3	8,7
Fruits and berries	64,0	53,7	70,8	72,5	64,9	0,3

Source: compiled according to the data [6, p. 102].

Average annual growth rates indicate that virtually all crops have an increase in yields except for sunflower. The yield of grain and leguminous crops in agricultural enterprises of Ukraine in 2017 compared to 2013 increased by 2.6 centners / hectare (6%), but the decrease in sown area led to a 3.5% decrease in grain production.

The yield of sugar beet increased by 64.7 c / ha (15.4%) and amounted to 484.1 c / ha, while the yield of sunflower fell by 1.5 c / ha (6.6%) to 21.3 c / ha. Yields of potatoes, vegetable crops and fruit and berry crops tended to increase, but potato production decreased by 34.9%, fruit and berry crops by 24.9%.

In this regard, despite the decrease in sunflower yield, its production for the analyzed period increased by 12.2% and equals 10596.7 ths. tons.

According to the data of the table 2, 77.4% of grain production is attributed to agricultural enterprises, including 14% to farms, which is 2.1 percentage points more compared to 2013. Accordingly, the production of grain in households increased by 1.4 percentage points to 22.6%.

Sugar beet production in agricultural enterprises increased significantly as compared with households - by 11.3 pp to 95.6%. There is also an increase in the production of sunflower seeds in agricultural enterprises - by 1.1 pp and equals 86.6%, including farms - 19.3% and vegetable crops - 2.8%, although their share does not exceed 14.5%.

At the same time the production of potatoes and fruit and berry crops remains the priority of households.

The possibilities of an agricultural enterprise to realize the main strategic goal of its development - maximizing profits, are always limited to the volume of production costs and demand for products. Under these conditions, management decisions can

not be made by the management of an enterprise without an analysis of available production costs and the dynamics of their change in perspective.

Table 2

Structure of production agricultural crops by types of agricultural holdings, percentage to total production

Indices	Years					2017 from 2013, (+,-)
	2013	2014	2015	2016	2017	
Agricultural enterprises						
Grain and leguminous crops	78,8	78,1	77,3	78,7	77,4	-1,4
Factory sugar beet	84,3	92,8	92,5	95,3	95,6	11,3
Sunflower	85,5	85,7	85,4	86,1	86,6	1,1
Potatoes	3,0	3,2	2,2	2,2	1,9	-1,1
Vegetables	11,7	13,9	13,9	14,1	14,5	2,8
Fruits and berries	19,4	16,6	19,1	18,5	16,3	-3,1
Households						
Grain and leguminous crops	21,2	21,9	22,7	21,3	22,6	1,4
Factory sugar beet	15,7	7,2	7,5	4,7	4,4	-11,3
Sunflower	14,5	14,3	14,6	13,9	13,4	-1,1
Potatoes	97,0	96,8	97,8	97,8	98,1	1,1
Vegetables	88,3	86,1	86,1	85,9	85,5	-2,8
Fruits and berries	80,6	83,4	80,9	81,5	83,7	3,1

Source: compiled according to the data [5, p. 32-33]

It should be noted that during the last five years there has been some change in the cost for production plant growing output (Fig. 2).

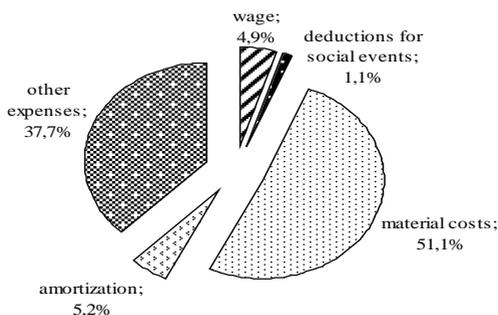


Fig. 2. Structure of Costs for Crop Production in Ukraine, 2017

Source: compiled according to [1]

In particular, the share of expenditure on labour decreased by 2.2 percentage points to 4.9%, respectively, deductions for social events - by 1.5 percentage points and is 1.1%. At the same time, the share of material costs decreases each year and in 2017 it is 51.1% which is 14.9 pp less compared to 2013. At the same time, the share of other expenditures increased by 19.3 pp by increasing the amount of payment for land lease and total production costs.

Table 3

Structure of material costs for plant growing production in agricultural enterprises of Ukraine

Cost items	2013	2015	2017	2017 (+,-) from	
				2013	2015
Direct costs of agricultural crops production including	100	100	100	x	x
seeds and planting materials	19,1	16,8	19,2	0,1	2,4
other agricultural products	0,9	0,5	2,0	1,1	1,5
inorganic fertilizers	24,4	26,6	31,3	6,9	4,7
oil products	18	16,7	17,8	-0,2	1,1
electric power	1,5	1,0	1,0	-0,5	0,0
fuel	1,7	1,2	1,4	-0,3	0,2
spare parts, repair and building materials for repairs	8	9,8	10,4	2,4	0,6
payment for services and work of other organizations	26,4	27,4	16,8	-9,6	-10,6

Source: compiled according to [1; 3; 4]

Since material costs occupy the largest share in the structure of costs and prime cost of plant growing production, it is important to analyze the structure of these costs and assess the factors influencing their dynamics (Table 3).

In the structure of material costs forming the prime cost of crop production in 2017, compared to 2013, the share of mineral fertilizer costs increased by 6.9 pp, spare parts, repair and building materials for repairs - by 2, 4 pp, seeds and planting materials - by 0.1 pp. At the same time, the share of expenses on fuel and lubricants decreased by 0.2 percentage points, which is conditioned by the active use of energy and resource-saving technologies, while the share of expenses for payment for services and work performed by other organizations decreased by 9.6 pp. to 16.8%.

Pricing for agricultural products is one of the most important ways of using economic laws for the further development of agricultural production. The index of prices on sale of agricultural products takes into account the sale of agricultural products to processing enterprises, on the market, to the population in payment for labor, shareholders for rent payments for land and property shares, exchanges, auctions and other areas. The basis for weighing to aggregate these changes is the

actual volume of sales of the respective types of products during the reporting period (Fig. 3).

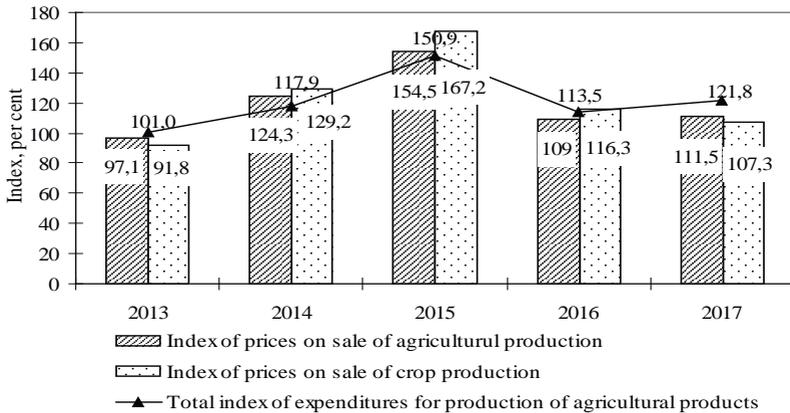


Fig. 3. Dynamics of the sales price index and the index of production costs in agricultural enterprises of Ukraine,% (to the previous year)
 Source: compiled according to [2; 6, p. 183]

As shown in Fig. 3 the largest increase in the index of prices for sales of products in agricultural enterprises was observed in 2014 - 124.3% and in 2015 - 154.5%, whereas in 2017 it decreased to 111.5%. In recent years the index of expenditures on agricultural production exceeded the index of prices of sold products, which adversely affects the financial results of enterprises.

Average prices for the sale of crop production had a steady upward trend. Thus, the price of sales of grain and leguminous crops increased by 2.9 times, oilseeds - 3 times, sugar beet - 2.1 times.

The main indicator that characterizes financial results of activity is profit. During the examine period, net profit of agricultural enterprises increased by 5.3 times and amounted to UAH 78457,7 thousand, while the share of enterprises that received net profit remained unchanged - 86,7%. The level of profitability of economic activity increased by 10.4 pp. and is 18.7% and the level of profitability of operating activity increased by 11.8pp. to 23.5% which indicates an increase in the efficiency of agricultural production [6, p. 174].

In general, agricultural enterprises in Ukraine have an increase in the efficiency of plant growing production (Fig. 4).

Thus, the profitability level of grain and leguminous crops production increased by 22.6 pp and is 25%, the efficiency of production of sunflower seeds - by 13.1 pp to 41.3%, the efficiency of beet sugar production - by 9.3 pp. and equals 12.4%.

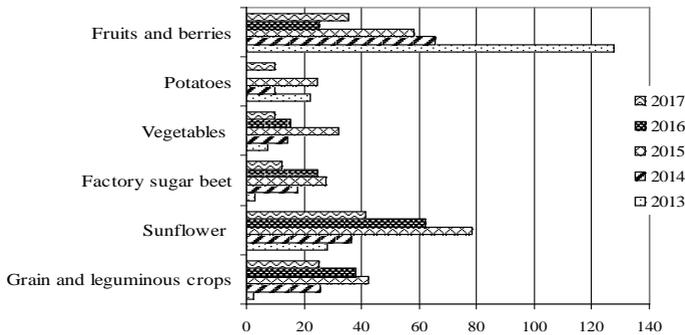


Fig. 4. Dynamics of the profitability level of plant growing production in agricultural enterprises of Ukraine, %

Source: compiled according to the data [6, p. 177]

Consequently, in the development of plant growing industry the following trends, which determine the level of food and economic security in Ukraine, are observed:

1. The expansion of industrial crops areas (sunflower and soybeans) by reducing the sown area of forage and grain crops.
2. The increase in crop yields is relatively low due to the low level of implementation of innovations and information technologies.
3. The growing role of farms in the production of grain crops and sunflower seeds.
4. The production of potatoes and fruit and berry crops remains the priority of households.
5. In the structure of the production costs of the plant growing production sector the share of other expenses constantly increases due to the increase of rent and total production costs.
6. In the structure of material costs changes are gradually taking place in favour of increasing the share of expenses for mineral fertilizer and spare parts, repair and building materials for repairs, while the share of expenses for the payment for services of other organizations substantially decreases.
7. The effectiveness of plant growing production varies considerably over the years due to a significant increase in the cost component compared to sales prices.

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THE STRATEGY OF INNOVATION SUPPORT FOR AGRARIAN ENTERPRISES AS AN ELEMENT OF TECHNOLOGICAL SAFETY

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In market economy, the most important condition for enterprise development is of competitive production. One of the directions of its support is the effective use of scientific, engineering, and technological potential, the revival of creative activity of inventors and industrial rationalizers.

Scientific and technical progress in agriculture involves the improvement of machines and mechanisms, the organization of production technology, soil cultivation systems. The high use of machine and tractor fleet is ensured by the establishment of rational technological, technical and organizational systems and other measures to implement the properties of agricultural machinery with designed features that guarantee high productivity in specified agricultural and technical terms with the greatest economic efficiency.

Technological safety is an enterprise security from internal and external factors that break appropriate functioning of the support systems, threaten the effective operation of production systems and life-support systems, thus causing a threat to the enterprise itself.

The task is, besides a significant increase in the returns from the existing production potential and agricultural equipment designed on the basis of the latest technology, to create new models of machines and units, which would significantly improve the productivity and efficiency of land and labor resources. This problem becomes more acute in the conditions of development of market relations in

agricultural sector, land reform, spreading of new organizational forms of economic management.

Solution to the problem of choice and highly efficient use of both specific machine-tractor units, technological complexes, and machine-tractor farm fleets with the aim of maximizing agricultural production should also be based on intensifying the improvement of innovative activities, not only at agro-industrial enterprises, but also in research institutions [2, p. 95].

For a long time, agriculture has been developing mainly due to extensive factors, while traditional evolutionary processes and phenomena have been dominating in the production process. These extensive factors have practically run their course, and their impact has become economically unprofitable.

Development and identification of modern production should be almost entirely based on new solutions in the field of technology, engineering, organizational forms and economic methods of management, that is, various innovations introduced into production.

The factors that slow down the assimilation of innovations in agriculture are, first of all, a lack of own financial resources and high rates on loans of commercial banks, a decrease in domestic demand and economic risk of new product development. Science, innovation and training are requirement for agricultural producers. Development of productive forces also occurs in the context of close interaction between new technologies and production.

Only radical measures for introduction of new technical and technological solutions, modern production processes useful for competitive goods manufacturing will allow agricultural enterprises to get out of protracted crisis.

Economic development of any agricultural enterprise is possible only on the basis of scientific and technical progress, regardless of the motives and forces that move the production process. In macroeconomic aspect, new scientific and technical achievements and their feasibility create conditions for widening of investment and so increasing agricultural output. Moreover, the relevance of using the achievements of scientific and technical progress arises only if the possibilities of the economic system development are completely exhausted, that is, additional financial inflows into the branch at this knowledge level are no longer able to provide a minimum of equivalent output growth.

Introduction of scientific and technological developments into production is an important issue for entrepreneurs of agricultural enterprises. After all, current political and economic conditions require of agricultural producers to improve engineering and technology, in order to ensure a strong position in the market of agricultural products and the largest possible profitability [5].

Economic transformation in agrarian sector of Ukraine should be oriented to sustainable and balanced development by means of the improvement of market relations, based on the innovation-investment model, the use of the latest advances of scientific and technical progress (STP), the expansion of information and

technological space, taking into account the needs of the post-industrial society. Activation of innovative-investment processes ensures the introduction of world-class leading and newest technologies into production, accelerates scientific and technological progress and further economic strengthening of the state. The level of development of scientific and technical sphere (science, education, knowledge intensive industries, world markets and technology) distinguishes the boundaries between rich and poor countries, creates the basis for sustainable economic growth, and innovation processes are the driving force of strategic economic growth [1, p. 63].

M. Zubets and O. Vasiliev state that there are several approaches to formulate the essence of innovations in the literature. There are two most common points of view: in the one instance innovation is considered as the result of a creative process in the form of a new product, technology, method, etc.; in other one – the process of introducing new products, elements, approaches, principles instead of existing ones.

For the agrarian sector, it is the second point of view that is more responsible, because it is a primary consumer for innovations [6, p. 194].

At the same time, it is expected that when introducing innovations in agrarian enterprises, based on a systematic approach, all innovative activities at the enterprise should not be one-time, but reproductive all the time. Therefore, all these activities should be interconnected with each other (both in space and in time) and provide together the appropriate economic development of the enterprise.

Overall, innovation means the development and the use of new engineering and economic tools, methods and techniques for optimization of production and the release of new, high-quality goods. This eventually increases productiveness in any industry and sphere of economy and living standards of population, improves working conditions, saves production resources, reduces negative social and environmental effects of economic activity, and such like. In other words, innovation is the use of new effective engineering and technological, organizational solutions in the economic and production activities [3, p. 19].

Changes in consumer demands cause a corresponding restructuring of scientific and technical policy of companies, directing it to improve the most important consumer-oriented characteristics of products. In order to take into account changes in market demand of an enterprise, before starting work on new products, they tend to identify the development trends of consumer demand better, try to predict the appearance of new, special product requirements. There is a range of scientific and technical problems to be solved based on the predicted consumer demand.

The main directions of STP in the agrarian sector are:

1. Complex mechanization and automation of production, the use of robotics and flexible production systems. The example of this is No-Till – a technology of zero tillage. It avoids mechanical method of soil loosening: cultivation, ploughing, harrowing, etc. The No-Till system involves only sowing and harvesting. Scientific

studies have shown that traditional ploughing causes more erosion than water and wind, a decrease in organic content matter in soil and a deterioration of ecological state as a whole.

2. Complex automation and regulation of production management processes based on electrical and computer engineering. Integrated automation system of production management should be created. Precision Farming has been used in European countries for a long time. It involves the following elements: precise machine control, data management (analysis and management of factors affecting soil fertility), planning, control and analytics.

The most important problems in the field are low skilled workers and a lack of willingness to work that negatively affect the profits of an enterprise. Precise machine control reduces the impact of human factor on the quality of work, but does not deny it at all. No less important one is almost general lack of reliable data on soil. This situation is especially serious for large enterprises where managers do not know the exact size of rented areas and their quality characteristics.

This data is very important for specialists to predict and analyze yields, the basis for the development of technological maps for each specific field and crop, otherwise, no overruns can be avoided. The use of satellite technology in agriculture is not only possible, but also extremely effective [4, p. 138].

The most expensive systems can be very effective in very large farms, where it is difficult to control the quality of work performed. The main difference in them is the use of more complex terminal. This device receives a task from the agronomist's personal computer. The content of the task is typically particular field name, its area, the estimated work time, mechanic's name and the like.

3. The use of new types of energy and its new sources in processing. Secondary energy raw materials mainly include biomass of plant or animal origin, as a result of «pre-processing» of plant products in animal activity (manure, muck). This raw material is used to produce biogas by the method of oxygen-free fermentation (dry fermentation). In this case, 60% of organic matter of biomass is converted to biogas, the residue is used as organic fertilizer. Experts predict that in the near future up to 12% of global demand for diesel fuel will be met by liquid biofuels (biodiesel and bioethanol).

Vegetable oils can be used as liquid biofuels for diesel engines in unprocessed or processed (ester) forms. The main producers of biodiesel in Europe are: Germany – 450 thousand tons, France – 364 thousand tons, Italy – 210 thousand tons (2017). In 2019, it is planned to increase this product by more than 6 mln. tons [1, c. 125].

4. The application of genetic engineering and biotechnology to improve crop varieties, the creation of artificial feed and medical products. The contribution of biotechnology to agricultural production is to ease the traditional methods of plant and animal breeding and to develop new technologies that improve the efficiency of agriculture. Genetic engineering growth hormone, as well as transplantation techniques and micromanipulation of embryos of domestic animals, are used to

create more effective breeding technology. It is used feed protein, obtained by microbial synthesis, to improve the productivity of animals.

5.The use of technological advances, electrical engineering and computer technology in new models of machines and equipment.

In the economic conditions, agricultural engineering should focus on speedy assimilation of the latest innovations and achievements of world agricultural engineering. Its task should be a radical (by a factor of 2-3) increase in the productivity of agricultural machinery and its technological efficiency, a decline by 30–40% in energy and material intensity and the total machinery requirements(by a factor 2–2.5). This can be achieved by means of the combination and integration of technological processes and operations, modular-block construction of powerful units and complexes. New technology should ensure the application of progressive world-class achievements in agricultural production technologies [3, c. 22].

6.The application of energy conservation methods, resource-saving and nonwaste technologies, as well as energetic products with low environmental pollution.

The ways and directions of STP show that only those countries that are able to «move» with world economic trends can expect to succeed in the future.

Managers defines innovations as new approaches (ideas) to the management and marketing, investment in machinery improvement and introduction of new technologies in production, as well as the use of advances of scientific and technical progress in their economic activities.

The evaluation of the effectiveness of innovative projects is not yet the key to its successful implementation in enterprise. Any innovative project can remain only a good alternative to the current business processes.

In order to improve innovation activity at agrarian enterprises, we can propose:

- to expand a circle of innovators;
- to shorten the research and production cycle “innovative idea – development prototype - production”;
- to create laboratories of agricultural products quality and research.

In order to improve the implementation and use of innovations for the machine-tractor fleet of agrarian enterprises, we offer the following directions that will be economically beneficial for the enterprise (Fig. 1).

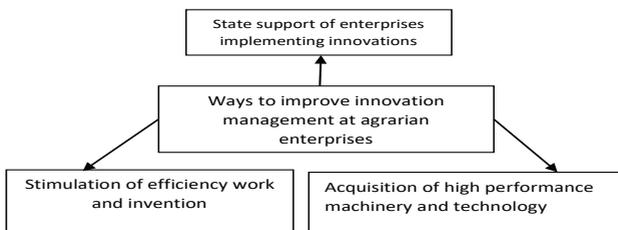


Fig. 1. Ways to improve innovation management at the enterprise [author’s development].

At the same time, one of the directions for improving innovation activity is to find technologies that fit natural laws of soil formation in order to increase crop yields and cut the cost of grown products. Energy saving is a way to reduce the production cost. Low cost production is a condition for its competitiveness in domestic and foreign markets.

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CURRENT STATE AND WAYS OF SOLVING RESOURCE CONSERVATION PROBLEMS AT THE ENTERPRISES OF THE PROCESSING INDUSTRY OF UKRAINE

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The processing industry today is one of the most important components of the national economic system of Ukraine. The main purpose of Ukraine's processing enterprises is to meet the needs of the population in quality and affordable food products.

Today in the system of the economic development there arises an economic situation, in which resource conservation and renewal play a crucial role. Their implementation requires constructing a holistic and multilevel model of the enterprise management based on resource conservation development of the economic agent.

The processing industry occupies an important place in the functional branch structure of the agribusiness of Ukraine and develops in close interconnection with its central link - agriculture. Consuming over 50% of the agricultural products of Ukraine, the processing enterprises provide animal husbandry with feed resources through the use of secondary waste from the manufacturing of feed products [1].

The processing industry maintains strong links with agriculture and machine building, which supplies the chemical, microbiological and food industries with processing technological equipment. There is a close relationship between the processing and food industries. Processing industry supplies the food industry with raw materials for their further processing, in particular, alcohol, oil, starch, sugar, etc. The processing enterprises links with agriculture are the most effective ones. The process of interaction between agriculture and processing industry is based on the organizational, economic and technological unity of production, storage and processing of horticulture and animal husbandry products. The processing industry complements the food industry and supplies raw materials and semi-finished products for their further processing. Active processes of the international integration make more urgent the tasks of increasing the role of the processing industry, its economic growth and competitiveness in the domestic and foreign markets [2].

One of the important conditions for ensuring the growth of the country's economy is the efficient development of the processing industry. Its function is to optimally meet the needs of the population of the country for the quality, economically and physically accessible food products, under the condition of predominantly self-sufficient state with adjustments for participation in the globalization processes [2].

The issues related to the functioning of the Ukrainian processing industry and ways for improving the efficiency of the processing enterprises were investigated by such scholars as Fedorus Yu., Pedram D., Mnykh O., Ivanova D., Artemenko L., Pochernina N., Mazur O., Kuvshynova A. and others.

The paper is aimed at studying the existing problems in managing the enterprises of the processing industry of Ukraine and ways for solving them; defining the stages of the development and implementation of the system of management of the enterprise resource conservation development in the processing industry.

The main problems of managing the enterprises of the processing industry of Ukraine related to the issues of resource use and resource conservation are the following:

1. Internal factors:

- high indicator of material intensity of products;
- low profitability with negative dynamics of this indicator in time;
- high cost of production and, consequently, uncompetitive price;
- outdated material and technical base;
- high indicator of resource intensity of products;
- ineffective use of material, financial, information, human and intangible resources;

- not taking into account the factor of time in manufacturing products;
- lack of clear long-term strategies, including and strategies in resource conservation;

- lack of an effective system for managing the enterprise resource conservation development.

2. Relative to competitors:

- low competitiveness of products in the national and global markets;
- a large number of competitors in the national and global markets.

3. Relative to the state:

- lack of an effective state program of support for agricultural producers;
- decline in purchasing power of the population, reduction in demand for products [3].

In addition, the processing industry is characterized by a low indicator of innovation activity and investment attractiveness of the industry.

Topical is the issue of the efficiency of the processing industries development, meaning a specific sectoral form of manifestation of the economic relations aimed at satisfying the needs of the society.

The main factor in improving the efficiency of processing industries is the development and implementation of a modern innovative scientific and technical model of production, the main components of which should be the development and use of resource and energy conservation technologies, fundamentally new types of machinery and technology; formation of knowledge-intensive production processes, competitive processing facilities, perfect mechanism of innovative development of the processing industries; ensuring efficient stimulation of the innovation activity of the processing enterprises [4].

Despite the fact that the state policy of Ukraine is aimed at reducing the resource and energy intensity of the processing industry products, domestic products have indicators 3-4 times higher than the analogous ones in the developed countries. The problem of the further reduction of resource and energy intensity is that no effective management mechanisms for the enterprise resource conservation development have been created at the appropriate levels [5].

Taking into account that the production of goods in the processing industry requires significant expenditure of resources, with energy in the first place, advanced foreign enterprises pay considerable attention to resource conservation through reuse and reduction of industrial waste, improvement of production equipment and an active introduction of alternative energy sources which not only help minimize the costs of the enterprise, but also are environmentally friendly and reduce the negative impact of the enterprise on the environment [6].

Today, in order to increase the efficiency of management of the resource conservation and resource conservation development of the enterprises in the processing industry, it is extremely important to pay attention to the following issues:

- full use of resource-saving technologies and the latest equipment at all stages of production and sale of products;
- conducting a thorough analysis of the use of resources at all stages of the life cycle of manufactured products;
- development of the new and application of the existing methods for the analysis of the efficiency of use of all resources of the enterprise;
- application of the forecasting techniques in the process of assessing the efficiency of the resource use;
- selection of the effective methods for motivating the enterprise managerial personnel;
- adopting new approaches and methods of management of all kinds of the enterprise resources [3].

The development of an effective system for managing resource conservation development (RCD) of the processing industry is extremely important today both at micro and macro levels. Implementation or improvement of the existing RCD system will allow to improve the quality of products, increase production and sales, rise profitability indicators, increase competitiveness in the national and global markets, cut production costs, increase social responsibility of employees, ensure the production of environmentally friendly products, reduce emissions into the atmosphere resulting in the absence of fines for environmental pollution.

The main stages of the development and implementation of the RCD system of the processing industry enterprises are the following:

1. Collecting information on the efficiency of using resources at an enterprise;
2. Sorting and analysing the collected information;
3. Calculating the indicators of the resource conservation level in separate areas;
4. Identifying problematic aspects of the enterprise resource conservation activity;
5. Developing the system of management of the enterprise resource conservation;
6. Organizing the resource conservation management at the enterprise;
7. Developing and introducing measures motivating personnel for useful suggestions on increasing the efficiency of using resources, and supporting resource conservation measures;
8. Following the recommendations and exercising control over the implementation of the measures developed;
9. Defining the strategic directions of the enterprise RCD [7].

Conclusion The main types of resources at the enterprises of the processing industry are material resources. In the process of economic activity, and forming a system of management of the enterprise resource conservation development particular attention is given to the energy resources. At the same time, scientists and business executives almost do not take into account the financial, human, information, intangible resources and time that underlie our further research.

Therefore, the use of many areas of energy conservation technologies is, on the

one hand, quite attractive for Ukraine. But at the same time, the main obstacle is the high cost of equipment, which hinders the process of its introduction at industrial enterprises. The issue of the processing and reuse of secondary resources in Ukraine also requires much attention in terms of improving the efficiency of the processing industry and Ukraine's economy as a whole, as well as from an environmental point of view. In addition, it can be noted that the leading domestic enterprises do not use numerous foreign developments in the management of resource conservation development. In this regard, the study of the world experience in managing the enterprise resource conservation development is particularly relevant.

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CONCEPT OF ACTIVE MARKETING INFLUENCE ON GRAIN PRODUCTION IN THE CONTEXT OF FOOD SECURITY

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Grain and grocery store is one of the leading sectors of agriculture, the sale of products of which provides the most significant foreign exchange earnings of national and foreign agro-traders operating in the Ukrainian grain market. In the geopolitical sense, due to the food component, Ukraine is able to play a much larger role in the world due to the sale of non-grain, prices for which are unstable and depend on the offer (for example, due to favorable weather conditions, providing a good gross yield, national producers significantly lose less revenue from - for price reduction, often leaving, for example, in 2018, corn on the field), and products with much higher added value, for example, starch, flour, mixed fodder, pasta, frozen x semi-finished products made from flour, gluten, corn syrup, butter and the like. That is, by reinvesting a portion of the profits obtained from the sold unprocessed grain production, the modern agricultural sector of Ukraine is uncompetitive, such that it does not ensure either national or world food security. The problem of optimizing grain processing depends to a very large extent on factors affecting both the consumer market and raw grain suppliers (agricultural enterprises, grain traders, and so on). They limit the possible intensification and increase the efficiency of processing of grain products.

In other words, the general trend is that, starting from a certain point, further market influence increases the financial and economic pressure on agricultural enterprises - potential suppliers of raw grains to the level at which agricultural producers begin to significantly reduce the quality of grain to create their break-even conditions. Other negative influences on the connections of objects of the agro-industrial sphere are also intensifying.

Existing models, for all their importance, cannot take into account the entire sequence of changes in the quality of grain raw materials for a processing enterprise and therefore cannot optimize the plan of marketing impact on crop production with the aim of obtaining a given result over long time intervals (planned periods). It is expedient to formulate the task of formulating a mathematical model for selecting actions, or rather, selecting approaches for optimal impact on crop production through the technological system of an agricultural enterprise in order to ensure the production system of the processing enterprise with high-quality grain raw materials. It is necessary to take into account the limitations of the considered models and find a way around and solve these limitations.

The direction that allows you to find a solution lies in the concept of active

marketing impact on grain production with a given qualitative load.

First, you need to decide on the terminology with which the author tried to reveal the specified concept.

We consider the production process of a grain processing enterprise in the framework of this work as a set of technological and natural (biological) processes aimed at transforming the grain production of agricultural enterprises into a finished product with desired consumer qualities. The organization of the production process in grain processing is based on knowledge of the patterns of changes in the basic properties and conditions of the grain, determine the quality of grain raw materials during the course of technological processes.

The production process in agriculture as an object of active influence of the marketing system of a grain processing enterprise is considered by as totality of technological and natural (biological) processes aimed at obtaining agricultural products of a given quality.

The organization of the production process in plant growing is based on knowledge of the patterns of changes in the properties and states of the soil and other resources during the flow of technological processes in the process of creating grain.

The period of time during which the production process is performed (from the start of work to the final product) in both cases is called the production cycle. The difference is only in the time shift of the cycle, due to the sequential location of agricultural enterprises and enterprises of grain processing in the production system of the agro-industrial complex. That is, if we assume that the grain processing enterprises are engaged in processing the current grain crop, then at the same time the agricultural enterprise implements the production cycle of growing the crop for further processing.

By the state of grain quality, we mean a certain set of indicators or its k -dimensional vector, determining the yield of grain processing products, which can be minimized into a generalized indicator of the quality of raw materials.

Similarly, the condition of the resource supply of an agricultural enterprise (including natural resources) will be understood as a specific set of indicators or its k -dimensional vector, determining the yield of grain crops, which can be minimized into a generalized indicator of the resource potential.

The production process of obtaining agricultural products is realized in the technologies of cultivation of a particular crop in certain conditions, which determines the quality of the grain, as a controlling impulse to change the efficiency of the grain processing technology. Therefore, it is appropriate to note that in this formulation of the question, the efficiency of the technology of agricultural enterprises is the determining factor in the efficiency of the grain processing technology.

We will call a set of technological methods, methods of processing, changing the state and properties of the soil, other resources, technological materials or plants that are used at certain points in time, in strict sequence and in compliance with the

requirements of agrotechnical tolerances in the process of its cultivation.

To determine the degree of optimal active marketing impact on grain production with a given quality load, it is necessary to define the concept of a single technology or technology, it is used with a single intensity.

The production of a unit of a certain product is a technology with unit intensity. A single technology is formalized as a vector, the components of which form the following sets. The first is a multitude of products. In other words, a single technology allows the production of several types of products, and their ratio is constant. Next comes a multitude of costs, with each cost element being determined by a standard for a single technology. This means that using this technology with a unit intensity, it consumes exactly the product a_j (factor of production of the resource potential).

In order to reflect the interests of grain processing enterprises, technology impact components are introduced on the level of components of the product being produced, which determine the quality of grain (gluten, protein content, etc.). For example, the use of technology with a single intensity leads to certain changes in the content of protein and gluten in the grain, due to changes in the timing of agrotechnical operations.

The concept of unit technologies allows the use of various models of linear optimization. The classical form is the task of choosing the intensities of technologies that maximize a certain performance criterion (or minimize it). For agricultural production, a single technology is determined by the area of arable land of one hectare, since all expenditures and output are specific indicators, that is, they reflect the volumes related to one hectare of arable land.

There are main and auxiliary technological operations. The main technological operation is a part of the technology; it has a complete effect, as a result of which the processed material (resources: seeds, soil, plant, etc.) acquires a new position or property. Auxiliary technological operations are a set of works to ensure the implementation of basic operations (preparation of units, fields, control and assessment of the quality of work).

Having defined the terminology, we will briefly review the process of obtaining products at agricultural enterprises, which potentially have consumer value for grain processing enterprises.

The vast majority of crop farms provide production based on crop rotation. Crop rotation is the alternation of crops on the same land area over a number of years. It is organized to support soil fertility. Crop rotation takes place in time and space, and is characterized by a period of rotation - the number of years during which the crops of all cultures, gradually alternating, will go through all the fields included in the crop rotation. Crop rotation is extremely important for balancing the load on natural resources, while at the same time for processing enterprises they are guidelines for the formation of a sustainable cyclical nature of the production system of the current supplier of grain products. That is, the subordination of its structure to the

goals of the technological system of the processing enterprise is not rational, since it will lead to a deterioration of the resource base of agricultural production, which will affect the quality of the grain supplied. However, combining the structure of individual grain crop rotations of different producers and suppliers of grain will create favorable conditions for mutual benefit in the form of high-quality grain raw materials while observing environmental management standards.

Each field of crop rotation has unique characteristics of soil fertility. These differences are due to different ancestral cultures, as well as to the various technologies used for the production of vegetable crops. Under these conditions, a specialist needs to select technologies for each field so as to grow the maximum quantity and quality of the crop, without violating the conditions for rational use of resources, which determines the conditions for the formation of the quality of future grain yields. At the same time, each technology requires different costs, characterized by different yields (revenues), the quality of the products obtained and the impact on the state of soil fertility.

Summing up, we note that from the point of view of an active marketing impact, the technological process in crop production performs two functions: the production of agricultural products in quantitative and qualitative assessment. For the grain processing enterprise, the quality parameter, as an integral indicator determining the output of finished products, is of exceptional importance. For agricultural enterprises it is important to obtain the quantity (volume) of products necessary for the formation of the break-even activity conditions. At the same time, the tasks of grain producers also include the observance of the balance of resource use. Thus, the task of an effective marketing system for the raw material supply of grain processing is the development of an action plan for the production of the target grain product while respecting the interests of all participants in the value chain, that is, a plan for ensuring the synergy effect.

From here you can determine a synergistic acceptable technology or technology with a given quality load. Synergistically acceptable technology is a method of using factors of production in which the volume of production and the quality of grain (or its state vector) will vary within acceptable limits, while respecting the parameters of rational resource use.

Such a definition is only sufficient if one-step technological process is considered. If you try to optimize a set of technological processes from several steps, at one of them the quality parameters may fall below the permissible level, compensating for this drop by significantly increasing it in the next steps or planned periods. So, it would be better to determine the sequence of technological transformations carried out in the framework of a given crop rotation. The sequence of technological methods of production, in which the quality of grain products at the final stage remains within acceptable limits, will be called a sequence of synergistically acceptable technological transformations or technologies. In essence, therefore, the planning process for the long term is reduced to the definition of marketing and

technologically acceptable sequence of technologies. With such a concept, the tasks of sustainable development of grain processing enterprises in the current conditions of agricultural production are formed.

Since the technological process of an agricultural enterprise from the point of view of grain processing forms the volume of grain production and the quality parameters of grain, it is natural to raise the question of what is more important for grain processing enterprises - quantity or quality. It is obvious that such questions arise when the decision is difficult or impossible to evaluate by a single criterion. Since we are talking about commodity production, naturally, at the level of an agricultural enterprise, it is optimal to plan economic activities in such a way as to maximize the amount of grain that forms gross income. However, as noted, such an orientation affects the quality of the grain produced in the negative direction, forming a predominantly extensive way for the development of grain production. The restrictions imposed to regulate a given grain quality at each production cycle also do not solve problems, and such models have already been considered. So, the criterion for maximizing gross volume and the conditions for maximizing the quality of grain belong to the Pareto region, and it is practically impossible to build such a region, since both such criteria are related through technological processes.

Consequently, such procedures as man-machine program complexes or the construction of value functions are impossible due to the fact that the process of production in a quantitative and qualitative sense is a single process. Moreover, as has been shown, it is not limited to one step. This means that at some stage of production it is possible to maximize the volume of production, neglecting the quality of the grain, and at some step, on the contrary, it is advisable to improve the quality by reducing the gross volume. In other words, this process should take place over a sufficiently long time interval, including at least the duration of the rotation period.

The next stage in the development of the concept is the formation of the criterion and the general principle of choosing the optimal planned trajectory of grain production for the needs of grain processing enterprises.

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PECULIARITIES OF FUNCTIONING OF SECURITY MANAGEMENT SYSTEM AT DOMESTIC MEAT-PROCESSING ENTERPRISES

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Nowadays, it is absolutely common that some Ukrainian producers are operating successfully while the others have to constantly defend their positions, being in a survival state. The activity of industrial enterprises operating on the verge of profitability are influenced by several factors such as production of low-quality products, deficit of high-quality raw materials, low purchasing power of population, etc.

At the background of such crisis situation, the need for a coherent link between external and internal markets in the context of integration processes is of great importance. It should be noted that integration affects not only interaction of markets but also the choice and implementation of the specific forms and methods of this cooperation. Therefore, we must state that achievement of socio-economic security and development of an effective system of production activity management

determines successful operation of domestic industrial enterprises.

The problems of economic security management have become the subject of interest for Ukrainian and foreign scientists. In particular, such authors as Z. Zaloha, M. Zemlianyi, M. Kovalok, O. Korobchynskiy, M. Krupko, L. Maliuta, I. Mykhasiuk, V. Ortynskiy, S. Pyrozhkov, T. Khvorost, Z. Yakubovych and others have been interested in this problem. However, monitoring of published works of the above-mentioned authors demonstrates the lack of generally accepted understanding of the essence of economic security management and the mechanism for management of economic stability of enterprises in general (not only meat-processing enterprises).

The research purpose is to study the peculiarities of formation and functioning of economic security management system at the industrial enterprise in detail and to substantiate its role in the process of economic activity.

However, before the direct analysis of preconditions of formation of the system of economic security management of production and economic activity of meat-processing enterprises, it is necessary to highlight the specific conditions for their operation. For example, a group of companies core business of which is production of agricultural products (agrarian holding company) quite naturally prefers export of manufactured products, trying to achieve large production output at the expense of large production. Hence, agrarian holding companies unlike small industrial enterprises have more powerful material and technical support.

The object of our research was the agrarian holding company LLC “Ahrokhodyn Avanhard”. It is one of the most powerful agricultural companies specializing in production of shell eggs and dry egg products. Enterprises of the “Ahrokhodyn Avanhard” company are located in 14 regions of Ukraine and export products to 40 countries throughout the world. The infrastructure is represented by 19 poultry farms, 6 feed mills, 3 hatcheries, 10 zones for laying hens, long term storage facilities. We have chosen this company due to the fact that despite successful operation, the agrarian holding company does not have its own special farm land, although at the same time it is able to remain a leading domestic producer of meat products for a long time (33.3% of the gross production of poultry meat). Experts believe that vertically integrated production cycle plays an important role in this.

A similar principle of production was introduced at the agro-industrial company “APK-invest” which has a closed cycle of production of chilled pork (from breeding raw materials, feed production and further sale of meat). Agro-industrial holding “Myronivskiy Khiboprodukt” is developing the alternative direction (growing of fruit) to poultry meat production. The vertical principle of production used by this company enables to control production costs as well.

The formation of an open socially oriented market system, as we know, is not possible without effective foreign trade relations algorithm. Under the terms of membership in the World Trade Organization state policy should be based on the principles of reduction of producers’ direct funding and price support. Therefore,

there is a need for the following fundamental rearrangements: changes in the national economy's structure in the context of its competitiveness; improvement of the export mechanisms (by increasing output of products with high added value); general support of the industrial enterprises which produce export products. Successful implementation of the above-mentioned measures will favour to strengthening of the national economy but it has to be stated that they have just declarative character. Today, existing standards, because of their non-coordination, create only technological obstacles and trade barriers. As a result, our state realizes only 48% of the livestock potential according to the official data of the specialists of the National Academy of Agrarian Sciences of Ukraine. There are several reasons for this situation. Firstly, intensification of foreign economic operations is impossible without development of adequate regulatory and legal support. Secondly, it is necessary to change the standards of animal assessment in order to assess meat's yield, not animal's weight. So, domestic producer will be able to provide both domestic and foreign market with products. Thirdly, low (20% at the state level) indicator of feeding with mixed fodder is also an important factor.

So, Ukrainian companies prefer the domestic market, considering the export activity to be unattractive and risky. By the way, factors which favour that are as follows:

1) most of products do not meet the world's quality standards; 2) operations on the domestic market are characterized by high profitability; 3) insufficient level of production and market concentration; 4) difficulties at the stage of VAT reimbursement as a result of export operations.

We believe that the further reduction of meat products' export and growth of import will provoke a decline in domestic production as a whole. The active granting of benefits to meat-importing companies will result in price abatement of meat for the period of several months. As a result, Ukrainian producers will receive fewer profits and will not be able to increase number of cattle and pigs.

Thus, import on preferential terms and combinations of other above-mentioned factors negatively affect the development of livestock farming, reducing production rate and livestock. We strongly believe that it is possible to radically change the situation by reformatting meat market and improving the regulatory framework in the field of export-import operations with meat products. It is also very important to coordinate the adopted Ukrainian standards with similar EU standards. This would make domestic products more competitive.

Relations between meat producers and raw material processors are not ideal concerning the problems of raw material supply and adequate pricing. Experts point out that today Ukrainian meat product complex is not enough to provide industrial enterprises with their own raw materials. As a result, market is filled with imported meat, which may not always meet the safety and quality standards. Prices of meat and meat products will decrease due to integration of cooperation between livestock enterprises and producers specializing in processing of meat raw material.

Considering researched material, we have established that in the modern conditions of management, domestic meat-processing enterprises are forced to independently take care of their own production in general and sustainable development in particular. First of all, it is necessary to develop an effective system of managing the economic development of an enterprise.

The term “economic security system” means an arsenal of organizational, managerial, technological, techno-preventive and marketing measures, the purpose of which is qualitative protection of business interests from existing external and / or internal threats. This definition shows complexity of the analyzed concept but ignores the fact that in the process of this system realization it is necessary to analyze probable risks and costs which arise as a result of non-compliance of economic interests of the entity and losses minimization.

Other researchers also offered their own definitions of this concept. Thus, Leonid Donets defines the system of economic security as “a combination of dependent elements which guarantee relative security of the industrial enterprise and contribute to the achievement of business goals” [1]. According to the researcher, the main attributes of this system are a subject, an object of security, a set of practical actions aimed at its achievement and the mechanism of its implementation. T. Ivaniuta and A. Zaichkovskiy [2] define the analyzed system as a deterministic combination of interconnected elements, the purpose of which is to achieve an enterprise security. The object and subject of security, mechanism and security policy are the elements of this system according to the researchers. So, the components of the security policy are its goals, objectives, functions, principles and security strategy in particular. V. Ortynskiy shares the similar statements [6]. But, O. Shnytko [9] argues that the economic security system is a system that closely contacts with the environment and therefore has features that allow to survive and develop in the conditions of various threats. T. Slobodianyuk [7] considers the system of economic security to be a complex of coherently related actions of the organizational-legislative plan implemented by separate structural units of the enterprise in order to protect its priority interests as well as the state from aggressive actions of unauthorized persons which will result in financial losses and threats to economic development. L. Shemaeva [8] offered a comprehensive definition of the concept “economic security system”: “This is a combination of interconnected elements of the external and / or internal security of the enterprise, organized in a proper way”. The author structures this system into the following components: specific objects, regulatory and legal support, scientifically substantiated methodology (principles, concepts, methods, etc.), profiled bodies, services aimed to defend strategically important interests of economic entities, protecting them from various factors of the external and internal environment. Z. Yakubovych identifies the system of economic security as an open microsystem of more complex formation [10]. The researcher outlines the following elements: input, subjects, purpose, goals, principles and tools of achievement. H. Kozachenko [4] states that in the current conditions the system should be more flexible and

integrated to embrace all the principles, methods and algorithms through which interaction between the enterprise and the external environment is achieved.

We would like to complete the theoretical review of the concept's definitions with the definition proposed by O. Korobchynskyi. He defines the system of economic security management as follows: "This is a combination of organizational, technological, preventive and marketing measures developed to protect the interests of the enterprise in quantitative and qualitative aspects from external or internal threats" [5]. The purpose of such management system is to predict risks and minimize their impact on enterprise operation.

So, the necessity to develop an effective management system is stipulated by several factors: the presence of so-called weak spots in enterprises' work, requiring some timely measures in order to eliminate or minimize of those; dependence of an industrial enterprise on the environment, which often carries a certain threat, destabilizing the enterprise; successful management of enterprises' economic security is a source of rational organization of production processes; ensuring of economic security is a precondition for achieving sustainable development and competitiveness of industrial enterprises.

According to the concept of an economic security management formation, management of industrial enterprise should develop such system of priority activity directions that would represent the interests of all entities through the use of various forms and methods for reconciling their interests while providing more profitable work of industrial enterprise.

So, it should be noted that system of economic security management of a meat-processing enterprise is a combination of purposeful measures developed to protect the interests from external influences. This complex is structured into the following components: an object, a subject of system, purpose, goals, principles and tools for achieving economic security. On enterprise level the internal security department is usually taking care of matters of strictly following this system. The process of this system formation is quite complex and long because sustainable development of the whole enterprise and the level of its security from a variety of external and internal factors depend on it.

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TECHNOLOGICAL RESTRUCTURING AS A FACTOR OF PROVIDING THE FOOD SECURITY OF UKRAINE

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Food security is a strategic benchmark for Ukraine's economy, which needs constant and systematic control. First of all, the strategic benchmark is considered as a such level of food production that provides and satisfies the needs of citizens. The actual solution to the country's food security depends on many components. Macroeconomic, trade, fiscal and government policies for the support of the agri-food sector have an impact not only on the development of the food industry, but also on the development of the food distribution system in general, which affects both the supply of foodstuffs and the level of consumption [7].

The problem of providing the food security of the country, which is defined as the minimum amount of foodstuffs consumption established by physiological standards, which is provided by the domestic production and sold at prices that make them affordable to the majority of the population, has been urgent for more than two decades.

Hence, the notion "food security" has two aspects: socioeconomic (the ability to satisfy needs) and political-economical (the ability to mobilize domestic resources and agricultural potential of the country to satisfy these needs).

However, there are other views on the definition of this notion. In particular, the Rome Declaration on World Food Security defines "food security as a condition characterized by the constant physical, social and economic access of all people to

the foodstuffs of a sufficient volume, nutrition and security, which is necessary for a healthy and active life” [4].

The Law of Ukraine “On Food Security of Ukraine” gives a slightly different definition of food security: “Food security is the protection of the vital interests of a person and a citizen, society and a state in which the state guarantees the physical and economic availability and quality of vital food products to the population in accordance with scientifically grounded food package, maintains the stability of food supply of the population and ensures food independence”[2].

The continuous and rational provision of population with foodstuffs of proper quality promotes the implementation of the physiological needs of mankind according to the theory of the hierarchy of A. Maslow. The Law of Ukraine “On Food Security of Ukraine” characterizes the condition of the food security on the basis of the following factors:

- the level of food consumption by the population;
- the economic availability of foodstuffs;
- the physical availability of foodstuffs;
- the food market stability;
- the degree of the food market independence;
- quality and safety of foodstuffs;
- the level of the agri-food development;
- the natural resource potential and efficiency of its use [1].

Food security is sometimes associated with national and economic security. In this case, it depends on the following factors:

- the level of the agrarian sector development including private subsidiary farms;
- the development of food industry;
- the level of export-import operations;
- the level of purchasing power and culture of the population;
- the possibility of using innovative technologies;
- financial possibilities of enterprises;
- material support and investment attractiveness of the enterprises in the agri-food sector;
- the government support, granting enterprises of the agri-food sector with privileges, effective fiscal policy [9].

Under the conditions of globalization and integration, the problem of improving the technology of food production is urgent at domestic enterprises, where special attention should be paid to the conformance of manufactured products to international quality standards. As at this particular time, under the conditions of export possibilities of Ukrainian products, economic entities of different levels, primarily, have paid special attention to the conformance of production to international standards and world technical regulations. The above mentioned requires the introduction of modern innovative technologies for the selection and cleaning of raw materials, production, packaging, transportation and storage.

The production capacities of the vast majority of Ukrainian enterprises do not meet the current requirements. In accordance with this problem, the high-priority task mentioned in the “Single and Comprehensive Strategy and Action Plan for Agriculture and Rural Development in Ukraine for 2015-2020” is being formed [5]. The above-mentioned requires a radical change in the production system and granting of state guarantees of Ukraine regarding safety and quality of foodstuffs and other agricultural products by harmonizing national legislation with the EU legislation in the field of sanitary and phytosanitary measures. In order to achieve the task, it is reasonable to change or abolish a number of regulatory legal acts that are obsolete rules, create an unreasonable administrative burden or unreasonable material costs for market operators [5].

The fundamental changes in the existing production capacities of Ukrainian enterprises can be made through technological restructuring.

Before considering the notion of technological restructuring it is necessary to understand what restructuring is in general. The Law of Ukraine “On Restoring a Debtor’s Solvency or Recognizing a Debtor as a Bankrupt” gives the definition of restructuring of the enterprise as the implementation of organizational-economic, financial-economic, legal, technical measures aimed at the reorganization of the enterprise, in particular, its division with the transfer of debt obligations to a legal entity that is not subject to sanitation, to change the form of ownership, management, organizational-legal form, which will promote financial improvement of the enterprise, increase of production efficiency, increase of the production output of competitive products and full or partial meeting requirements of creditors [3].

Technological restructuring is an integral part of the complex restructuring of the enterprise, which belongs to active, long-term restructuring. If we analyze the internal structure of the enterprise restructuring process, then the technical and technological restructuring involves renovation, reconstruction, new construction, modernization of equipment, technologies, fuel and energy saving, materials-output ratio, resource strategy, automation [6].

The main purpose of the technological restructuring of the production capacities of the enterprise is the timely output of sufficient quantity of quality and competitive products to make profit and meet the needs of consumers.

The use of modern production and processing technologies with the aim to increase the efficiency in the sphere of production, processing and trade, improvement of product quality is a necessary requirement for joining supply chains, a guarantee of the use of existing competitive (spatial, economic, environmental, specific) advantages at the domestic and foreign markets [5]. The mentioned is possible by means of:

- application of new methods and technologies of production, technologies, forecasting of demand, formation and establishment of relations with suppliers;
- formation of an investment strategy for technological development;
- obtaining licenses;

- changes in the range of products;
- implementation of the marketing strategy oriented on consumer needs;
- changes in the geographic structure of the export;
- introduction of modern tools such as Lean Production, Total Quality Management, Kaizen, Just In Time;
- environmental protection in accordance with the recommendations of social responsible business [10].

In addition to outdated equipment, it is also necessary to highlight a low level of education in rural areas, the lack of highly qualified personnel, the lack of practical skills in using modern production technologies and the use of modern management practices.

The development of agriculture is slowed down by a number of problems related to the lack of clearly defined tasks, quantitative and qualitative parameters of the agricultural development, as well as the main measures, implementation of which will allow to achieve the established parameters [8, p. 7].

It all goes to show a low level of the food security of Ukraine, despite the fact that the state possesses significant world reserves of chernozem. Therefore, the priority goals of the implementation of the Strategy for the development of agriculture of Ukraine for the period until 2020 developed by the Institute of Agrarian Economics are foreseen as follows:

- increase of the economic potential of agrosystems, which will be ensured through the introduction of a complex of organizational and technological measures;
- provision of arable farming with a highly effective genepool of varieties and hybrids of agricultural crops;
- development and widespread use of post-industrial systems of resource-saving environmentally-friendly technologies of crop growing and transferring the field of crop production to post-industrial models of development;
- increase in milk production;
- stepping up the requirements for the quality of dairy primary products;
- increase of production output of meat from cattle;
- development of the most rapidly growing sectors of livestock farming, especially pig breeding;
- development of poultry industry;
- revival of sheep breeding;
- improvement of land relations, provision of sustainable land use; soil conservation, soil fertility recovery and soil enrichment;
- replacement and development of the material and technical base;
- improvement of the price mechanism and development of the effective pricing policy in agriculture;
- formation of the effective infrastructure of the agrarian market and ensuring enlarged access of direct manufacturers to the organized marketing channels of agricultural cooperatives;

- formation of the effective mechanisms of financial support in terms of development of agricultural production and financial regulation;
- improvement of the investment government in agriculture;
- development of production of alternative kinds of energy from biomass in agriculture [9].

In Ukraine, there is no efficient system for the transfer of innovations, the diffusion of modern technologies for production and processing of agricultural products, methods and ways for organizing and managing an agricultural enterprise, providing advisory services to small and medium-sized enterprises. The absence of such a system significantly reduces the opportunities for development of small and medium-sized enterprises in the field of agrarian production, does not promote the increase of productivity of manufacturing resources, the increase of production of value added products, and ultimately does not ensure the improvement of wellbeing of rural residents [5].

Thus, to improve the food security system it is necessary to take a complex approach. To solve the above-mentioned problem it is necessary to introduce a system of management of technological restructuring, since its effective implementation and application of its results will give an opportunity to the agri-food enterprises of Ukraine to reach a whole new level of the socio-economic development.

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INCREASING THE EFFICIENCY OF OPERATING ACTIVITY OF AGRARIAN ENTERPRISES ON THE BASIS OF ENERGY CONSERVATION

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Energy conservation is the progressive direction of using the resource potential of the enterprise, the continuous process of economy at all stages of production and economic activity, which ensures reduction of production costs, production growth, and cost reduction, with the same amount of used resources, raw materials and fuel. It should also be noted that energy conservation is a scientific, commercial, organizational and informational activity aimed at the rational and integrated use of all types of energy resources of the enterprise, taking into account the existing state of scientific and technical progress and the state of the environment.

The problem of formation of energy efficient system in the management of agro food industry should be considered in direct connection with the existing level of development of the material and technical base, with the policy of energy conservation and optimizing the use of resource potential.

Issues of energy conservation cover technique, technology, and organization of production associated with the formation of a new type of economic thinking, which is based on the effective use of entrepreneurial and intellectual resources. It is necessary to conduct searches and adaptation of qualitatively new methodical approaches to research the resource support system, efficiency determination of its functioning and, first of all, from the point of view of energy conservation. The system approach in research and evaluation of resource potential and determination of criteria for the effectiveness of its use should be done [3, 5, 9]. The solution to

this problem depends greatly on the leadership, level of planning and management of agricultural enterprises.

The degree of energy resources use by the enterprises of the agro food industry is characterized by a set of indicators characterizing production per unit of expenditures of resources, expenses per unit of sold products, profit per unit of total expenses, profitability of sold products, etc.

The prerequisite for development of the economy of agrarian sector is the competitiveness and efficiency of agricultural enterprises. The dynamics of the level of profitability of production in enterprises of the agro-food sector shows that the production of the main types of crop production is cost-effective, but has an unstable tendency.

Ensuring competitiveness of agricultural production will continue depending on the price situation and the containment of production costs, in particular the cost of production resources.

The problem of Ukrainian enterprises, and especially of the agro industrial complexes, is that nowadays most of them operate on the principle of a consumable rather than an energy conservation method. Since the time when absolutely all the resources were state property and in fact they could be spent on the instruction of the administrative command authorities in an unlimited number, without taking care of rationality, many modern managers still cannot move away from such a policy of using resources.

Another problem is that many Ukrainian entrepreneurs often have limited access to energy resources interpretation and they are usually associated with cash. At the same time, finance is just one of the resources that is needed to be managed at an enterprise, and financial performance indicators only reflect the state of the enterprise, the level of resource management. And their improvement will not be achieved only by one statement of financial accounting.

The resources of the enterprise are the whole set of values that the enterprise operates, i.e. people, machines, materials, tools, and money. Many Ukrainian firms are complaining of working capital shortage. And there are many of them who do not even know what they have in warehouses and whether they will need it, forgetting that unfinished production and materials in the warehouse are means withdrawn from circulation and frozen. It is the inability to upgrade the equipment, buy vital components and pay taxes, wages and salaries to workers [1, 8].

Thus, energy conservation is an enterprise management method based on the introduction of energy saving technologies, the adoption of effective management decisions regarding energy conservation, as well as continuous improvement of knowledge and professional skills of the respective managers.

Unlike traditional technologies, the use of resource and energy saving technologies in agricultural production provides average savings in production costs of five times, including fertilizer costs – by 30-40%, fuel and lubricants – by 60-70% , the purchase of agricultural machinery – by 80-90% [2, 4, 10].

There are the following main tasks of the energy supply of development and implementation of the strategy of increasing the competitiveness of enterprises in the agro food sector:

- ensuring high scientific level of work and energy saving processes;
- thorough justification of the directions of spending resources and energy consuming objects both within the system (in the enterprise) and in the external environment, at the expense of innovative projects;
- application of scientifically grounded methods of forecasting, optimization, economic substantiation, rationing of needs for energy resources;
- finding sources and forms of resource support from different sources;
- coupling in strategy, innovation investment projects of target tasks, objects, costs of energy resources, places, terms, performers, efficiency and other components;
- choice of progressive logistic technologies for the organization of material flows;
- selection of modern information technologies for valuation, planning, accounting and control of energy resources consumption;
- analysis of the efficiency of the energy resources use;
- stimulation of efficiency increase of energy resources use;
- organization of teaching staff for advanced technologies, methods, models and tools for the efficient use of energy resources.

The modeling of the energy saving management mechanism of the agro food industry enterprise in the system of ecological and economic development management is based on the methodology of structural system analysis (Fig. 1). The regulators of the energy saving management mechanism provide the adaptability of the structure and functional behavior to maintain the effectiveness of the management of competitiveness.

The decomposition of the enterprise competitiveness management system and the energy saving management mechanism must take into account the object hierarchy and the level of decision-making [1, 8]. The behavior of the system is described by discrete characteristics in the form of a set of indicators and their values at all levels of management. Formation and implementation of the energy saving strategy at all levels of management is one of the most important issues in the management of competitiveness, because, firstly, energy intensity is the second side of the product (the first one is quality), and secondly, Ukraine, on the efficiency of the use of resources, is several times behind the developed countries [7, 10].

A promising direction for the development of the market for energy saving products is the use of new opportunities opened up by business entities. They include:

- improving the quality of already existing products and services by adapting them to environmental requirements, requirements of international standards of energy efficiency, which enables to significantly increase the competitiveness of enterprises in the domestic and foreign markets;

- development of fundamentally new energy saving products and creation of specialized companies for this purpose (for example, production of new waste products, development of man-made mineral deposits);
- attraction of foreign capital and creation of joint ventures with representatives of countries where the energy saving market is developed. It allows using leading technologies, methods of management of energy saving activities, increasing its efficiency in Ukraine;
- further development of specialized companies for providing consulting, engineering, educational and other energy saving services, etc. [2, 6].

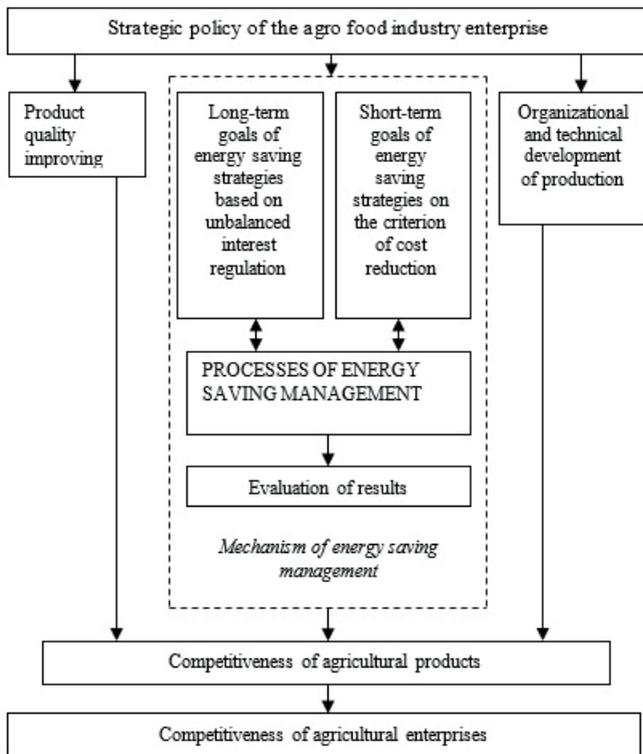


Fig. 1. Model of energy saving management of the agro-food industry

The directions discussed are mainly related to the state, regional and local levels of management. At the same time, at the microeconomic level, it is expedient to intensify work with:

- assistance from the subjects of the energy saving infrastructure to increase awareness of the population and enterprises with innovations in energy saving technologies, their ecological and economic and social advantages and disadvantages

through exhibitions, promotions, personal sales, etc.;

- public formation of the image of energy, water supply and other companies of the energy saving sector as economically efficient and environmentally friendly through the production of press releases and information materials on the activities of enterprises, custom-made articles, reports, press conferences and presentations;

- development and introduction into practice of flexible financial schemes, performance-contracting, allowing to work even with low-liquid enterprises, by the subjects of infrastructure;

- conducting explanatory work with the heads and employees of enterprises of different industries and activities on the feasibility of energy conservation, principles of the activity of audit firms in the field of energy conservation in order to create a favorable attitude to the work of auditors at the enterprise;

- expansion of the range of services provided by the subjects of the energy saving infrastructure, in particular, provision of practical assistance to customers during the development of a phased plan for the implementation of energy saving measures on the basis of their “self-financing”, training of personnel of the customers of enterprises on the basics of energy management.

The goals of effective functioning and ecologically economic development of the agro food industry in the long-term can be achieved with a stable increase in the competitiveness of products, which determines the formation and implementation of a strategy for energy conservation. With the integrated application of the proposed mechanism for managing energy saving, the level of anthropogenic load on natural resources can also be reduced. Thus, energy conservation should become a continuous process at each production cycle.

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PART 4. INNOVATION ASPECTS OF FORMING SOCIAL, EDUCATIONAL, AND INFORMATION SECURITY

PRIORITIES OF UKRAINIAN MARKET OF THE FORMING LIFELONG LEARNING SYSTEM

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Various aspects of lifelong learning are the subject of scientific research of domestic and foreign researchers. A. Goncharuk, G. Telegina, L. Shevchenko consider organizational matters of continuing education, its content and form, pay attention to financial support and developmental problems. In terms of individual costs and benefits explored the role of continuing education in the human capital theory, which laid the foundations G. Becker and T. Schulz. This aspect highlights the reproduction of the human resources also in the works of Ukrainian scientists O. Grishnova, I. Zayukov, L. Musin A. Chukhno.

The purpose of the article. To determine the direction of the formation of education for life in Ukraine need of major trends in the development of adult education to analyze the development of national systems of adult education in the leading European countries, reform and modernization in the second half of the XX - at the beginning of the XXI century, the development of concepts and economic support system of continuous education.

Presentation of the main research. Today higher education in Ukraine is in the process of transformation, due to both global trends (including the establishment of a knowledge economy, information society, the nomination of the new requirements to the production of educational capital) and reformation in the state and the transformation of Ukrainian society.

In many countries, adult education has become a new, supranational sector, which has international, European and other continental, national management structure and distribution. The development of this promising industry in the world provided the integration and interaction of public authorities and NGOs. [1]

The engine of the economy is the exchange - market. Overall, the market for education (educational services) can be defined as a «sphere of circulation or system of economic relations on the sale of educational services» [2], or a «system of commodity-money relations that arise between the seller and the buyer on the sale of specific educational goods» [3]. Fundamental changes in the rates of production

and consumption in modern conditions accompanied by a simultaneous increase in the education market, which is an instrument of mastery of reality.

Like any market, the market education has three basic components:

- 1) Educational services / product - the good, satisfying social and individual needs on the formation of certain knowledge, abilities, skills and values;
- 2) The seller (manufacturer) educational services, which forms its proposal;
- 3) The buyer (consumer), which creates demand for educational services.

Education at all age stages of life is a necessity, it not only determines its quality directly affects the preservation and improvement of human health, its offspring, longevity, but also gives a resource to solve the problems listed above. Education is a powerful productive force. Economic and social realities of today dictate the need for drastic reforms in the education system. Adequacy of education regarding current challenges and requirements is regarded as an essential prerequisite achieve economic, social and environmental objectives. It is now clearly established relationship between the level of education of society and political, cultural, economic and military power states. In Europe, education is positioned as the core of a new society based on knowledge.

Structural market lifelong learning according to the stages of personality can be divided into the following components:

- Market pre-school education and training;
- Market secondary education;
- The market of secondary education;
- The market for higher education;
- Market postgraduate education.

Man must learn throughout life, and the education system should give her such opportunities. In accordance with the objectives defined and implemented a system of continuous education, it is appropriate to allocate three components:

The first component of lifelong learning - additional professional education - promotes professional The potential of modern high-tech economy. Consumers of services of the system of continuous education is socially adapted part of the population that receives education consistently at all levels.

The second component of lifelong learning provides diverse populations to adapt to changing conditions. This subsystem provides education aimed at adaptation and rehabilitation of social and professional groups not able to adapt to rapidly changing social environment. In addition, this subsystem involved citizens who have various reasons access to the formal system of vocational education, which creates a threat for them desocialization.

The third component of adult education provides meet the diverse educational needs of individual citizens, such as language training, obtaining psychological, cultural and other knowledge, communication skills, special abilities and more.

So, continuing education can be defined as a set of tools, techniques and forms of competition, deepening and expansion of general education, professional

competence, culture and education, civic and moral maturity. For each person continuous education is a process of cognitive and meets its requests and spiritual needs, inclinations and abilities of the network of educational institutions of different ownership or by self.

By the formal structures of additional professional education include various informal structures (training groups, training and retraining in enterprises, etc.) which are sometimes based on formal structures and are often formed informally, usually for a short period. Also, this system adjacent opens education in its different forms and distance learning. Effective means of a system of continuous education is the creations of corporate universities that provide alternating obtain fundamental knowledge with practical activities.

The development of continuing education can create the conditions for the formation of flexible educational paths and leveling access to quality education at all levels of the educational system, provides a set of educational services that meet the dynamic needs of the individual, society and the economy. For the state, continuous education is the leading social policy to ensure favorable conditions for general and professional development of each individual. For society as a whole is a mechanism for continuous education expanded reproduction of his professional and cultural potential, the condition of social production, accelerating socio-economic progress of the country. For global society continuous education is a way of preservation, development and mutual enrichment of national cultures and universal values, an important factor and condition for international cooperation in education and solving global challenges of our time.

The aim of continuing education is the formation and development of the individual as in times of physical and psychosocial maturation, prosperity and vitality and stabilization capabilities, and during aging when the fore task force compensation and opportunities are lost.

Generating factor in continuing education is a public need for continuous development of the personality of each person. This activity is determined by many educational institutions: main and parallel, basic and additional state and public (social), formal and informal. Their relationship and interdependence, mutual subordination levels for the coordination and direction for the purpose, to ensure interaction between them transform the totality of such structures in a single system. Unity lifelong learning goals and specific objectives of each level organically combined with its variability and diversity of types of educational institutions, educational technologies and forms of state and public administration.

State of the domestic market potential lifelong learning is characterized by the data presented in Table 1. Thus, the value of the total annual market potential of lifelong learning is per year about 117 billion USD or 7.8% of GDP in Ukraine, describing education as one of the leading industries in the structure of the national economy.

Despite the economic crisis, unfolding as a result of the struggle for independence

and sovereignty of Ukraine and the prospect of political instability, can predict the growth potential investigated market value by 3-7% annually over the next decade. Thus, by 2024 it will increase to at least one third, 150 billion USD [5].

Table 1

State of the annual value of the domestic market potential lifelong learning

Name of units	Purpose	Demand, persons	Financing, persons:			Total, thousand UAH	Structure, %
			State	households	enterprises		
The annual value of the market potential lifelong learning	40390	12243400	101547500	9893137	6400000	117840637	100
The annual value of the market potential of preschool education and upbringing	16400	1428000	12185700	3749499	400000	60441854	51,29
			42692523,9				
The annual value of the market potential of school and school education	19700	422000	1414131,7				
The annual value of the market potential of secondary education	972	423300					
The annual value of the market potential of higher education	823	2170100	19961926,9	5154324	5000000	30116251	25,55
The annual value of the market potential of Postgraduate Education	671	4000000	1117023	989314	1000000	3106337	2,63

Source: Calculations based on data [5].

It is likely that the increase will take place primarily through postgraduate

education component, as its customers required by the Law of Ukraine «On the professional development of employees' professional competences increase every five years. In addition, the market is expected to increase the capacity of secondary education as a result of a request for trades in the country. Positive dynamics observed on school and school education under the influence of demographic factors alignment (in school will study compared numerous cohort of children born in the first decade of the 2000s).

At this stage there is a significant gap between Ukraine and European states in the quantitative coverage of the adult population of various education and training opportunities and innovative scientific training. This leads to a significant backlog of quality manpower needs of a modern economy. At present, only 9% of the numbers of the accounting staff members (or 1 million people) are covered by a system of training, retraining and skills. Frequency increase qualification of employees is on average 11 years, while in the EU - about 5 years [8].

Perhaps the most positive potential increase in the degree of mass higher education lies in the creation of a modern education industry with many jobs, the results of which have high demand. This is especially important socio-economic results are in conditions of prolonged demographic crisis and aging populations. To make full use of this potential should actively promote the development of lifelong learning, including vocational training, acquisition of new specialties, training and more. An important potential social and political consequences masovizatsiyi higher education is increasing social expectations of young people who strive for better quality of life and thus ready to make personal efforts in economic activity conscious and actively participate in political life, the process of renewal.

Education for life in the Ukraine, in our opinion, is still at a level that does not comply with global trends. The law of Ukraine «About school education» does not solve the problem because it does not regulate the integration of adult education into the general education system of the country, leaving aside the key issues and ensure quality control and recognition of non-formal education. An important step for the development of adult education in our country is a law «About education». The new law «About education» term «adult education» was registered as a full component of the entire education system in Ukraine. This allows you to directly work in this direction in the Budget Code prescribe the need for spending on development of this area of education.

In a globalized Ukraine is in a force field trends related to the transition of humanity to a new phase of civilization, which is defined as not only has the information society, and increasingly - as a knowledge society. Putting the aim of joining the circle of most developed countries, Ukrainian society has become a society that constantly learns rapidly accumulates and leverages new knowledge. The prospect of development of Ukraine in the knowledge society requires a deep reform of education and educational sphere, should be based on a reasonable combination of the best international experience with national traditions.

In Europe, many experts have expressed their desire to learn throughout life, it's the possibility of general knowledge and professional skills. Lifelong education can improve both professional and personal life, which is why even the best professionals in the 40-50 years continue to explore a variety of courses. This helps them to cope with changes in the labor market. While measures aimed at training, participants receive their financial assistance in the form of grants and loans. The state partially finances such courses. At the same time, many employees personal growth and career development more important than any compensation.

Conclusions. However, there are reasons why people are not involved in education in adulthood. Among them are the following: 1) disposition (attitude to learning); 2) situational (lack of time, family responsibilities); 3) institutional (payment, lack of evening courses, entry requirements).

As for Ukraine, the leading cause of adult education lag Ukraine the practice of developed countries can vydylyttaki:

- 1) lack of study of foreign experience;
- 2) lack of regulatory framework in this area;
- 3) focusing on the problems of children and youth education.

One of the most significant problems of a system of continuous education in Ukraine is to overcome the stereotype attitude to informal education as little significant and insignificant. Failure to understand the specifics of informal education and its social potential (compared to a traditional school or higher education) generated by insufficient attention to studying the problems of adult education. It should be across the country to analyze the activities of the existing areas of unconventional forms and educational activities of adults. It will identify the specific cognitive and non-formal learning activities of different groups of adults, motivational features and mechanisms of self-organization of these activities.

At the present stage of lifelong learning market in Ukraine we recommend to develop and implement effective public policies to support its growth, including:

- 1) stimulating enterprises to invest in training and professional development of employees;
- 2) measures to recognize the value of employee productivity growth of the principle of pay equity;
- 3) initiatives to increase the prestige of the employee education;
- 4) internationalization and exchange experience with foreign educational institutions;
- 5) introduction of innovative information technology and training;
- 6) encourage self-education and self-improvement.

As a genuine moment Practical Implementation of the concept of «learning to techenye vsey life» javljaetsja edynstvennoy deystvennoy «antykryzysnoy prohrammoy», «Exit prohrammoy IZ crisis» As for separately vzyatoy personality, and so for business and mean and the country as a whole.

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APPLIED METHODS IN INTERNATIONAL EDUCATION COOPERATION POLICIES

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International development cooperation and international humanitarian activities form an important part of Hungary's international relations and as policies developed in line with Hungary's commitment in the international donor community are key elements of Hungary's role in addressing global challenges. According to the Hungarian law in force, under the leadership of the Minister of State for Security Policy and International Cooperation of the Ministry of Foreign Affairs and Trade and the Deputy State Secretary for International Cooperation, the Department for International Development and Humanitarian Assistance is responsible for developing the policy for International Development Cooperation and International Humanitarian Assistance, for its coordination by the Government, as well as for its implementation.

Hungary's annual summary statistics about spending on official development assistance pointed out that last year – similarly to previous years – multilateral development cooperation prevailed primarily due to ratio of mandatory contributions to the EU, voluntary contributions to EU Funds and to support for international organisations. In terms of bilateral International Development programmes and projects, the problem of resources with a low level of funding reappeared. Within the OECD, the Development Assistance Committee (DAC) was founded in 1960. Hungary joined to the OECD in 1996 and since its accession to the EU, it has had an observer status in the OECD DAC as an EU Member State. As a result of the accession process launched in 2016 that took months, Hungary became the 30th full member of the DAC on 6 December 2016. As a member of the Committee, Hungary became a part of a global process that aims at coordinating Development Policy all over the world, and deals with the coordinated implementation of the UN Development Sustainable Goals in the long run, as handling crises effectively is possible only with a global approach and with the cooperation of Member States. The Sustainable Development Framework establishing the directions for development after 2015, Agenda 2030, was adopted by a consensus on 25-27 September 2015 at the UN Development Summit by the Heads of State and Government of the UN Member States with Hungary as a participant. The Framework sets 17 goals and 169 subgoals for the period between 2016 and 2030 that replace the Millennium Development Goals (MDGs) adopted in 2000. Hungary had a leading role in establishing the

Sustainable Development Goals (SDGs) since Hungary co-chaired the UN Open Working Group (OWG) commissioned to make a proposal for the goals with Kenya for one and a half years. In terms of adopting the framework, it was emphasised that international peace and security and sustainable development cannot be separated, and thus the causes triggering conflicts can only be eliminated through sustainable development. Moreover, the Agenda includes the target system and subsystem to achieve the dual aim of poverty reduction and sustainable development in a balanced manner. At the same time with intergovernmental negotiations aiming at establishing the Sustainable Development Framework, preparations were going on for the Third Funding for Development Conference of the UN held between 13 and 16 July 2015 in Addis Ababa. The final document of the Conference, the Addis Ababa Action Agenda (AAAA) forms an integral part of the Sustainable Development Framework 2030, thus providing its implementation. The Sustainable Development Framework and the Paris Agreement adopted at the 21st Conference (COP21) of the parties of the United Nations Framework Convention on Climate Change (UNFCCC) are interconnected in many ways. The transforming elements of the Agenda 2030 have an effect on the implementation of the decisions made at the Climate Summit, while the decision about the legally binding climate agreement affects all the goals of the Framework too.

Migratory pressure is still one of the greatest challenges affecting Europe. International Development Cooperation has a key role in handling factors that trigger migration locally, that is, in providing assistance with international cooperation to ensure such living conditions that hundreds of millions of people shall not be forced to leave their home countries. The main goal of the UN Sustainable Development Framework adopted in 2015 (Agenda 2030), including the Sustainable Development Goals (SDGs) is that people shall live in peace and security, under balanced and sustainable conditions in every state of the world within 15 years. Besides the “human sectors”, International Development has a great potential in terms of the Economy too. Development activities also contribute to improving international opinion about a particular country, enabling economic actors to pursue their interests in the medium to long term. While migration and asylum were not among the priorities of development and foreign policy instruments under the EU budget, due to the mass wave of migrants and asylum seekers coming to Europe, they were integrated horizontally into most of the sub-programmes, which in turn resulted in the reallocation of resources. The Commission started to use the funds in an ever increasing ratio on supporting the resettlement and assimilation of migrants and refugees primarily in the neighbouring countries of states affected by conflicts, and wherever the conditions allowed, on providing assistance for them to return to their homeland. The Commission set the overall objective of providing better living conditions for forced migrants and refugees also during the transitional period spent in refugee camps and host communities. Thus, the EU paid greater attention to provide a remedy for the consequences of mass displacements in addition to

handling the causes triggering migration (e.g. deep poverty, unstable political and economic systems, harsh security conditions etc.). However, this did not mean a complete change of focus: it was rather a more focused approach in handling consequences, which – in terms of handling causes – had been established by the beginning of 2016, mainly thanks to establishing Trust Funds . Making payments to the extra-budgetary European Development Fund, which serves the development of the African, Caribbean and Pacific Group of States (ACP) as part of the Cotonou Agreement, is Hungary's obligation flowing from its EU membership. Now the programming and the allocation of funds is going on for the 11st EDF (2014-2020). The overall budget of the 10th EDF is EUR 22.682 billion, out of which Hungary has to pay EUR 125 million based on its quota (0.55%) . The funds can only be used in specific sectors as set out in particular country strategies (in general: environmental protection, water management, energy, agriculture, food industry, health care industry, construction, education and culture, building capacities, human rights, migration and supporting democracies).

Hungary has been the member state of Organisation for Economic Co-operation and Development (OECD) since 1996. Within the organisation, the Development Assistance Committee (DAC) was set up in 1960. Hungary joined the OECD in 1996, since its accession to the EU, it has had an observer status in the OECD DAC as an EU Member State. As a result of the accession process launched in 2016 that took months, the Minister of State for Security Policy and International Cooperation, Dr. István Mikola formally signed the accession document in Paris. Thus, Hungary became the 30th full member of the DAC. As a member of the Committee, Hungary became a part of a community that aspires to a leading role in coordinating Development Policy all over the world and in the implementation of the UN Sustainable Development Framework including the Sustainable Development Goals. Handling crises effectively is possible only with a global approach and with the cooperation of the Member States. In this process and reducing poverty, the DAC plays a leading role. The DAC urges and assists its member states in establishing a comprehensive Development Policy, in coordinating their particular policies with Development Policy, and in every four year it makes a comprehensive evaluation of the International Humanitarian Assistance and Development Policy of each member state. Hungary takes part in the high level and executive meetings of the DAC, as well as in its monthly formal sessions and in the work of particular committees. As regards the reform of the ODA, the integration of new, innovative forms of funding into development funding continued in the various working groups of the OECD in 2016 with the main focus on soft loans eligible as ODAs, the administration of development activities in the private sector, and the just recognition of the amount of energy invested by the donors besides the profit of recipient countries. In terms of bilateral scholarships and contributions for developing countries in 2016, 103 students from developing countries participated in the Stipendium Hungaricum programme funded by the Ministry of Human Capacities and coordinated by the

Tempus Public Foundation. The scholarship programme that has been come well-known again after decades is especially important. It aims at improving Hungary's "international visibility", presenting our national values in the global context. The aim of the programme in educational policy is to foster the internationalisation and quality improvements of Hungarian tertiary education, to strengthen the international relations of the Hungarian scientific elite, to increase the cultural diversity of tertiary education institutions and to promote the competitive Hungarian higher education all over the world. The economic and foreign policy objective of the programme is laying the foundations of the personal and professional attachment of students graduated in Hungary, thus potentially enhancing the understanding of Hungarian peculiarities and interests among the elite of their home country, and establishing the social capital necessary for developing Hungarian economic relations and fostering its aspirations for market entry. It is not negligible that the presence of international students has a positive impact on the economic development of that particular city or region. In addition, the programme contributes to the promotion of the Hungarian language, as some students start their university studies in Hungarian following a preparatory training. In the multilateral context, the university level agricultural programme in Hungary for fellows from developing countries based on the agreement between the Government of Hungary and UN FAO, which continues the practice of previous years, falls into this category. The contribution to the UN FAO scholarship made by the Ministry of Agriculture enabled 34 countries to participate. The Regional Educational Centre of the Hungarian Competition Authority organised five seminars on competition law in 2016 as part of its annual programme for the competition authorities of its primary target countries out of which three events were held in Budapest, one in the Russian Federation and another in Serbia. Within the framework of its bilateral agreements, the Hungarian Academy of Sciences provides financial assistance for the mobility costs of joint research projects and gives mobility support for individuals who wish to travel with research purposes. The subsidised projects mainly last for 2-3 years. The Academy of Sciences provided financial support for 10 developing countries in 2016. Moldova held the presidency of the Police Cooperation Convention for Southeast Europe (PCC SEE) in the first half of 2016. The Moldavian party – due to trainings organised earlier at the International Training Centre of the Hungarian Ministry of Interior and building on the positive experiences during last year's Hungarian presidency – asked the Hungarian Ministry of Interior and the PCC SEE Secretariat to organise the Moldavian Presidency's training programme in Hungary. The Hungarian party did not only provide logistical support and assistance for the organisation, but an instructor of the Faculty of Military Sciences and Officer Training of the National University of Public Service developed the curriculum of the training programme and moderated the training together with the PCC SEE lecturers as well. 16 military education specialists from ten PCC SEE countries participated in the training which they deemed excellent both in terms of professionalism and organisation. Similarly,

professional cooperation based on special knowledge transfer was initiated by the Secretariat of the Police Cooperation Convention for Southeast Europe (PCC SEE). The target group of the training was the pool of military experts with multiple years of experience in the field of document security of PCC SEE member states . The professional forum aimed at giving an opportunity for regional professionals to share their experiences about false and forged Iraqi documents, to review trends and best practices in the field of document security and to strengthen the professional network in the area of documents within the PCC SEE. In addition to the British, German, Belgian and Swiss experts, the Pest County Policy Headquarters, the Ministry of Foreign Affairs and Trade, the Hungarian Special Service for National Security and the National University of Public Service sent lecturers to the workshop. The curriculum of the training was developed by the professionals of the Hungarian National Police Headquarters, the International Training Centre of the Hungarian Ministry of Interior and the National University of Public Service with the representatives of the Secretariat. Since 2012, Hungary has been a member of the Delhi-based Global Development Network. It is an international network of researchers in Development Studies that focuses on the development of the Third World. The organisation excels other international research institutions and networks by organising its annual conferences presenting new research results .

Recently Hungarian diplomacy has also sought to enhance cooperation between the disciplines of the Hungarian Academy of Sciences – especially in the areas of Sustainable Development, Climate Impact, Healthcare and Agricultural Sciences – and the scientific and educational professionals of countries entitled to ODAs. Bridging the gap in scientific knowledge and education in underdeveloped countries is of key importance in development. In 2016 October, the Committee for International and Development Studies of the Hungarian Academy of Sciences received the delegation that came to Hungary for the preliminary investigation before our accession to the DAC, and informed them about the cooperation between the Ministry and the academia. However, the results of these efforts also depend on the commitment of the parties. This partnership assumes governmental awareness and an appropriate national legal environment.

Success Story: Stipendium Hungaricum Scholarship Programme.

Thousands of students from all around the world apply for higher educational studies in Hungary each year. The number of Stipendium Hungaricum applicants is continuously increasing as well as the number of available scholarship places. In the 2018/2019 round of applications, more than 4100 scholarships were awarded. In the academic year 2019/2020 more than 5000 students can begin their studies in Hungary in the framework of the Stipendium Hungaricum Programme.

The programme is based on bilateral educational cooperation agreements signed between the Ministries responsible for education in the sending countries/territories and Hungary or between institutions. Currently around 70 Sending Partners are engaged in the programme throughout 5 different continents and the geographical

scope of the programme is spreading each year.

Hungary provides high quality education in the heart of Europe. Today, there is a growing demand of international students to study in Hungary. Besides the quality of education and degrees recognised throughout Europe and beyond, students are attracted by the affordable living costs with an extremely favourable cost-to-value ratio, a safe and friendly living environment with convenient public transportation, the central location of the country in Europe and the unspoiled natural beauties combined with a 1000 year-old, rich Hungarian history and several UNESCO World Heritage Sites. Hungary is also within the top countries with the highest number of scientific Nobel Prize Winners per capita, and a numerous scientific inventions from Vitamin C to Rubik's cube and so on.

The Stipendium Hungaricum Scholarship Programme was launched in 2013 by the Hungarian Government. The core mission of the programme is to increase the number of foreign students in Hungary and to encourage Hungarian higher education institutions to attract top foreign students.

Higher education sector: public and private responsibilities. The university sector or the higher education more generally, deserves much attention. Many developing countries and emerging economies as well, have seen the sector evolve in a particular way. Often one finds one, by now very large, national university which in the past drew most of the talent in the country, both as professors and as students. As student numbers began to grow new national and increasingly private universities were established (Tindemans, 2009). The (former) national university has often grown so large that concerns for decreasing quality are more than justified as funding has not matched the student numbers. Research was rather concentrated at the national university, also because in many cases this university had close links to one or two universities abroad. Private universities concentrate with few exceptions on areas such as business administration, finances, ICT or for example international relations. The mushrooming number of small universities has, however, brought a serious quality issue to the fore, making a much tighter accreditation system an absolute necessity. Sometimes, however, governments are still very restrictive with providing licenses to private universities or are in other ways, sometimes unknowingly, raising obstacles. The result is that in those countries gross enrolment into higher education is at a very low level. Public financing is often intransparent and rather more follows historical patterns than funding mechanisms that allocate the scarce public resources in the best possible way (McLendon, 2003). Moreover the national university or the few public ones rather deal with the ministry of finance than the ministry of (higher) education, creating a further hurdle towards a transparent and equitable system. In countries with a very strong Academy of Sciences the additional problem was and often still is that the development of a strong research capacity at universities was effectively choked. Establishing a more balanced system of tertiary education, which is much less focused on one or a few central universities is essential. There are very good

reasons to differentiate between universities and institutions of professional that offer shorter (one to two years) degree programs or diplomas or longer (three to four year) professional degree programs. Within universities only a relatively limited number should be encouraged or even allowed to developing into or continuing as research universities. Dilution of research funding is a threat all over the world and for example a serious issue in Europe, but much less so in the US. China here follows clearly the US example. Providing good-quality undergraduate education is an important and valuable mission for a tertiary educational institution. A set of interlinked issues relate to the functioning of institutions of higher education. But the government has to create many of the conditions that provide incentives for individual institutions to improve their management and operating methods. Universities need strong management and the traditional academic procedures for appointing persons on key positions are not always well suited to modern requirements. The same applies to human resource management already mentioned in the context of staff development. Universities and other tertiary institutions need on the whole increased autonomy, including internal financial autonomy and flexibility in employment conditions. Those conditions, at least in public institutions, often resemble those of the civil service, and the recognition that these are not suitable has taken roots worldwide. What governments are increasingly doing is granting autonomy in exchange for accountability . That is often combined with forms of performance-based funding which will be considered in greater detail in the next section. A link to national priorities is another element whether this is implemented through a financial mechanism or not. Governments may require universities to respond to such priorities in ways they may freely choose but should report upon in their annual accounts or strategic plans.

Supporting innovation: funding instruments. A contrast between developed countries and most developing countries and emerging economies is not only the availability of funding as such but also the lack of a differentiated and transparent funding system for research and innovation. It may seem a technical matter but it is not. Funding mechanisms play a crucial role in improving quality, in directing researchers and institutes, in ensuring both a sustainable infrastructure for research and dynamics on the basis of competition, as well as in providing incentives for cooperation between universities and companies. As an example, in quite a few developing countries experience is now being built up with a mechanism for providing funding on a competitive basis to excellent researchers and their teams, using (international) peer review as a selection procedure, funding coming from international partners in development.

In the first place governments provide from their higher education budgets direct funding, mostly as institutional or core funding to create the infrastructure for carrying out research. There are several ways in which this can be done. Often, also in developed countries this is still strongly based on discretionary ways, which others would describe as arbitrary. But attempts are being made to

base these core funding allocations on more or less detailed budgeting and on the funding of specific cost categories, increasingly governments or higher education funding agencies, which are tasked by governments in some countries to replace governments in doing this, are searching for formula-based lump sum contributions, implying that the governments bases its contribution on some rational calculation whereas universities retain the full freedom to spend the money in ways they deem fit. Both past performance and agreed future targets may lie at the basis of such performance - or formula-based funding mechanisms. The second major contribution to university research also comes from the government, but through and independent 'Research Council' (there may be more for different fields of science) and to a lesser degree from an 'Innovation Funding Agency'. This funding is typically provided on a competitive basis, using (international) peer review as the selection mechanism. The proportion between what is often called the 'first flow of funds' to university research and the 'second flow of funds' varies widely. Some countries (the US and the UK are key examples) rely heavily on the competitive mechanism, others put the emphasis on the core funding. It is really a policy issue: continuity versus dynamics, as some would like to phrase the dilemma. How to promote concentration of research and thus differentiation of missions of tertiary educational institutions is a vexing problem that governments in most parts of the world face. With regard to tapping private resources, whether it is for stimulating companies to carry out more research or for attracting private donations for research in public institutions, governments need to consider which tax measures will effectively trigger individuals, private foundations or charities and enterprises. Competitive funding for research projects is key as a complement to institutional funding. Almost all countries nowadays avail of a mechanism to provide such funding. The National Science Foundation in the USA is well-known example, but as part of modernizing the research and research funding systems many countries have created a 'Research Council' or a National Funding Agency whose main task is to make available research money for the best researchers by transparently assessing proposals or past performance through peer review (often international) in competition. There is a good case for letting them operate very largely in a 'self-organising' mode by scientists, though the government should set a certain framework to which such a National Funding Agency is bound. The Russian Foundation for Basic Research, the National Natural Science Foundation of China have been successfully functioning during the last twenty years, but also in for example Uganda the Uganda National Council for Science and Technology is now providing competitive grants with government money assisted by the World Bank. Even in France, which in the past relied extensively on CNRS with its own research institutes and research units at French universities, the French Research Agency (AFR) now provides competitive funding. As the STI system evolves and extends governments may wish to consider whether more research councils or funding agencies would better serve different fields of science (Tindemans,

2009). As mentioned before governments can do several things to stimulate companies to increase skill levels, productivity and research efforts. Initially for reasons of efficiency and the lack of (human) resources one may well consider to making the same funding agency that on a competitive basis funds academically-oriented or strategic research also responsible for the support measures that target companies in the first place. But eventually as the STI system matures, one usually finds a separate agency tasked with the promotion of research and innovation in companies. The reason is that proposals to get support from companies or involving companies often require some form of business plan, market assessment and a strong managerial approach. Assessing such proposals requires different skills from those required to assess on a competitive basis research proposals. Governments are also considering which instruments they can use to introduce more differentiation, concentration and specialization, which as mentioned before are important policy challenges for the higher education system. This has led in several countries to competition not between individual scientists but between institutions as a whole or departments. Sometimes one finds requirements for public-private partnerships in such competitions. Not always is the competition complete. For example in China's case the limited number of universities allowed to participate in the so-called 'Project 985' have been identified by the government, but using academic performance as an important criteria. Another strategy some governments adopt especially to increase concentration and also specialization focuses on mergers between tertiary educational institutions. It is not an easy option to implement, certainly not when one part of the problem is the sometimes very large number of rather small private tertiary institutions. Yet governments would do well to consider how accreditation could be used to increase efficiency and quality by increasing the average size of universities and providers of professional training.

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THE NEW INSTRUMENTS OF PAYMENTS IN THE 21ST CENTURY

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Introduction. From 2010 till today's the number of types of digital currencies in circulation is estimated to number over more than a thousand. This fact alone is enough to focus attention on what might be justifying the existence of these special methods of payment. In addition to the fact that trust is the main motivator, what else is behind these quickly spreading virtual payment methods? On the one hand, it is consumer

behavior, a desire for a fast and simple payment method. In our paper-inundated, over-administered world, many seek the opportunity to render anonymous payment (and not limited to transactions of shady intent). The breakdown of bureaucratic barriers and comfort are the most powerfully expressed needs with the users of digital currencies. There is no standing in line at the bank, no entering into a contract with riders in tiny script, no unsecured transactions. There is, however, this: a fast and user-friendly (downloadable) system or application, anonymity, discretion, numerous services accessible in virtual space.

In order to understand the world of digital currencies and the richness of the current, rather popular metal or secondary world, I am going to review the value added services offered to users, services which have brought about the conquest of virtual space.

Introduction to virtual reality. The meaning of the word virtual: seeming, appears realistic, possible, almost, virtually real, close to real, inherent. Based on the foregoing, the needs of the users can also be explored, namely: in a close to reality format, but still expanding opportunities and physical boundaries, we can be capable of creating, to exploit virtual opportunities beyond the dearth of the daily grind, without being inhibited by the limitations of our physical or financial constraints. Advanced technologies assist in sensing near-reality, as in these meta-worlds, vision, touch and smell alike are playing ever greater roles .

Virtual reality is an all-encompassing, multimedia or computer based simulated reality, which enables interactivity and the users can indeed interact with one another. The expression artificial reality has been used by Myron Krueger as early as the 1970s, while Damien Broderic applied the term „virtual reality” in his 1982 novel (The Judas Mandala) (wikipedia). But the expression has only become widespread around the middle of the 80s.

The European Central Bank on virtual currency. Not even that long ago, in 2012, the European Central Bank defined the concept of virtual currency, setting forth:

- unregulated digital money which is issued and controlled by the developer and is a generally accepted method of payment in the given virtual community;
- a currency that is not issued by a non-central bank or authority;
- may be transported, stored and used for payment to legal or natural persons alike.

The international organization did not address the category of the new currency or payment method, what is should be considered, a payment system, a service, or a form of currency. It does not provide clear guidance in the field of taxation.

Virtual currencies developed from loyalty programs, the coupons and bonus points can be cashed in by now, as far as their appearance is concerned, they are the digital currencies of a given brand. The collection of points and exchanging them has ascended to a higher level; a broad array of point collection cards and credit cards has appeared.

Piggy coin- „Your first Crypto”. For starters, let us begin with piggy coni, the

digital currency developed for the youngest age category. We can easily guess from the piggy coin slogan that the target group is comprised of children, who are living within the zone of attraction of the internet now. The web site developed for children introduces the downloading and use of the piggy coin application. The objective of the site is to teach children the world of crypto currencies in an enjoyable format.

Piggy coin is accessible via a web application, and android app, on paper and with the aid of a PC installed program. The user then receives a piggy coin address that they can share with their friends, and then the transaction can begin at once. The children also have an opportunity to mine and search for piggy coins as well, in which they can try out the current games. Additionally, parents can reward their children with additional piggies, if they had done their household chores or written the homework . The price of 25,000 coins is USD 25, payable by the parent via bank card. The children may even use the digital currency to make purchases, the little „piggies” can be converted in authorized stores.

The piggy coin is 10 times as fast as the Bitcoin settlement, is family friendly and one can learn financial know-how with its assistance. Prior to sending the money, the children receive a question and only after answering it is the transaction processed. A serious team of developers and educators stand in the background to enable the piggy coin bank to operate in a playful format, interlaced with education. The amount that can be issued consists of 500 million piggy coins . On the piggy coin stock exchange, the piggy is measured in Bitcoins, the rate of exchange is close to 1 to 1.

A proprietary, secure, untraceable, open-source digital currency. It was launched on its triumphant tour of conquest on April 18, 2014. The users can choose from among various identification levels, if necessary, they can provide access to other users, such as auditors, with a right of download access. With its smart mining function, it enables continuous Monero mining, even with a relatively simple infrastructure. Its block size – having learned of the limitations of the Bitcoin system (where the block size is limited) – is dynamic.

A self-limiting/self-censoring mechanism is built into the system to filter out suspicious transactions. Even though the system is anonymous, the transactions of suspicious users are recorded on a blacklist. (Untraceable?) The application is easy to download and does not require special tools, a PC or a smart phone is sufficient. The owner of MyMonero is Riccardo Spagni, one of the founders of Monero. The Light Wallet application is necessary for the Monero transaction, which is Java based. Monero recommends to each of its users to run a „Node” to make the peer-to-peer network more stable. (<https://getmonero.org>)

The Monero network is underfinanced; therefore it is awaiting contributions and in exchange provides discounts for the contributors and to those who are participating in the development. In all cases, a hexadecimal character identifier is assigned to the payments; conveying this identifier enables the beneficiary to accept the Monero. In the case of Monero, a central address is live for payment and

the payments of a user are therefore collectable to a certain extent, unlike in BTC (where one payment may be assigned to one address).

The user may operate multiple wallets/accounts; for example, one may be used for private purposes, while sharing another with a business partner or family member, etc. The network works with two keys, one is for sending, the other for access/review. The review key enables a third party to gain access, e.g. an accountant. In the case of Monero, the security of each account is guaranteed by a reminder core developed from 13-25 words at the time of account creation; it is the responsibility of the user to guard and record it.

Overview of Crypto Currencies. Entropia Universe. A developed virtual 3D environment, developed planetary world with a real monetary economy. The planets offer numerous entertainment options, including travel between planets, socialization, forging ties. There is no fee to join or subscribe. Its economy is based on a modern micro-transaction system, with its method of payment being the PED – Project Entropia Dollar. Established in 2003, Planet Calypso uses a virtual currency that is tied to the Dollar.

The continuous expansion and development of the Entropia Universe and the visitation of new planets can be viewed in parallel with Farmville, where we can obtain/purchase farms in new areas from time to time. The appearance of new geographic units, migration on planets, special themed farms associated with holidays (e.g. Halloween, Christmas) ensure diversity and an opportunity to grow for users. Entropia Universe is also accessible via mobile application, but the user data within the universe is tied to each avatar, even though this data can be fictional. (Transitional state between complete anonymity and identified user networks.)

Farmcash /Farmville. Farmcash is the virtual currency of one of the rather popular games on Facebook; it may be purchased via bank card payment on the internet. In the virtual reality of Farmville, anyone can construct the farm of their dreams, their model spread, has the opportunity to operate, build various bars and markets, to create something during the daily grind. Relaxation and game playing and the improvement of performance are fundamental motifs in this system as well. The users behave rationally on a fundamental level, just as over the course of their actual economic decisions.

Linden Dollar. The Linden Dollar is the form of payment in the virtual 3D world of Second Life. In the virtual reality of Second Life, the user can maintain ties with his/her friends and „meet” new people, chat, discover numerous 3D areas, and create his/her own virtual appearance.

The users sell each other virtual goods and services; the transaction is entered into upon the meeting of demand and supply. In addition to the virtual real estate market, there is an operating minimal wage system, an employment and a charitable organization as well in Second Life.

Dogecoin. Open source digital currency that was intended by its developers to be a developer’s joke in connection with an internet meme. Users could send each

other Dogecoins for interesting internet content and in a short period of time, this generated a lot of traffic. The Dogecoin appeared in December 2013 in the world of crypto currencies. By today it has become a worthy adversary of Bitcoin and Litecoin, operating on the same operational principle, but contrary to those, it is capable of generating inflation. The amount that can be issued is not subject to a limit. As of 2015, 5.256 billion can be mined per year. It is ranked in the 5-8 range among digital currencies. Its code is XDG, the value of a coin is around HUF 30.

An interesting aspect of Dogecoin is that it can be obtained in the form of „tips”, assuming that someone creates or shares interesting internet content. The Dogecoin Wallet is accessible via computer application, through the internet, on Android based devices (mobile phones), blackberry or in the form of a hardware device. Its mascot is the Shiba Inu Japanese dog breed, this became the logo of the digital currency as well.

Litecoin. Open source P2P internet currency, characterized by payment with nearly zero commission, faster transactions (confirmation takes place nearly four times as fast as in the case of BTC), nearly immediate confirmation, better storage security/effectiveness. It can be accessed on Windows, Mac, Android, Linux, etc. systems. All of the Bitcoin followers are trying to provide some kind of added value, e.g. Litecoin enables a larger transaction volume, faster. It is planned that Litecoin volume can reach as much as four times the Bitcoin volume. There is even a reward component that has been built into the system for the miners, namely, 50 Litecoins per block. The site is now accessible in more than twenty languages.

Ethereum. An operating system that functions non-stop, developed by ETHDEV. Fans from all over the world participate in digital payments. There is a motivational component in this system as well: bonus Ethereum is paid out for development. A precondition of utilizing the service is entering into the so-called Hello World agreement, if the user has not had previous contact with Ethereum. Its unique nature is that the user may plan and issue his/her unique digital currency, which is standardized to a certain degree, thereby rendering it suitable for commercial circulation.

Peercoin. A secure and sustainable crypto coin which has been in existence among digital currencies since 2012, thus it is one of the oldest ones. Its rate of inflation by annum is below 5%. It is the first proof-of-stake coin (it uses a proof-of-work and proof-of-stake hybrid system), and there is no need for a intensive calculating power to operate the system. An innovation of the system is time stamping, a very important operation in the financial sector. The coins are equipped with a time stamp, therefore they are aging. There is a performance reward issued after the currency if it is retained for 30 days, at a level of 1% per annum. The coins do not „age” any further. Based on the age of the coins, the user may generate a new block for him/herself, increasing the quantity of coins.

Bitcoin on the pinnacle of the hierarchy of crypto currencies. BTC is a currency, digital money, a virtual method of payment; it is essentially an electronic signal

created with an encryption process. It is a special currency which is independent of central issuers and not influenced by the authorities. Bitcoin is not an official currency, therefore it does not have an ISO code, but its generally used designation is BTC, which is rather similar to the ISO code. Bitcoin's widespread adoption has been assisted by its accessibility through any internet-connected device. It is not a generally accepted national currency, yet it is still a currency. It is based on consensus, faith governs its use and acceptance. The maximum issued volume is capped at 21 million BTC.

By now, Bitcoin might have become the most well-known digital money which also performs the functions of a medium of exchange, currency, sale and purchase tool, measure of value and savings accumulation method. Based in Switzerland, the financial service provider First Global Credit also accepts Bitcoin as security for stock exchange transactions, thereby opening new horizons for digital currencies. Numerous other crypto currencies, like Monero, launched in the wake of Bitcoin's success. The digital currencies that are following in the footsteps of Bitcoin are attempting to overcome the limitations of the BTC system, often making this claim when advertising their own currencies.

The users of digital currencies are mostly young adults, more than 60% of BTC users are under 35 years of age. The currency has become widespread nearly worldwide, but there are some nations that explicitly prohibit its use (e.g.: Russia, Vietnam, Bolivia, Iceland, China, etc.) therefore users are decidedly trespassing through shady territory with their transactions.

Zerocoin. Zerocoin's entry was warranted by the imperfections of Bitcoin. BTC does not guarantee anonymity, therefore an attempt was made to develop a more secure protocol for users, who could exchange their coins. A critique: BTC stores transactions in a public main registry, therefore these transactions can be researched going back years. Zerocoin's developers deemed this too dangerous, so they sought another solution for the problem.

Zerocoin offers an opportunity to transform non-anonymous BTC coins into anonymous Zerocoins, thereby ensuring actual anonymity, while retaining value. This is important because one of the primary reasons for the use of digital currencies is low cost, low transaction fees. (Conversion works free of charge in reverse as well, from Zerocoin to BTC). Zerocoin's developers did not seek anonymity, their contact information and role in the creation of the system can be found on their website.

Shared characteristics:

- anonymity
- speed
- neutrality
- non-discriminatory
- digital encryption
- peer-to-peer network

- provision of resources/ and infrastructure on a community level
- opportunity to mine
- low costs
- address and private key required
- open source systems
- no age limit
- no unsecure transactions
- the download of an operating system independent application is required
- BTC and Monero may be ordered in coin form as well
- no centralized control
- one group operates the "core" system or project
- the inventor and developers of the system choose anonymity because of harassment by the authorities
- there are no fees (account management, admission fees) only transaction fees
- an interesting intermediate solution between classic batch settlement and RTGS systems (with regard to the timeliness of settlements, it approaches real-time settlement systems)

Success factors of digital currencies



Source: self-generated graph

Digital currencies tied to virtual games operate upon the infrastructure of other payment systems and can be tied to a specific service, even though strictly interpreted they fit the criteria of digital money. FarmVille and Entropia Universe strive to create a separate, identifiable, distinct space in virtual space. They form their own value system and norms and operate in accordance with certain values. It is their method of payment that can be used in virtual space in a limited manner, like Bitcoin. BTC, however, is not tied to a single segment of virtual space, but rather

strives for global domination. The role of digital currencies created for individually developed virtual games are connected with the need of the developers, namely that they enrich the users with an experience and offer them relaxation. From this perspective, Farmcash, PED, piggy coin and Ethereum contain a virtual added value in comparison with crypto currencies associated with primary payment transactions.

Barion – one example from the world of non-anonymous currency. Barion could be defined as digital currency tied to applications that ease daily payments, an electronic money issued in Hungary. The service provider ensures the use of the system alongside low costs, but it is hardly anonymous. The condition of utilizing the services is entering into an agreement and the provision of personal documents. The service provider may deny to enter into the contract, a direct intervention into the system is possible. The service operates similar to that of a traditional bank account. The users of the service do not enjoy the anonymity offered by crypto currencies and may not avoid convoluted administrative burdens. An additional disadvantage of the system is that the spectrum of those who accept it as payment is highly limited; we cannot talk about a worldwide network. There is a central registry (account management system), therefore it is centralized, the service provider provides the primary infrastructure for settlements.

Dangers. The settlement of crypto currencies, just as traditional settlements and banking systems, are subjected to numerous dangers. Cyberattacks on the networks may take place for the purpose of determining the identities of users. The identification of a single user might unmask the anonymity of other users. In this case, the operation of the entire network might be endangered, as one of the most frequent reasons for someone to choose crypto currency is to avoid administration and identification (not just terrorists desire anonymity in virtual space). Zerocoin was founded to achieve a higher level of anonymity, created with the expansion of the BTC protocol.

There may be an intrusion into the system with the intent to defraud, to enable the coins to be spent on multiple occasions (by injecting additional nodes into the system). At this time, the security and performance of the payments may be in danger. Certain external attacks may be targeted at making settlements impossible (Denial of Service), to reduce processing capacity. In this extreme case, the system may stop operating entirely.

Lacking a central issuer, in the case of abuse or theft, there is no one to intervene or investigate the fraud. This is why security and trust are so important in the operation of these systems. The improvement of security is continuously present in the world of digital currencies. Newer and newer crypto currencies endeavor to overcome the flaws of their predecessors.

On the one hand, the speeding up of settlements, on the other, the integration of check points and the increasing of their frequency may improve security. In case of BTC, these can get in the system simultaneously with the updates; in the case of Peercoin, verification and closings are continuous. [Bura i.m. 17] These security

closings are similar to the settlements of the batch-based items of traditional clearing systems.

In the case of Bitcoin, it may be a source of danger if more than 50% of calculation capacity was concentrated in the hand of a single user. At this time the user can take control of the system, able to spend a single BTC more than once, or to reject certain transactions. The stability and security of the system are well demonstrated by the fact, however, that the controller of the system cannot modify the transactions of others, change rewards for mining, or spend money that does not belong to him/her. Additionally, he/she may not create a new settlement unit, a new coin.

In the case of Peercoin, 51% of issued currency (coins) is required to intervene, but in this case the intervention/attack becomes counterproductive, as the user would be weakening the value of his/her own money. This is how it becomes apparent that Peercoin is attempting to remedy the „growing pains” of BTC.

The importance of the struggle against money laundering are beginning to be placed in the foreground by the users of digital currencies as well, limit monitoring is also built into the new system (or are planned to be integrated). Naturally, this is cumbersome, as how can there be a guarantee for anonymity? Or perhaps the basic principles are only valid to a certain amount limit? There is no direct screening in the clearing systems, it is the partner banks, not the clearing system itself which perform the identification and reporting of suspicious transactions.

Conclusions. BTC’s leading role remains unquestioned to this day; only BTC approaches the real of real currencies with its savings accumulation function. Bitcoin technology serves as the foundation of numerous other digital currencies. Its acceptance as security for stock exchange transactions has given the crypto currency a new function. The involvement of minors in payment transactions harbors numerous dangers and opportunities. It is obviously important for children to become familiar with the virtual world and payment systems, so that they can learn the value of money. The fact that they can earn money in virtual reality expands their imaginations and of innovation. They can become familiarity with the world of work and the interactions in the economy, but the exploration of the digital financial world can be dangerous as well. Minors are subjected to attacks in virtual space, meaning that parents must bear a great deal of responsibility when they determine how much freedom to allow their offspring in virtual space/economy.

Financial authorities and governments are observing the appearance of crypto currencies with concern. A serious rival has appeared in the market of payment systems. One might say: „Digital money doesn’t have a distinctive smell”, we do not know the previous history of digital money, in many cases digital currencies do not even have a tangible existence, we do not know who the payer and the beneficiary is, the flow of funds is not directly tied to a service or a good. Anonymity is a threat and a competitive advantage at the same time. Digital space is yet unexploited, thus one can expect explosive growth and natural selection to take place in the area of digital currencies in the coming years. Governments and financial authorities are

still lagging behind in the area of regulation. Fast and forward-looking steps are necessary to enable control over the continuously flowing money.

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EDUCATIONAL SECURITY IN THE CONTEXT OF ENSURING NATIONAL INTERESTS OF UKRAINE

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In the context of the transformational processes taking place in Ukraine, the issue of educational security, which is a key component of national security, deserves special attention. National security directly influences the effectiveness of changes in all spheres of public life, since it is a conscious, targeted, organized influence of the subject of management on the real threats and danger through which state and non-state institutions create favorable conditions for the progressive development of Ukrainian national interests, the sources of the well-being of a particular person, society and the state, and also ensure the effective functioning of the system of

national security of Ukraine [Lipkan, 2005, p. 26].

In order to realize the ideas of national interests, it is necessary to bring the functioning of the education system to a qualitatively new level, as the security of the state in the strategic plan is determined by the state of the education system. The education system is an environment and an essential mechanism for comprehensive development, mobilization and updating of intellectual potential, and, consequently, for innovation development. In economically developed countries, at the expense of education, they receive up to 40% of the growth of gross national product [Stetsiv, 2010].

As the national security of the country depends directly on the intellectual potential of the country, the moral and political ideals of the youth, its social values, the level of general culture and vocational training, education, above all, is the foundation for the formation of knowledge and intellectual capital. It provides security at all levels (individual, society, and state). And it plays an essential role in their strengthening. Thus, without qualified personnel, economic and military security of the state is impossible, technological security is impossible without modern scientific developments, etc.

Educational security of the state is the ability of the education system to ensure the implementation of human rights for general and vocational education, its ability to reproduce skilled labor, the state's ability to protect national interests in education from possible threats.

The Institute of Human Rights and Freedoms establishes that in the field of education, the state must create the whole set of institutional conditions for the realization of the right of citizens to education. At the same time, the intervention of the state in the educational process must be determined by the interests of the individual, society and the state, which, obviously, is dictated by the realization of human rights and freedoms, since the right to education belongs to the set of fundamental rights [Zarubezhnyi, 2001, p. 62].

Considering the aspects of security in an educational institution, there is a concept of comprehensive security of an educational institution, which G. Kodzhaspirova understands as "the state of the educational institution's security against the real and predictable social, technological and natural threats that ensure its safe functioning" [Kodzhaspirova, 2008].

The problem of implementing national security in the field of education has reached a certain solution and philosophical comprehension in the works of V. Barkhatov, D. Dzvinchuk, H. Dmytrenko, K. Karpova, K. Korsak, V. Luhovyi, A. Malolitko, S. Nikolaienko, V. Ohneviuk, S. Proleiev, M. Stepko, I. Stetsiv and others.

The national interests of Ukraine lie in the fact that education should fulfill the functions assigned to it: acquisition, extension and continuous updating of knowledge; growth of labor productivity and individual employee income; balancing the labor market, ensuring its labor force in line with changes in demand

in the labor market; social protection of workers from unemployment. According to some calculations, wages in Ukraine are 50%, labor productivity is 32-38%, and more than 50% of inventions depend on the educational and professional level of the employed. At the same time, educational factors in aggregate by 50-80% provide a positive dynamics of the results of innovation activity [Antoniuk, 2008, pp. 16–17].

There is a close relationship between education and science, since scientific knowledge enhances human, state, and society's ability to anticipate and neutralize certain threats. Nowadays, economically developed countries pay particular attention to the development of information technology, improvement of methods for obtaining, storing, searching, transmitting information, and this greatly contributes to the development of education [Stetsiv, 2010].

In view of this, successful personality development is possible in an environment in which the absolute value of each person is recognized, the activity is carried out on the principles of humanism, which gives impetus to its successful implementation. Domestic and foreign scholars and practitioners interpret the educational environment as part of the human life and social environment, which manifests itself in the aggregate of all educational factors that directly or indirectly influence the personality in the processes of education and development; it is a certain educational space, where its development is carried out.

Thus, foreign scholar V. Iasvin believes that the educational environment is a characteristic of life within an institution of education, a system of influences and conditions of personality formation, as well as a system of opportunities for the development of personality that are contained in the social and spatial-subject environment [Iasvin, 2001]. Evaluating the educational environment as a systematic tool for the formation of personality, the author proposes its structure, which includes three basic components: spatially-subject (spatially-subject conditions and opportunities for the implementation of education, socialization of the individual); social (the space of conditions and opportunities that is created in the interpersonal interaction between the subjects of the educational process (students, teachers, administration, parents, psychologists and others); psychological and didactic (a complex of educational technologies (content and methods of teaching and education), built on different psychological and didactic principles) [Iasvin, 1997, pp. 11–15].

The educational environment of higher education institution (HEI) is studied as a pedagogical phenomenon (A. Artiukhina), a factor of professional self-determination (O. Mondonen), socio-cultural development of students (N. Zybyna), professional self-consciousness (L. Andrieieva), adaptation of students in conditions of optimization of educational environment (H. Horska, T. Braun), formation of professional and civil competencies (S. Miakishev and L. Orynina). The educational environment is studied as a means of development of a student's creative personality (V. Masterova, S. Pymonova, Y. Podolska), self-realization of the personality (N. Senchenko).

The term “educational environment of a higher education institution” is understood by some scholars as a combination of the material and spiritual conditions of its functioning, which ensure the self-development of a free and active student, the realization of the creative potential of his/her personality. Educational environment serves as a functional and spatial association of subjects of education; and close diverse group relationships are established between them. It can be regarded as a model of socio-cultural space, in which the formation of personality occurs [Katashov, 2001, p. 8].

The entrant, choosing HEI today, thoroughly examines its stability, prestige and economic well-being. Such a situation necessitates the work of the HEI in creating conditions that would ensure its successful existence in order to ensure that the educational environment of the educational institution is protected and safe.

At the same time, in today’s rapidly changing conditions, the educational environment of an educational institution is not isolated from external and internal factors and their influence. These factors can have both a positive result and contain threats, dangers and risks that lead to destructive changes.

Professor I. I. Musiienko points out that “The development of the educational system in the direction of guaranteeing and safeguarding national interests is determined by the influence of such factors as: the emergence and expansion of the sphere of influence of organizations that seek to world-wide manifestation (for example, the WTO, the World Bank, the International Monetary Fund, the Organization for Economic Co-operation and Development, etc.); popularization of the philosophy of neo-liberalism, based on the absolutism of the importance of market relations and spreading them to the spheres of education, health care, social security, etc., as a government ideology; maintaining a deep divide in the level of socio-economic development between industrialized and developing countries; the desire of national and governmental organizations to create horizontal rather than hierarchical organizational structures (for example, the European Union, the North American Free Trade Area, the Southern Cone Common Market, Asia-Pacific Economic Cooperation, etc.); the urgency of the solution at the supranational level of global environmental problems” [Musiienko, 2012, p. 5]. As a result, he observes that “It is obvious that the right to education requires an appropriate institutional structure, which, created by the state, should be in line with national interests. In essence, an institutional political and legal field is formed that regulates the field of education, and it is determined by a wider institutional context, ensures the realization of human rights and freedoms. Therefore, the full implementation of the right to education by the state is connected with the conceptual content of national interests. This interest is an ideological context for ensuring national security” [Musiienko, 2012, p. 10].

Unfortunately, in reality, modern Ukrainian higher education does not respond quickly to the fleeting needs of society and the labor market, which is expressed in terms of training and discipline, which are calculated on the existing (or past)

educational environment, rather than on the planetary information space; structure of the content of training and retraining, which are formed according to the “tunnel” principle (“immit me”); pedagogical technologies, formed on information and reproductive techniques; pedagogical control, which is aimed at finding mistakes both in the teacher and in the students (that is, on the negative) [Luzik, Khomenko-Semenova].

Therefore, HEIs are under the influence of a number of factors that negatively affect their activities and threaten their safety. These main factors include:

- lowering the quality of higher education;
- outflow of qualified personnel from HEIs;
- reduction of the number of entrants;
- non-transparent mechanism of distribution of budget funds and reduction of state financing;
- aggravation of competition between HEIs for entrants and between graduates in the labor market;
- low representation of domestic HEIs in international university rankings.

The aforementioned factors create threats both for the development and sustainable functioning of the HEIs, as well as the state; determine the orientation of international economic communications; can damage the HEI or adversely affect its functioning. At the same time, the identified factors of the threat to the security of the HEIs make it possible to prevent or mitigate the impact of certain threats to the activities of higher education [Snihyr, 2017, p. 647].

The analysis of the source base shows that scientists differentiate many classifications of threats. Thus, M. Glasnyi points out 7 main threats in the system of higher education and considers them the most urgent and global problems: 1. Non-compliance with legislative requirements. 2. World financial crises. 3. Energy crises. 4. Inflation. 5. Changes in consumer demand. 6. Fight for talented professionals. 7. Epidemics [Glasnyi, 2008].

The greatest spread in science has been acquired by the allocation of threats, depending on their sphere of origin. On this basis internal and external threats are distinguished. External threats arise outside of the economic systems. Internal threats are caused by those processes that arise during the operation of economic systems. According to scientists, all kinds of threats and risks, associated with the provision of educational services, are appropriated for institutions of higher education.

L. P. Snihyr submits a classification of internal (all that creates conditions for violation of the current legislation in the field of education and licensing conditions by the leaders, faculty, other permanent staff of HEI and students) and external (arising outside the economic systems, are manifested in the negative consequences of socio-economic development of the country) threats to the security of HEI [Snihyr, 2017].

He refers the following to external threats: the instability of state policy in the field of higher education; change in the system of knowledge assessment when

enrolling entrants; unfavorable demographic situation; competition in the market of higher education; saturation of the labor market by graduates of certain specialties; the impact of the economic crisis on the consumer's purchasing power of educational services; the level of corruption and crime in Ukraine.

The scholar refers the following to internal threats: non-compliance with legislative requirements; aging of consumers and personnel in the system of higher education; constant shortage of skilled personnel; the inability to react in a timely manner to changing consumer demand; inability to innovate in the system of higher education; presence of conflicting relations between the leadership of the higher educational establishment and the teaching staff; the absence of preventive measures for manifestations of corruption, fraud in the HEI [Snihyr, 2017, p. 30].

Threats to native education have different nature, sources and forms (crisis in the field of spirituality; fall in the credibility of education (fundamental one); lack of funding; commercialization of education; unfinished reform process – from the old Soviet system to the modern, advanced world). The provision of security in educational institutions is largely dependent on the availability and use of financial resources, the stable and sufficient receipt of budget funds above all. In addition, given the fact that Ukraine has clearly identified the entry into the educational space of Europe as its guideline, respectively, there should be a gradual modernization of educational activities in the context of European requirements [Hirniak, 2014].

In order to create an effective safety system of HEI, it is necessary to have a clear idea of what factors affect the level of security threats. Awareness of the relevant factors of security threats to institutions of higher education will make it possible to prevent their impact or at least the consequences [Snihyr, 2017, p. 647].

Specialists of the Humanitarian Security Department of the National Institute for Strategic Studies of Ukraine T.V. Chernenko, M.M. Karpenko, V.S. Lozovyi and others prepared an analytical report on Security Measures of Education Policy: World Experience and Ukrainian Realities, in which it is noted that for the foundation of the security factor, it is necessary “to streamline the organizational and legal principles that determine the development of education and science, primarily forms of interaction between universities and institutes of the National Academy of Sciences, mechanisms for implementation of agreements of scientific collectives with high-tech production, in particular in the field of defense, as well as provision of public-private partnership in the field of scientific developments; to ensure sufficient financing of the joint educational and scientific projects of the institutes of the National Academy of Sciences of Ukraine and research institutes of the Ministry of Education and Science of Ukraine, which should provide elite education and conduct innovative scientific research; to implement the policy of financial and tax incentives for universities and scientific institutions that develop science, specialize in the creation of innovative knowledge; using the experience of the best European and world scientific institutions and educational institutions, to modernize the system of training highly skilled personnel for the scientific,

educational and innovative spheres, create effective mechanisms for supporting young scientists, expanding career prospects for doctors and postdoctoral students, ending the emigration of researchers, providing social protection of scholars” [Ishchenko, 2017, p. 40].

Thus, the creation of an integrated system of national security is the main task of Ukraine as a sovereign European state. In the national security system, education plays the huge and increasing role. It acts simultaneously as an object, a resource and a means that creates, strengthens the foundation of the country’s economic growth and its security. By joining the struggle for high positions in domestic and international rankings, HEIs contribute to the improvement of the quality of education. Increasing the level of economic development in modern conditions will contribute to ensuring the effective functioning of higher education institutions and their security, in particular as a result of improving the quality of training of specialists who can be competitive both on the domestic and international labor markets. That is why the development of the educational sphere should be one of the most important priorities of the national security policy.

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GENDER POLICY OF POPULATION EMPLOYMENT IN THE SYSTEM OF FORMATION OF UKRAINE'S PERSONEL SECURITY

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The issue of employment and job placement remains a topical point in Ukraine as well as in EU countries and it is considered to be one of the central problems of modern society. The problem of gender equality have a profound impact on the development of the social life of Ukrainians and it is aimed to be the center for economic and social growth. Although women have already achieved significant successes in their rights and freedoms, in reality no country in the world has ever

been able to achieve full gender equality. Once too often, women and girls are discriminated against in health, education, political representation, labor market, etc., which has a negative impact on the development of their abilities and freedom of choice.

The gender approach is an important part of the comprehensive study of market problems, because it reveals the mechanisms of gender inequality in employment, reveals its causes and consequences. Awareness and solving of this problem will contribute to the improvement of legislative enforcement within the framework of equal treatment of employees, regardless of the gender, in accordance with the standards of the European Union legislation. This problem is especially relevant in the context of personnel security forming in Ukraine, while there have been an ongoing migration processes for the last decade. The generalization of theoretical basis and practical experience of forming gender policy of employment shows that the main problems of the domestic labor market, in addition, lie in the characteristic features of mentality, national culture, traditional concept of the woman's role in the family, at work, in management. In the long-term perspective, it is necessary to get rid of the phenomenon of gender discrimination against women in the sphere of employment. It gradually exhausts the economy of our country – we lose the workers and qualified personnel and become the supplier of the “human capital” to the European countries.

Moreover, this tendency is becoming more and more serious. The countries with the higher level of economic and social development than Ukraine are considered to be more attractive for labor migrants and it causes the labor resources outflow.

Semikina M.V. notes, «The gender approach is an important part of the comprehensive study of labor market problems, since it reveals the mechanisms of gender inequality of employment, reveals its causes and consequences» [1]. The main task of the State Social Program for ensuring equal rights and opportunities for women and men for the period up to 2021 is «ensuring of equal rights and opportunities for women and men will determine the necessity of active and comprehensive work in solving the problems of gender discrimination and providing the real gender equality «[2]. Economic activity is the desire of the able-bodied person to apply his abilities, knowledge, skills, and competences while performing the work in order to obtain the income. The realization of such a desire is expressed in the economic activity employment, and non-realization is expressed in the unemployment.

The study of indicators of economic activity of the population of the country by gender on average in the first half of 2017 - 2018 (Table 1) showed that the prevailing number among employed persons belongs to men.

There is a quite insignificant percentage shift for benefit of women (it is only 0.5% of the total) in 2018. It is explained by a decrease in the number of men in the structure of the economically active population by 65.1 thousand people in the current year, in comparison the previous one.

Table 1

**Economic activity of the population on average in the
first half of 2017 - 2018, by gender**

Indexes	The whole population		Women				Men			
	2017	2018	2017	% to all	2018	% to all	2017	% to all	2018	% to all
Economically active population, thousand people	17830.6	17883.6	8425.6	47.3	8543.7	47.8	9405.0	52.7	9339.9	52.2
Economic activity level, %	61.9	62.4	55.7	×	56.7	×	68.8	×	68.6	×
Employed population, thousand people	16120.9	16283.2	7775.8	48.2	7898.1	48.5	8345.1	51.8	8385.1	51.5
Employment rate, %	56.0	56.8	51.4	×	52.4	×	61.1	×	61.6	×
Unemployed population (according to the ILO* methodology), thousand people	1709.7	1600.4	649.8	38.0	645.6	40.3	1059.9	62.0	954.8	59.7
Unemployment rate (according to the ILO methodology), %	9.6	8.9	7.7	×	7.6	×	11.3	×	10.2	×

* International Labor Organization

Source: done by the authors according to the data of the State Statistics Service [4]

In the domestic labor market, the employment rate of women in the surveyed

period is lower than that among men (9.7% in 2017 and 9.2% in 2018). The level of economic activity of women is lower than that of men (by 13.4% and 11.9%, respectively the above-mentioned years). The obtained results of the research once again confirm the existence of gender segregation in the economy of our country.

Taking into account the mentioned indicators, it is impossible to affirm with certainty the discriminatory nature of the Ukrainian labor market for women. Even though the level of female unemployment is lower than that of men (provided that the number of employed women is smaller than the number of employed men: 7.8 million employed women versus men - 8.3 million people in the first half of 2017 and 7.9 million people against 8.4 million people in the first half of 2018).

The surveys have shown that there are discrepancies in the employment rates of male and female population living in cities and rural areas (Table 2). According to the results of the survey, we can state that the number of employed people is decreasing year after year. Thus, the deviation between the reporting and base year is 3023.8 thousands people (or 15.7%).

Analyzing the data in Table 2, we can state that the number of employed people decreases each year due to the reduction of the population in Ukraine. To some extent, it is because of the Crimea annexing and some problems in the temporarily occupied territories of Donetsk and Lugansk regions. Thus, the deviation between the reporting and the base year is 3023.8 thousand people (or 15.7%).

Considering the data on the employment of the population according to the residential distribution, it is worth stating that the urban population prevails over the rural one more than twice.

As you can see, during the surveyed period the number of full-time employees in accordance with their gender distributed almost equally. However, there are significant differences in the labor application.

Traditionally, man's working spheres are: construction (81.1% of the total number of staff), extractive industry and the development of mines (75.7%), furniture production, other products, repair and installation of machinery and equipment (72.5%), agriculture, forestry and fisheries (71.4%), transport activities (70.6%), production of coke and products of oil refining and metallurgy, production of finished metal products, excepting machinery and equipment (by 70, 1%), warehousing and assistant activities in the field of transport (69.9%), machinery and equipment (69.8%), rubber and plastic products manufacturing, and other non-metallic mineral products (69.4%) [3]. In most types of economic activity, it is due to labor conditions. In particular, it is prohibited to employ women if it is necessary for them to perform heavy and harmful work. However, the low level of democracy development in the country, the characteristic features of mentality, national culture, traditional notions about the role of women in the family, in work, in management, etc. prevent the gender inequality overcoming [1].

Table 2

**Employment by sex and place of residence
(Aged 15-70 years, thousand people)**

Indicators	2010	2014	2015	2016	2017	Deviation 2017 by 2010	
						+/-	%
The whole population	19180.2	18073.3	16443.2	16276.9	16156.4	-3023.8	-15.7
from it able-bodied age	17451.5	17188.1	15742.0	15626.1	15495.9	-1955.6	-11.2
Women	9442.0	8718.9	7872.4	7827.4	7771.2	-1670.8	-17.7
from it able-bodied age	8194.9	8169.4	7489.0	7490.9	7424.7	-770.2	-9.4
Men	9,738.2	9354.4	8570.8	8449.5	8385.2	-1353	-13.9
from it able-bodied age	9256.6	9018.7	8253.0	8135.2	8071.2	-1185.4	-12.8
Urban population	13072.2	12780.9	11309.0	11178.5	11109.3	-1963.0	-15.0
from it able-bodied age	12173.4	12263.7	10869.5	10771.5	10689.2	-1484.2	-12.2
Rural population	6108.0	5292.4	5134.2	5098.4	5047.1	-1060.9	-17.4
from it able-bodied age	5278.1	4924.4	4872.5	4854.6	4806.7	-471.4	-8.9

Source: constructed by the authors according to the data of the State Statistics [4]

An important aspect of using the labor force is the wage. In recent years, the average wage of women in the economy of the country was 21.2% lower than the corresponding index for men (in 2016 - by 25.4%). Let's analyze the dynamics of women's employment and their wages by the type of economic activity in the period of 2015-2017.

Analyzing the data in Table 3, we can note the fact that in the period 2015-2017, in terms of economic activities, the wages of women are lower than that of men, which confirms the presence of gender discrimination in the field of employment in our country. The only exception was the sphere of services and cultural institutions activity in 2015-2016. It is explained by the specific features and requirements for these professions, as well as by the historical and traditional concepts of our society. However, in 2017, there was a decline in the above-mentioned types of economic activity. It should be noted, that the majority of the gaps are not caused by direct discrimination in wages but by horizontal and vertical stratification of the labor market: women are more likely to work in less-paid sectors of the economy and in lower positions.

The difficult social and economic situation in Ukraine causes and strengthens the tension in Ukraine's labor market and causes the increase in unemployment.

Unemployment is a complex multidimensional phenomenon, when the part of the active able-bodied population cannot find work [5]. Unemployment is considered to be a macroeconomic problem, which leads to many negative consequences in the country such as: increase in the social differentiation, reduction of population labor activity, increase of unemployment benefits, and as a result - decrease in the gross domestic product of the country [6].

Table 3

Number and wages of women in agriculture

Years	Average numbers of women		The average month salaries of staff workers, UAH		Wage ratio of women and men, %
	Thousand people	% to the average number of workers	women	men	
2015	129.3	31.0	2637	3307	79.7
2016	126.5	30.8	3455	4121	83.8
2017	123.4	30.4	5040	6077	82.9

Source: compiled by the authors according to the State Statistics Service [4]

Let's compare the number of unemployed population of Ukraine and the correspondent rate of unemployment in the first half of 2017 -2018 by gender. Thus, the number of unemployed in the first half of 2018 amounted to 1.6 million people, 40% (645.6 thousand) women, 60% (954.8 thousand) men. In the first half of 2017 the number of unemployed was equal to 1.7 million people, there were 38% (649.8 thousand people) of women and 62% (1059.9 thousand people) of men. Among women, the unemployment rate (defined by the ILO methodology) in 2017 amounted to 7.7% (in 2018 - 7.6%), and among men -11.3% (10.2% in 2018) (Fig. 1).

In modern globalized economy, migration is considered to be the consequence of unemployment. Today, Ukraine is among the top ten world countries, which supply the migrants, while losing not only workers and qualified personnel, but also becoming a supplier of human capital to European countries.

It should be noted that, in accordance with the implementation of the EU-Ukraine Association Agreement, we must comply with the principles of the Gender Equality Directive, which prohibits any less favorable treatment of men or women from the point of view of the sex or women due to pregnancy or the birth of a child. It also forbids sexual harassment. The European Commission [7] promulgated a detailed analysis of this Directive.

The elimination of gender inequality is impossible without reduction of social inequality. The cost of living, the minimum wage, the development of reproductive infrastructure and the children care policy have a structural impact on the life and well-being of women. The conflict which is going on in the Eastern part of Ukraine leads to the humanitarian catastrophe and has a negative influence on the life of

those women who live there [8]. Today, as ever, one needs to praise a woman who defense the Ukrainian hope and is responsible for human lineage [9].

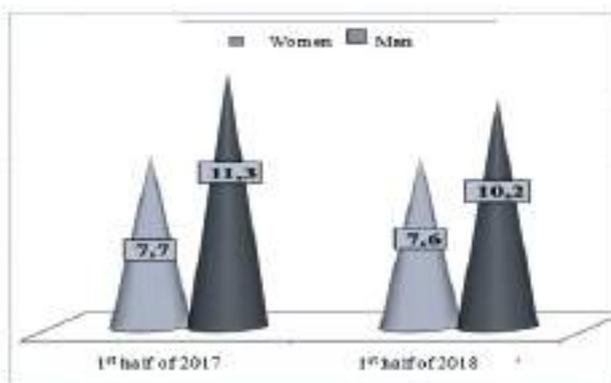


Fig. 1. Unemployment rate by gender (%)

Source: Built by the author according to the data of the State Statistics Service [4]

A lot of measures have been undertaken at this stage. Still there is a necessity to implement the combined approach in order to be able to manage the consequences and foresee the future changes.

Eliminating gender discrimination in many cases will depend on understanding the problem, correspondent gender knowledge sharing, proficiency in international standards and successful examples of gender equality implementation.

The consistent work in this direction will lead to stability, equality and justice. Today, an important prerequisite for the development of modern society is to pay special attention to personnel that creates conditions for economic growth and competitiveness in conditions of maximum use of innovations for the individual employee and the enterprise itself, and it guarantees its economic security [10].

There is a lack of institutional procedures to provide gender prioritization in various local policies. They relate to the temporarily displaced people, gypsies and women of national minorities empowerment, the system for coordinating and monitoring implementation of national policies and measures at the local level, a functional mechanism and abilities to achieve gender equality in public administration.

There is a necessity in defining the gender equality as part of the powers of local self-government bodies in order to provide administrative capacity for implementation of the gender equality policy.

The legislation itself is not enough for transformations in the social consciousness and for the creation of civilized cultural customs of gender roles in Ukraine. Unfortunately, the legislation itself is not fully implemented. It will be useful to gain some experience in foreign practice and implement the best features of it.

The equality among women and men must become a reality in the new and democratic Ukraine. There is an urgent need in the adoption and implementation of measures, which are aimed to prevent, reduce, resist and avoid gender inequality.

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ENSURING ECONOMIC SECURITY OF UNIVERSITY BY MODERNIZATION OF MANAGERIAL APPROACHES

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Entered the third millennium as an independent state Ukraine has been building a national education system. The main priorities in the modernization of the education system are its democratization, fundamental improvement, use of new learning technologies, integration of various training forms and systems. The strategic objective of the state educational policy in Ukraine is competitive entry in the world market of educational services, deepening international cooperation.

However, nowadays the majority of Ukrainian universities are facing the managerial crisis caused by discrepancy between the existing system of management and new economic conditions. The traditional management of institution of higher education (HEI) is inefficient, and the desire to preserve financial stability only affects the quality of educational and research activities.

Reformation of the universities' system of management is of a particular relevance in connection with passing the new Law of Ukraine «On Higher Education», where universities have considerable autonomy in academic, financial and organizational issues. The law enabled universities to form the desired system of management, to choose the methods and tools of management and to bear full responsibility for the impact of their activities.

Being aware of the need for reformation, some universities have begun to rebuild their own system of management, but the lack of experience and clear understanding of the problems and ways of their solution results in changes that occur haphazardly and do not bring the expected results. All this makes university leaders seek the ways to apply modern and innovative approaches to improving the system of management.

Consequently, there is a need for a new ideology of management and specific managerial practices to effectively manage the university in terms of the emerging education market and continuous innovation providing. In this regard, the purpose of the study is to substantiate the need for changes in higher education and to develop the innovative process-centered approach to the management of higher education institutions based on modern concepts of service management.

In conditions of market reformation, two main behavioral models of universities can be defined. The conservative behavioral modeled results in sluggishness of a HEI activity: it keeps mainly formed relationships and solves emerging problems in a traditional way, and if there is no solution at the level of the university, HEI expects to get it at national level.

On the other hand, the model of active adaptation contributes to utilizing the HEI's

own strength, not so much on its own resources, but on the ability to independently predict the situation and undertake the appropriate steps on its own [1].

The need for modernization of a university's management led to the need to change management approaches and, consequently, provided an opportunity to instantly respond to changes in the social environment. In order to increase the efficiency of national HEIs in the new economic conditions the innovative process-centered approach to the HEI management based on the author's concept of management of higher educational institutions as a subject of the market [2].

HEI business processes allocation, their analysis and improvement are the considerable reserve for efficiency of the university management. Among the main advantages of the process-centered approach to HEI management are the simplicity of the optimization of both processes in terms of their organization, synchronization, interconsistency and resources consumed by the processes, especially human and financial resources. In addition, there is a natural reorientation of organization and management on a consumer (client), who begins and ends all processes in the HEI.

In the context of the process-centered approach to the university management one can distinguish four main groups of business processes: the goal setting process, the operational process, the process of management and the processes of development. The following are the main features and recommendations on their improvement.

Currently, there are different approaches to define the mission of the university. Some believe that its goal is scientific discoveries, transfer and use of knowledge in the community of scientists and teachers. Others focus on the issues of economics, finance and on the response to market changes. Still others see the university as a well-ordered social and political community. Thus, the duty of the administration and the university staff is to creatively approach to the definition of the HEI mission [3]. The mission should reflect the core values of the university, its main products and target markets.

HEI's strategy determination depends on the legal form of the university, on its size and specialization. The geographical location, demographic, economic, social and cultural traits of the region are also should be taken into account. Strategic plans should include far-reaching goals: access to the world educational market, the occupation of its specific niche or obtaining the market share [4; 5]. The strategy defines the university's policy, which should aim to achieve its objectives.

Unlike the strategies, goals and objectives for a certain period of time must be specific, indicating the ways of their achievement, the appointment of responsible persons and the creation of the system control. The current environment has a high degree of variability, so the goals should constantly be adjusted. In addition, it is necessary to distinguish between internal and external purposes. External goal set by society (the state) and reflects the contents of its organization.

Operational processes of HEIs likewise the processes at any organization that carries on business in a competitive market are divided into primary and secondary

processes. The primary activities of HEIs include: educational services; research and development; production. In terms of the technology of building a business process in a HEI, the primary activities of the university correspond to the key business processes, that is a sequence of actions starts with one or more inputs and ends with the creation of products or services necessary to the consumer. In its turn, the main activities are divided into subtypes that represent the private business processes. For example, such business process components as educational activities at different levels of education, pre-university and post-graduate educational activities etc are subject to a key business process - educational activity of a HEI. Auxiliary activities that support the implementation of the key activities (key business processes) are considered to be those, which support and serve to the business processes that do not have direct access to the customer (the applicant). These are the administrative and financial, personnel, logistical support etc.

Each auxiliary business processes in its turn is divided into subtypes similar to the key business processes. The interdependence between basic and additional activities is provided by the unified organizational structure and the system of management on basis of the both transparent information systems support and quality assurance. Each type of activity (main and auxiliary) must be aligned with the current legal framework [6, 7].

Thus, in accordance with the process-centered approach to the HEI management the key roles belong to the processes, their purposes and executives. The role of functional departments fades into the background. Thus the focus of management is shifted from structural educational units (dean office, department, center) to the educational process, but rather to the organization and implementation of educational (research) programs. The research of the educational business process as the key process of HEIs allows to coordinate resources allocated to an education program or research project with the rights and responsibilities of process managers. Thus, in order to be effectively managed each process should be leaded and presented by the process team.

These processes are the binding components of the HEI business system. Managerial functions are presented in each operating process. If we consider the educational process as the key business process of a HEI, it begins with development of educational (research) programs, is followed by educational process planning, organization and its direct implementation as well as motivation of its participants, control at all stages of the process and finally ends with the results assessment.

To link resources allocated to the education program with the rights and duties of the head of the team it is expedient to draw up the estimate of educational programs. Although the processes by the educational programs are not displayed in the structure of a HEI system of management, but they are used as means of the internal control of the process team. The abovementioned breakdown of estimates is required to both take into account the consumption of resources by the each process team and to coordinate their work [8]. Scheduled budgeting should be done on the

basis of self-sufficiency of educational (research) program and processes teams that carry it. This requires on the one hand a new understanding of planning and financial activities of a HEI and on the other – change of approaches to the evaluation of educational structures (dean, department) and the units they serve.

Organization as a management function includes: forming the management structure, division of tasks and resources, allocation and delegation of authority. Most universities use a closed management model based on linear-functional organizational structure, and only a small number of universities are shaping and implementing an open management model, able to respond flexibly to environmental conditions.

Each process team should be headed by the process manager who individually is liable for the process team work and provides interconnection between managers of the other core processes [8]. Both the matrix and project organizational structure, which provide a direct connection between the linear and functional units at any process are able to provide the necessary flexibility in the management of educational activities.

As practice shows staff motivation as a management function in a HEI is not provided sufficiently with financial resources. To solve the issue of financial security, in particular of the process of motivation in the conditions of educational systems restructuring and economic crisis, it usually takes time. So, the university management support and provision of staff self-development can serve as an effective motivating tool. Employees training to improve their skills is a central component of a HEI development in the information society. Care of the university teachers, teaching both teachers and students to efficiently work in team are the main objectives of the university.

Control function in the management of university provides the achievement of its goals and development in the given organizational conditions. The main tasks of control are: collection and systematization of information on the state of both the outer environment – market needs, customers inquiries, competitive advantages of the other universities, etc. and inner environment – education, research, economic, financial and other activities; assessment of the results for all activities; analysis of the factors that influence the effectiveness of operational processes; preparing and implementing managerial decisions

The leading place in the hierarchy of objectives the universities are currently facing belongs to quality assurance in all spheres of its activities and, above all, in education. This process is an integral part of every primary and secondary process and should be organically included in any of them. Therefore, according to the innovation process-centered management, the process of quality assurance is imposed as an invisible network on all its components and is reflected in the functional responsibilities of each employee having a link to a specific business process.

The other processes that have an impact on a HEI's development are the process

of creating a positive consumer's experience and loyalty; the process of innovation providing; the process of image growth and progress support.

The customer receives a positive experience in the service. Such an experience provides a long term relationship between a university and its graduates, and the process of a comprehensive customer experience management at all stages of its interaction with the university guarantees customers' satisfaction with the final result. Loyalty formation assumes maintaining and increasing of a customer's positive experience with a HEI. Loyalty reflects a positive customer's attitude to the services provided as well as to the university and to a certain extent reflects the degree of satisfaction with the HEI.

The main indicator of innovation is the progress in a HEI development compared to traditions and widespread practice. Therefore, innovations in education are related to amendments in the objectives, content, methods and technologies, forms of organization and management; in educational programs and the organization of educational process; in monitoring and evaluation of education; in the educational and methodological support etc. The innovation may be determined by the needs of the region, the city; achievement of the human sciences; by the advanced pedagogical experience; by the serendipity and creativity of the university leaders and teaching staff; by the experimental work; by the international experience, etc [9; 10].

A HEI's image is the image that occurs in public or individual consciousness. It is influenced by media and non-media factors and efforts on the basis of a positive experience and loyalty in order to create a positive attitude to the university in the public mind. Image of a HEI includes satisfaction of the students with quality of the education services provided, and satisfaction of the teaching staff with the results of their educational and research activities, price policy, advertising and marketing communications, and position which the HEI occupies in the national and international rankings of universities.

It should be noted that the most acute indicator of a HEI's image and ranking university is the level of its graduates' employment in the labor market. Employment and demand of the graduates, their personal professional success crucially depends on the competencies acquired during the study. Therefore, the results of the quality assurance of education are the primary components of the university's image.

Support of the progress achieved by a university is needed to ensure sustainable development in a changing competitive environment which is enhanced by hard integration into the European and world educational area. The national universities struggle to survive in the new conditions, but according to the principle of natural selection only those HEIs which have powerful potential and willpower to win will survive and flourish.

So the success of universities in achieving their objectives using a process-centered approach is stipulated by the result-oriented staff involved in the process implementation. Effective management depends on the degree of consistency

between the team and the leadership on the mission and strategy of the university. Values, corporate culture and the attitude of the university management to changes are considered to be the important factors for a HEI's development.

The proposed innovative process-centered approach to a HEI management based on modern concepts of customer-centered management makes the scientific novelty of the research. The approach is characterized by refocusing the management on a customer's subjective and objective needs and demands.

Unlike existing approaches the innovative process-centered approach enables to determine the subsystem that prompts the HEI's development and presented by the process of quality assurance, the process of creating a customer's positive experience and loyalty, the process of continuous innovation providing, the process of a HEI's image growth. The proposed modernization of the managerial approach contributes to the economic security of a HEI's in modern economic conditions. The practical value of the current research results in development of methodological recommendations on restructuring of the system of universities management and a university's adaptation to a competitive market and functioning as an autonomous economic entity.

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FEATURES OF GOVERNMENT REGULATION EDUCATIONAL CLUSTER FOR THE OBJECTIVE OF THE SUPPLY SOCIAL SECURITY

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The social vector of strategic development of our country requires the development and introduction of new methods of management in all spheres of economic activity in order to increase their competitiveness, especially in the context of strengthening the processes of European integration. In the process of implementation of the innovative model of economic development, the educational cluster plays an extremely important role as the basis for ensuring the social security of the state.

In today's conditions, social tensions in Ukraine are intensifying and accumulated social problems create threats to national security and the further development of society, which can become a cause of imbalance and stability. Therefore, research on the provision of social security in Ukraine is urgent in order to develop preventive measures and prevent the threats that can destabilize the situation. The complex nature of social security brings it to the interdisciplinary level and determines its multidimensionality [1, p. 3].

The theoretical work on the problems of ensuring social security shows that the study of the category «social security», measures and forms of social security are significantly dependent on the personnel component. Efficiency of labor potential is determined by the level of education and the quality of educational services [2, p. 137; 3]. In different historical periods, the quality of the training of specialists depended on the degree of development of productive forces, the forms of state regulation of the educational cluster, political regimes, and geopolitical situations. Existing plurality of approaches to the definition of the term «social security» includes a wide range of methodological aspects of social security of the state [4, p. 118; 5, p. 201].

Modern economic science defines social security as a combination of conditions and factors that ensure the independence of the national economy, its constancy and the ability to constantly use innovative technologies [6, p. 621; 7, p. 314]. This is done only if there is a high level of training and effective use of knowledge provided by a knowledge economy. It is necessary to take into account the expanded

idea of social security, which includes additional approaches for determining the need to take into account the dynamic parameters of social development and the factors of influence of the environment in conditions of uncertainty [8. p. 156; 9, p. 603]. In complex comprehensive and multidimensional studies of social security issues, attention was focused on the protection of national interests and the capacity of educational institutions to create mechanisms for the implementation of quality educational services for the development of the domestic economy and support of social stability. Such an approach allows us to use the categories of sustainability of the national economy, the protection of social interests from internal and external threats, and ensuring the independence of the national economy [10, p. 2; 11; 12]. The system of state regulation of the educational cluster provides all the conditions for achieving the main goal of the educational system - ensuring the high quality of knowledge of specialists for the purpose of their implementation in conditions of modernization changes in the state. Such an approach creates the basis for the protection of the social interests of the state. Modern approaches to defining the category of «social security» can be divided into several groups.

The first direction defines the category of «social security» because of the sustainability of educational policy and the independence of public administration from the influence of factors of the external and internal environment [13].

The second synthetic approach is based on the definition of a combination of the category of «social security» through the interests of society, as well as independence from regional and local conditions of development.

The most important of these approaches is the component, which is opened due to the notion of sustainability of the development of the state educational cluster and protection from external threats, which is practically limited to parameters of the development of the economic system and level of state economic security.

The main aspects of social security are connected not only with the development of the educational sphere of the state, but also with the problems of the political direction. The meaningful study of all spheres of human life and society, in the conditions of information transformations, shows that the basis of social security is the possibility of investing major investments to ensure sustainable development of the state. Such doctrinal changes emphasize the need to identify a set of parameters that characterize the state of social security of the state, parameters that reflect the impact on the sustainability of globalization processes taking place in the world, which determine the contradictions in preserving relative national autonomy and competitiveness. The close relationship between social security of the state and the solution of the most important tasks of the sustainable development of the educational cluster is ensured by the need for harmonization of approaches to the solution of these interconnected tasks. The key task of creating a system for managing social security is identifying possible threats and developing measures to create mechanisms for ensuring the country's social security. Identification of indicators that allow monitoring the parameters of social development are under the

influence of external and internal threats. Establishing the values of these indicators is one of the tasks of the mechanism of preventive measures for the loss of social security.

Analysis of the factors of influence on socio-economic processes, as well as monitoring of these factors, using the system of indicators, allows us to develop a forecast of possible threats and to take preventive measures to solve social problems. External factors affecting the social security of the state create appropriate barriers to the development of the state's educational cluster. Such factors in transitional economies are: lack of monitoring of the main parameters of the knowledge economy, underdevelopment of educational infrastructure at the regional and local levels, which makes it impossible to use modern educational technologies and significantly reduces the level of training of specialists in connection with remoteness. The sharp drop in the innovative activity of educational institutions is manifested in the degradation of scientific and technological potential, the loss of a leading role in certain areas of technical development that arises as a result of the migration of young people and the loss of prestige of intellectual work. The weak level of motivational incentives to improve production, as well as to reduce the quality of management at individual enterprises, is associated with obsolete production equipment, a decrease in production capacity due to the lack of re-equipment of technological equipment. The great deterioration of the means of production, as well as the lack of effective communication systems, leads to improper state of infrastructure objects.

The factors that determine the social situation in the state should include an increase in the stratification of society, the growth of unemployment, the presence of negative and uncontrolled migration processes. This significantly influences the increase of the threat of the sustainability of the development of the economy and the aggravation of regional (territorial) problems. Identifying imbalances in various economic areas is a significant threat to social security.

The influence of these factors, some of which, in the modern period, are dominant, provoke real threats to social security. Therefore, these factors should be identified to develop responses to the current situation.

The analysis of scientific sources, which are devoted to determining the factors influencing the emergence of threats to the loss of social security, as well as the mechanisms of such a plan, can identify the main violations of socio-economic development in the conditions of social production and take into account the need to preserve the socio-economic potential of the state. Such threats are manifested in the insufficient development of individual branches of production, which are vital for the functioning of the state. In today's extreme conditions, it is necessary to ensure the process of reproduction of the labor force irrespective of the factors of external influence and to create state control over the strategic resources of sustainable economic development. As a result, mechanisms will be formed, the implementation of which will reduce external threats to the sustainable development

of the educational system and destabilize the formation of labor resources of the state.

Under the conditions of social development, the risks associated with international economic activity are the risks of socio-economic positioning of the territory. The more the types of such activities are carried out, the greater the level of total threats. Commercial operations, a large number of transactions, the presence of international partnership forms external threats and determines the degree of dependence of socio-economic development of the state. Unregulated international economic ties as a result of unfair competition significantly reduce the degree of openness of the economy and the intensity of foreign economic activity. This is due to the threats of degradation of scientific and technological and technological potential, which influences the training of personnel for individual industries.

Modern socio-economic development is characterized by the leading role of scientific and technological progress in ensuring economic growth. However, significant threats to increasing environmental imbalances, reducing the innovation activity and competitiveness of some sectors of the state, leads to the loss of a significant part of the educational potential, falling industrial and technical conditions at the regional and local levels.

The investment policy in the conditions of modernization changes becomes regressive. This is due to a significant degradation of technological structures and an increase in personnel shortages. Such shifts in scientific and technological potential force the national economy to reorient to the import technological base, which leads to the creation of threats to social stability, which also has a critical impact on the educational sector. The existence of high social polarization of society leads to significant disparities and provokes socio-political tension. Reducing the resource base of sustainable development of individual regions is causing negative demographic processes, as well as increasing the criminalization and degradation of the population in certain regions and cities.

The main source of such threats is unemployment, which provokes a state of social discomfort and increases the burden on the occupied population by increasing the cost of retaining the unemployed. This leads to a loss of skills and labor skills, which greatly increases the damage to the entire national economy.

Violation of the unified social space of the state, as well as the normal cooperation of the regions within the single information space, leads to the creation of an economic crisis and aggravation of the problems of differentiation of socio-economic development of the regions. The development of specific recommendations for addressing identified problems involves identifying priority strategic measures that affect the qualitative and quantitative component of social challenges in different regions, as well as reducing regional development imbalances that are relevant for the entire state.

Identifying the threats that significantly affect the development of the state and their identification in the trajectory of sustainable development allows us to

formulate an integrated approach and create mechanisms for partial compensation of the impact of social threats by reducing their level. Analysis of the classification of threats and mechanisms of their impact on social security allows to determine the possibilities for their reduction and to form a system of imperative measures on new properties. The competitiveness of an educational cluster is understood as the ability of a knowledge economy to constantly increase its share in the world market through the creation of benefits that are conditioned by social and economic factors for the formation of quality educational services. Efficiency, which is understood as the rational use of educational resources, implies the achievement of sustainable development. Flexibility, as the ability of an economy to adapt to a changing situation, allows timely responses to changes in internal and external factors.

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PECULIARITIES OF SOCIAL AND ECONOMIC SECURITY OF AGRARIAN ENTERPRISES

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In the context of global changes the current state of agrarian enterprises does not provide their competitiveness. Agrarian enterprises are dependent on natural factors and have seasonal type of production. Moreover, they are more vulnerable and technologically backward in comparison with economic entities of other branches and therefore they are less adaptable to changing economic, social and technological conditions. In addition, market modernization substantially modifies basic conditions of agricultural production and it leads to raising an urgent problem of providing social and economic security of agrarian enterprises.

Social and economic security is a general concept which includes various types of security of certain spheres of social and economic information. Each sphere of scientific information has its own vision of security, its sources, factors and risks, which together make it possible to analyze the whole system of theoretical and practical problems concerning such phenomenon as security. Taking into account the concept 'danger', security refers to the state of social and economic system, its balance level and ability to life and sustainable reproduction of the main system elements required to provide its functioning. However, in order to maintain the balance of the system and its security it is necessary to provide a special social activity, which will not distort the balance and will be focused on working out and implementation of certain arrangements to preserve system integrity and stability.

Ensuring social and economic security of agrarian enterprises is one of the priorities, since provision of state security is impossible without proper functioning of agrarian sector [5].

As the result of the analysis, it has been found out that there is a fair number of scientific papers concerning fundamental approaches to the research of certain aspects of ensuring social and economic security of enterprises [2, 6, 9, 13]. However, it should be stated that not enough attention is paid to such mechanisms of improving social and economic security of agrarian enterprises, which will take into account branch peculiarities and destructive impact factors [2]. Therefore, there

is an urgent need to provide theoretical and practical background of this problem in order to understand the main point of social and economic activity of agrarian enterprises and to work out some arrangements to improve this type of security.

In the age of globalization the enterprises dealing in agrarian branch and possessing a sufficient economic independence have to search for new approaches to ensure economic security [7]. Moreover, it requires global changes in the whole security system of economic interests of these enterprises.

In respect to the above-mentioned information, it is necessary to focus on the definitions that describe economic security not only as the economic state of an enterprise but also characterize its social orientation.

Social orientation of economic security can be seen in the definition given by H. Pasternak-Taranushchenko, who supposes that “social and economic security refers to the state, in which all needs of a certain group are fully and timely satisfied and it provides the appropriate functioning and development of the whole system and all its elements” [8, p. 131]. He considers social and economic system as a complex system that is established by performing a certain number of actions and has many directions, such as ecology, resources, fresh water, food, energy, information etc. [8, p. 131].

According to V.K. Senchahov, “the essence of social and economic security can be defined as the economic state, which provides an ensured protection of interests of an economic entity, social orientation of the enterprise strategy and sufficient defense potential even under unfavourable conditions of development of internal and external processes” [9, p. 47]. In other words, social and economic security is not only the protection of enterprises interests, but also the readiness and ability of managerial staff to work out the mechanisms of implementation and protection of interests of employees and local community as well as maintenance of social and political stability [9, p. 47].

O.S. Vlasiuk states that social and economic security is a complex social phenomenon and includes social, sociological, technical and economic aspects of studying.

V. Serebrianykov focuses on the protection of social aspects and refers social and economic security to the complex of arrangements to protect interests in the social branch, to develop social structure and relations in the community, life support and social involvement system as well as lifestyle according to the demands of progress, current and future generations [9].

Political scientists consider social and economic security from the point of view of the result of social and economic politics of different subjects of activity and relations. Lawyers are interested in legal norms and guaranties of ensuring economic security and legitimacy of activity of various bodies. Sociologists pay their special attention to the research of public opinion and its changes dynamics according to different threatening factors to economic interests of enterprises and citizens. Economists are concentrated on the study of economic relations and

economic activity from the point of view of security, which requires developed economic infrastructure, skilled labour force, integratedness of economic entities into the world system of economic links [14, pp. 6-7].

To summarize the above-mentioned definitions it should be stated that social and economic security is a complex multifactor category, which provides a possibility to maintain stability to external and internal risks and characterizes the ability of the economic state of enterprises to extend selfreproduction in order to satisfy the needs of people, community and a state at a certain level.

To estimate the peculiarities of social and economic security management it is necessary to describe the main risks to agrarian enterprises. They are the following:

- low level of resource and technical support (inability to provide production with full scale physical resources);
- lack of own financial assets;
- no capital investments (it makes the process of reproduction of fixed assets impossible);
- low level of investment attractiveness of the branch and increased competition;
- low level of labour productivity;
- lack of skilled staff at enterprises;
- inefficient use of land resources;
- low level of price competitiveness of enterprises;
- environmental and human risks;
- natural and climatic conditions.

Despite the fact that agrarian branch is vulnerable to uncontrolled factors, such as weather and climate, it is economic and social factors that have the largest negative impact. Therefore, agrarian enterprises face an urgent need to develop an efficient mechanism of social and economic security management.

The mechanism of ensuring social and economic security refers to the combination of organizational, economic, ecological, technological and legal arrangements to prevent risks in economic security. This mechanism includes the following elements:

- forecasting of social and economic development taking into account detected and potential factors and processes which endanger economic, social, ecological, food, investment and energy security;
- monitoring and analysis of factors and processes which cause external and internal risks in social and economic security;
- working out and implementation of arrangements to prevent possible risks in social and economic security in all branches of national economy;
- project expertise of laws and regulations concerning financial and economic issues from the perspective of protection from external and internal risks in the branch of social economy (Fig. 1).

The key result of the implementation of the mechanism of ensuring social and economic security must be creating optimal conditions for living and development

of a person, social and economic stability of community, preserving state integrity and offsetting the impact of internal and external risks in social, economic and other types of security.

The mechanism of ensuring social and economic security fulfils a number of significant functions, such as protective, regulative, preventive, innovative and social [3].

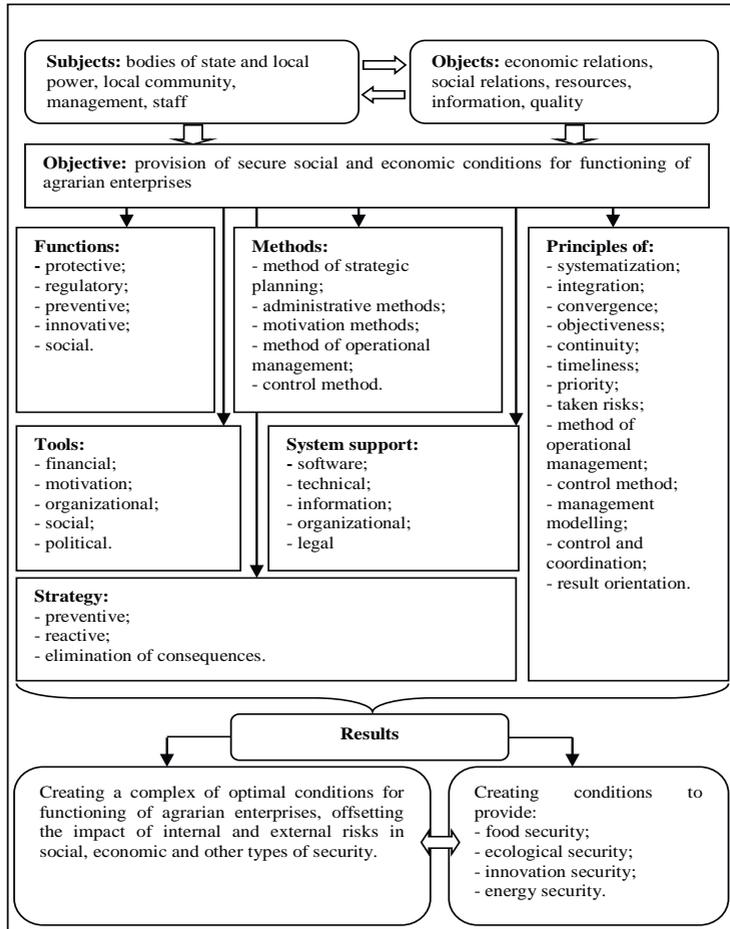


Fig. 1. The structure of the mechanism of social and economic security of agrarian enterprises [developed by the author].

According to the suggested mechanism, the following aspects of the development of agrarian organizations must become the priorities at the current stage [4]:

- stimulating a certain number of agrarian organizations to use advanced

technologies in application of fertilizers and manure as well as highly efficient feeds;

- consulting scientific and research institutes and using the results of their work to implement innovative technologies in farming focused on raising the level of competitiveness of agrarian organizations;

- transfer to the system of energy-efficient productive resources of agricultural production;

- orientation of agrarian organizations to step-by-step technical re-equipment and improvement of agrarian technological park;

- cooperation and integration of small and medium-sized agrarian organizations into prospective economic entities with the aim of efficient solution of problems concerning raw materials and marketing;

- appropriate actions in the sphere of the state support of the most significant sectors of agrarian production, budgeting of agrarian organizations and using of financial and credit resources in order to improve the functioning of agrarian organizations;

- stable and progressive development of social relations, life sustainment and improvement, protection of social relations quality, which provides necessary conditions for the development of a person, community and state;

- coherent and complex social and economic policy of careful attitude to people and their potential, with the focus on social aspects as the priorities in the social and economic development;

- stable economic growth or loss minimization under the conditions of negative factors or crisis in the world economy;

- tough anti-inflationary policy, promotion of general welfare and ensuring security of people's savings;

- improvement of external economic links and investment attraction, which makes agrarian producers more competitive on the world market;

- realization of social and economic rights of citizens, first of all their right to work and get fair wages, which means high income levelling in comparison with most countries and providing high labour cost and maximum employment [14].

First, all the above-mentioned requirements are necessary for providing the appropriate level of general welfare. Secondly, only if these requirements are met, the corrective policy will smooth over social differences, improve social solidarity and prevent external and internal negative impact on the stability and efficiency of agrarian production.

Thus, social and economic aspects become the priorities in the process of ensuring security at all levels and functional areas of agrarian production. The development of economic and social spheres, in which one can observe an impact on security with regard to various risks and vulnerabilities, determines the necessity to work out and implement the efficient mechanism of social and economic security of agrarian sector.

At the current stage, social and economic security of agrarian production is

the system that with the aid and support of bodies of state power at all levels can promote the well-being of rural population, enhance the state food security, preserve the countryside landscape and lands and improve investment attractiveness of rural territories.

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INFORMATION SECURITY IN THE PROFESSIONAL ACTIVITIES OF THE SOFTWARE ENGINEERS

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The intensive and rapid economic development, utilization of the information and computer technologies in all spheres of a society life offer not only a wide range of opportunities but also give rise to very serious problems and calamities. Thus, “the following problems need immediate solution or improvement: providing the legal basis for ensuring pluralism, transparency and impartiality of the media in creation, dissemination and consumption of information, especially it concerns improvement of the legal regulations regarding the observance of professional ethical norms by the journalists, consistency of the terminology in the information legislation, specification of the intellectual property protection under the conditions of the Internet technologies expansion» [2].

Information has become a factor that can lead to large-scale accidents, military conflicts, disorganization of public/state administration, etc. The Law of Ukraine «On Information» dated October 2, 1992 defines the concept of information as a documented or publicly disclosed information about the events and phenomena occurring in the society, the state and the environment ...The right to information can not violate the civil, political, economic, social, cultural, environmental and other rights, freedoms and legitimate interests of the citizens and legal entities [1].

Experts in the field of information technologies are unanimous in the conclusions, that the wide spread of informatization (computerization) affects the world so much, that it has become a source of significant threats to the society, state and humans like once the achievement of nuclear physics caused the danger of nuclear war. The higher the level of informatization of a society, the more pronounced and acute is the need for reliable information security, since nowadays the realization of the interests of people and states more and more often depends on the use of informatization / cyber resources. In view of this, the information security is an integral part of national security and is considered as a priority function of the state.

In recent years the researchers have become increasingly interested in the issues of information security, problems of the national information space protection. The problems are highlighted in the works of national experts (I. Zaitseva-Kalaur, A. Maruschak, V. Petryk, V. Lipkan, B. Kormich, V. Pocheptsov, Y. Yakubivska) and foreign scientists (A. Giddens, M. Yablonsky, M. Kalinsky, A. Kerkovska, G. Tomashevsky, N. Polmar and T. Allen, M. Hermann, L. Kozhenovsky, Z. Ljudziievsky). The urgent issues of cybernetic security are investigated by R. Lukianchuk, V. Buryachok, A. Babenko, V. Havlovsky, D. Dubov, V. Nomokonov, M. Pogoretsky, V. Shelomentsev and other scientists. The psychological aspect of

the educational environment safety is considered by I. Baeva, E. Laktionova, L. Gayazova, G. Kozheshpirova, V. Rubtsov and others. I. Aristova, G. Pocheptsov and other scholars are engaged in studying the role of the state in the formation of the information society. A number of publicists (V. Suprun, V. Yarochkin) have developed a set of the basic principles of ensuring information security.

There are many interpretations of the concept of information security. Thus, in the Law of Ukraine «On the Basic Principles of the Information Society Development in Ukraine for 2007-2015» this term is interpreted as “the condition, under which the vital interests of a person, a society and a state are protected, which involves protection from the harm caused by incompleteness, timelessness and unreliability of the information used, negative information influence, negative effects of information technology, unauthorized dissemination and use of information, violation of the integrity, confidentiality and availability of it « [3].

According to the doctrine of Ukraine the information security is an integral part of each of the spheres and aspects of the national security. Along with this, information security is an important independent sphere ensuring the national security in general. That is why a steady development of Ukraine as a sovereign, democratic, legal and economically stable state is possible only when its information security is at a sufficient level of protection [4].

Some researchers in their studies argue that information security focuses on determining the gravity of threats to devices, systems, traffic segments and information security measures, aimed at revealing the probability of any threat emergence. Information security can be defined as an action, system or method aimed at protecting information resources transmitted and stored in the memory of computers and telecommunication networks. This is not only a protection against unauthorized access, data theft or destruction, but also a component of physical, personal-organizational and IT security of the business entity or any other institution [11, p. 290-291].

I. Zaitseva-Kalaur considers the concepts of information security of an individual and society as closely related notions, since, according to the researcher, the individual information security ultimately generates information security of the society and a state [7, p. 182]. Information security can be defined simply as the protection of information. It implies the complication and difficulty in obtaining data about the physical nature of the current or planned state of things and phenomena in their own space of operation, precluding modifications or changes in the information communications and eliminating physical destruction of information carriers. According to M. Yablonsky and M. Melus [13, p. 11-14] information security involves a series of measures to be taken to provide a desired state of safety (prevention, deterrence, indication and warning, detection, emergency preparedness and response to possible attacks).

Foreign scientists (M. Kalinsky, A. Kerkovska and G. Tomashevsky) argue that information security is not only physical safety and protection of the technical

information resources, it seeks to ensure and maintain the confidentiality, integrity, availability, accountability, authenticity, reliability and credibility of information and systems in which it is processed [12, p. 10-14].

The dynamic changes caused by the development of the information technology give rise to new, previously unknown threats. Thus, in the case of crises or the aggravation of conflicts the informational confrontation can turn into the information warfare, which is carried out with the help of information weapons. Purposeful, large-scale and complex informational actions are the indicators of it [5].

Equally important is the information component of the educational environment security system, which according to N. Kyrylenko has a massive and global influence on the personality through the use of ICT in education [9, p. 150] Among the matters of negative impact of information on the modern educational environment the author places importance on: the lack of appropriate mechanisms for monitoring the quality of the information material accessible through modern telecommunication means/media, which allows the penetration of inaccurate or false information into the educational space; uncontrolled penetration of information of dubious and aggressive content, which may contribute to violence, bullying, cyberbullying, etc.

There is no doubt that for every society the question of security is one of the main dimensions of its perception of social reality. The main task of information security is the creation of a system for counteracting information threats and protection of its own information space, information infrastructure and information resources of the state [6].

Information threats (in the broad sense) are the information influences (internal or external) which create the potential or actual (real) danger of changing the direction or pace of progressive development of the state, society, individuals, causing damage to the vital interests of an individual and society through the meaningful and purposeful impact of information on the public consciousness. Information resources and the infosphere of the technical systems represent a set of factors that impede the development and use of the information environment for the benefit of the individual, society and the state [7].

The unique feature of the information threat is that it acts as an independent kind of threat and, at the same time, is an implementation basis for other types of threats at the information level, and quite often is their root cause.

An integral component of the state information security is the information-psychological security of a software engineer personality and a society on the whole. This component occupies a special place in the national policy of any state. The complexity of providing information and psychological security of software engineers is determined by the three main factors – political, socio-economic and spiritual. The political factors include: changes in the geopolitical situation which involve fundamental changes in regions; formation of a new conception of national interests; establishing the statehood on the basis of the democratic principles, legality, information openness; destruction of the existing system of a command-

administrative type of state governing; the informational expansion of the developed countries, which succeed in the global informational influence aimed at propagating the philosophical, political and spiritual values and ideals of the Western world; strengthening international cooperation on the basis of maximum openness of the parties; low level of the political, legal and informational culture in the society.

The socio-economic factors include: the difficulties of transition to a market economy; the continuation of inflationary processes and the decline in the standards of living of the population; increase in unemployment, property polarization; the proliferation of crime and criminalization of social relations; deterioration of health indicators of the nation; an increase in ethnic confrontation.

The factors of spiritual nature are also of great importance, especially the following ones: the crisis of state ideology, systemic deformation of the norms, attitudes and values, which manifests itself in the inadequate evaluation of the information-psychological impact on the society; the establishment of new forms and patterns of influence on the individual, group and public consciousness; development of the new types of mythological consciousness; undervaluation of the national and cultural-historical traditions and penetration of the Western mass culture patterns into the public consciousness; weakening role of the important socio-cultural institutions of the state, science, education, upbringing and culture; imperfection and insufficiency of the ethical norms system in the sphere of information functioning [10, p. 233-248].

Therefore, the guarantee of information security in the professional activity of the software engineers is determined, firstly, by the insurance of the national security of Ukraine as a whole; secondly, by the neutralization of those threats to the information sphere of the country that could seriously harm the general national interests; thirdly, a deep understanding and apprehension of the fact that with the help of information it is possible to influence and control the changes in the consciousness and behavior of people.

The objects of the informational-psychological protection of software engineers personality are: the state of their spiritual and physical comfort; the conditions and factors that ensure the advantageous development of all spheres of an individual and society, including culture, science, art, religion and international relations; the favourable linguistic environment, social, ideological and political tendencies, social relationships, the psychophysical factors, that manifest themselves in the form of physical, chemical and other impacts of the natural, anthropogenic and technogenic origin, the gene pool of people inhabiting the state; individual and mass consciousness.

The main personality-creating qualities for the individual are the integrity (the tendency to stability) and development (the tendency to change). When these qualities are disrupted or deformed, the personality stops to exist and function as a social subject. It means that any information-psychological impact on a person should be considered from the standpoint of preserving or annihilating personality

as a single entity.

The means/devices of information-psychological influence created on the basis of modern information and communication technologies and software have become a crucial factor in terms of the effectiveness and strength of their impact on the psychology of software engineers personality and mass character of an audience coverage. These tools are an integral component of the so-called virtual space or virtual reality in the professional activity of software engineers.

The virtual reality is an artificial space, created with a help of modern information-communication technologies (ICT) and has all the features of the reality, which is open to penetration and transformation from the outside. Moreover, virtual reality is stuffed not only with the actual information and lively communication of real people, but is also filled up with a huge number of artificial «worlds», role-playing computer games, the sites devoted to the alternative religious trends, non-traditional sexual orientation, violence and antisocial behavior which are interpreted as a social life stereotype of young people.

Uncontrolled access to such information resources, the lack of psychological stability of software engineers, the blurriness of the social, moral and ideological values are the factors which represent immediate information danger by themselves.

In order to understand the goals and content of the tasks of informational and psychological protection of a software engineer's individuality and the society in general from the destructive influence of modern information-psychological confrontation, it is necessary to comprehend the mechanisms of information-psychological influence on the behavior of a software engineer, including the decision-making at any level of social and state structures and in any sphere of their professional activities. The emphasis should be laid on the mechanism of verbal information influence, understanding that its basis is the law of conscious perception of information, namely its content. This mechanism is universal by its very nature and reflects the general laws of information dissemination in the social environment.

Thus, information security of software engineers in their professional activities is one of the most essential components of the national security of the country. Providing information security of software engineers through the consistent implementation of a well-formulated national information strategy could greatly contribute to the successful solution of the problems in the political, social, economic and other spheres of the state activity.

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MEDIATION OF LABOUR DISPUTES: LEGAL AND PRACTICAL ASPECTS

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Currently, the institute of mediation has gained a highly positive reputation due to its successful application in Western countries. The United States was the first country, where they began to resort to mediation in resolving various disputes. Having proven itself well, the institution of mediation has spilled over to the countries of continental Europe, Canada, Australia, Great Britain and other states. According to the Center for Effective Dispute Resolution report, 85% of the disputes that were resolved through mediation at that center ended with the conclusion of a settlement agreement (with an average duration of mediation in one and a half days), 6% were peacefully settled within three months after mediation and only 9% of the disputes were submitted to the court [1]. This practice is widespread in the developed countries and represents a separate institute of the pre-trial practice for resolving legal disputes. In Ukraine the mediation institution has not yet gained popularity, though it is recognized as quite successful and effective.

In general, mediation is a way to settle disputes with the assistance of a mediator, based on the voluntary consent of the parties, in order to reach a mutually acceptable solution. In other words, it is an alternative court procedure for resolving disputes involving a third neutral, impartial party, not interested in the conflict, which helps the parties to reach an agreement over a disputed issue or issues [2]. It should be noted, that the method of mediation, particularly in the labor conflicts, can be an effective way of solving them at the macro level.

Important and actual issues of mediation in conflicts are elucidated in the works by P. A. Astakhov, V. S. Hopanchuk, O. A. Bryzhynsky, D. A. Davydenko, D. B. Elisieev, S. I. Zapara, A. M. Lushnikov, C. I. Kalashnikova and others. Although considerable amount of research has been devoted to the method of mediation in general, little research has been undertaken to study the rationale of implementing this method as an effective means for managing relations within and beyond the organization.

The world practice uses three basic mediation models:

- 1) private (extrajudicial) mediation, characterized by complete independence from the process of considering a dispute by a court;
- 2) mediation, which has some coordination with the court process, but is procedurally separated from the court as an institution;
- 3) mediation within the judicial process, characterized by a local and personal

connection with the court and the actions that are implemented within the consideration of the case by court [3, p. 53]

According to the current Labor Code of Ukraine primary authority in resolving individual labor disputes is the Labor Dispute Commission (LDC), although the law provides that the parties may apply directly to the court. Effective LDC activity is currently quite rare due to a number of factors:

- 1) a significant number of labor disputes can be considered only in the courts;
- 2) in many organizations there is no LDC at all – either because of the lack of initiative on the part of the employees and/or the employer or because the number of employees at the enterprise is small;
- 3) stipulated by Art. 223 of Labor Code of Ukraine extra duties of the authority or the body authorized by him regarding the organizational and technical support of the LDC (provision of the equipped premises, printing and other equipment, necessary literature, organization of record keeping, registration and storage of statements of employees and cases, preparation and issuance of the decisions copies, etc.) do not stimulate the owner to create a Labor Dispute Commission at his enterprise;
- 4) insufficient competence of the members of the LDC, who are not always able to understand the complex issues of the current legislation due to lack of legal training or the lack of relevant experience, etc.;
- 5) the decisions taken by the Labor Dispute Commission are often not implemented by the employer voluntarily since the LDC is not really an authoritative body for the employer [4, p. 79].

The resolution of the collective labor disputes (conflicts) in Ukraine is entrusted to the National Mediation and Conciliation Service. However, some scholars question the effectiveness of its work when comparing the number of the resolved disputes and the expenditures from the state budget for the maintenance of the specified structure [3, p. 42]. In view of the above mentioned, it is the mediation system that many scholars regard as an effective alternative to the existing ways of resolving labor disputes. The current mediation procedure in Ukraine remains unregulated by the legislation. The experts have submitted to the Verkhovna Rada of Ukraine three bills, which are at different stages of consideration:

- «On Amendments to the Tax Code of Ukraine (regarding the introduction of the procedure for mediation)» dated 28.12.2014 under No. 1666;
- «On mediation» dated 17.12.2015 under No.3665;
- «On mediation» dated 29.12.2015 under No.3665-1.

The draft of Labor Code of Ukraine, prepared for the second reading, does not contain any norms on mediation as a way of resolving labor disputes. At the same time, it preserves the possibility to resolve individual labor disputes not through a commission on labor disputes, but in the court, which is specified in the law as the main body.

Analyzing the bills on mediation, O.S. Shchukin draws the conclusion that

they violate the fundamental principle of mediation – voluntariness. In particular, according to the scholar, this is manifested in the statement that mediation should be carried out exclusively on a professional basis. O.S. Shchukin interprets this norm as an interference of the state into the sphere of civil society. In his opinion, the voluntary agreement of the parties of an individual labor dispute regarding the direct application of mediation must necessarily be in writing and tripartite. The scholar also objects to the leading role of a mediator when choosing the media and methods of mediation, since the final decision must always remain for the parties to mediation. The scientist believes that the mediator may refuse to participate in the mediation procedure only under the following circumstances (especially in the case with the professional mediators): if he is not sure that he will be able to keep neutral or if he believes that he is not qualified or competent enough to resolve the conflict. According to O.S.Shchukin, the item concerning implementation of the mediation agreement should be included in the mediation procedure [5].

Table 1

The mediator functions in resolving labor disputes

Function	Content
Analytical	prompts opponents to analyze carefully the conflict situation, tries to make the parties promulgate the available information on the dispute and determines the most significant moments of the conflict.
Active hearing/listening to the parties (therapeutic)	shows attention to both conflicting parties, but at the same time trying to separate openly the facts and feelings/emotions.
Organizational (procedural)	organizes negotiations, promotes an agreement on the correctness of relations between the parties in the negotiation process, sets the tone for negotiations, announces breaks and requires confidential conversations (caucus) from each of the parties alternately.
Generating ideas (creative)	provides participants of the conflict with information or helps them to find the necessary information, but only the facts.
Expanding the resources of the opponents (informational and consultative)	provides participants of the conflict with information or helps them to find the necessary information, but only the facts.
Controlling	controls the actuality of the ideas expressed and the implementation of the agreed arrangements
Educational	teaches to think, act and negotiate with the directive of mutual cooperation, reminds the parties not to use the «prohibited» techniques, to see the problems from the perspective of the opposite side, properly manages the negotiations.

Source: [designed on the materials of 7].

Y.P. Lyubchenko also points out a number of shortcomings in the existing legislature. For example, the bill does not specify the types, extent of liability, organization or institution, whose competence will include bringing the mediators to justice. The scientist considers as mistaken the definition of the moment of the

mediation starting – the day when the parties agreed to meet with the mediator for the procedure of motivation. Y.P. Lyubchenko offers the following wording as more expedient: «when one party turned to a mediator and the other agreed to participate in the mediation», ie accepted the offer. The scientist considers controversial the issues regarding the requirements for a status of mediator – the training must include at least 90 academic hours of initial training, including at least 45 academic hours of training in practical skills. However, the bill does not specify what such initial training is and what is training practical skills [6].

Consequently, the adoption of one of the above-mentioned bills in the presented form will not solve the problem of labor conflicts, on the contrary, they may create new threats for the new conflicts occurrence.

The reasons for conflicts that arise in a modern organization are multifaceted and can be caused both by the subjective and objective factors. The consequence or result of the conflict can be positive (constructive conflict) or negative (destructive conflict). But, in our opinion, the mediator services are beneficial in both cases. This is due to the functions it performs (Table 1).

Naturally, the mediator is, first of all, an individuality with his/her peculiarities of character, temperament, style of behavior. Therefore, when mediating a conflict, one can observe different styles of a mediator behavior (depending on the situational and personality factors), (Fig. 1.)

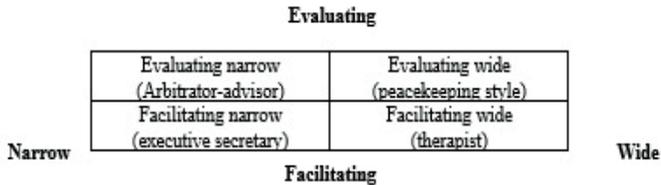


Fig. 1. Mediation Styles [7]

In any case, the mediation procedure should be conducted in accordance with the strict principles (Fig. 2).

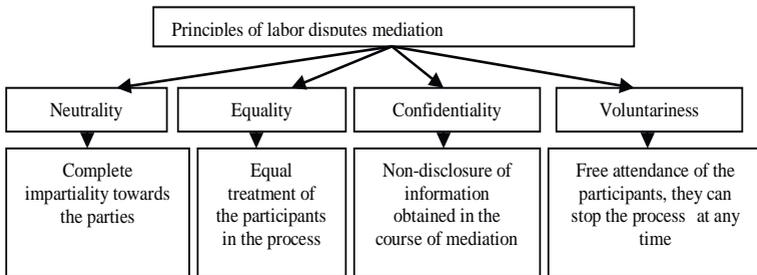


Fig. 2. Immutable Mediation Principles [designed on basis of [8]]

The mediation procedure can be highlighted from the standpoint of the systemic and process approaches. We will focus on the latter (Fig. 3).

The parties, who started the mediation process are not obliged to bring it to the end and the mediator does not have the authority of a judge, he can not make a decision and obligate the parties to execute this decision, he only serves as a catalyst for negotiations and helps to negotiate more effectively, directing the talks in the right direction.

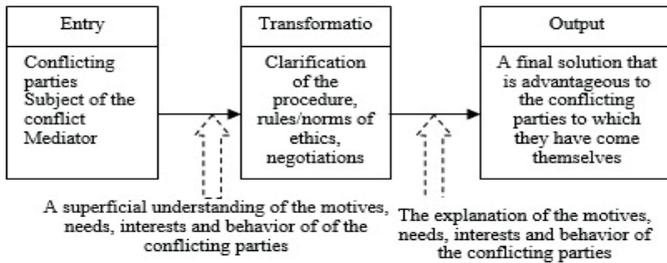


Fig. 3. Mediation as a process [author's development]

We want to draw attention to the mediation method functioning within the organization, the employment of «regular/salaried» mediators. In our opinion, modern organizations must necessarily have appropriately trained specialists who can even be integrated into the mediation service. It is expedient to appoint for the position of mediator graduate students who have higher education and who have taken the appropriate vocational training program (mediator school). The procedure for creating a mediator service should include:

- informing about the initiative of creating a mediation service;
- motivating measures for joining this service;
- development of procedure and coordinated actions of the mediation services;
- teaching the methodology of mediation to the employees;
- networking with counseling organizations (to ensure continuous improvement of the mediation skills).

In our opinion, neither the mediation service nor some specialists who have received the appropriate training should not be an official structure or post in the company's staff. Under the conditions of most Ukrainian organizations this is inappropriate. But, in our opinion, mastering the method of mediation is obligatory for the leadership (at all levels), part of the specialists (mostly non-formal leaders) of the organization.

It is important to remember that the main thing in mediation is careful attentive attitude towards people, attention to their needs. The task of the mediator is to help the conflicting parties to show themselves to the maximum, which will allow them eventually to develop a unique solution that exactly satisfies their needs.

It is worth knowing for all parties of the conflict that the mediator acts as a neutral person, but at the same time he manages the procedure, studies the problem and the cause of the conflict and promotes decision-making by the conflicting parties themselves. The mediator does not judge the parties to the dispute. The range of the techniques and methods of the mediation process is unlimited

The use of the mediation method for managing labor conflicts/disputes is beneficial for the state, for the organization and for the conflicting parties. For the organization – a positive image is maintained, productive cooperation is being established (people better perceive and execute the decisions that they have adopted themselves), conditions are created for improving the moral and psychological climate in the team and loyalty of the staff increases. For the conflicting parties – meeting their needs, motives, maintaining working relationships, saving time and money, psychological and emotional satisfaction.

Thus, mediation teaches to live in conflict without destroying relationships, use dispute for development and get benefits from it.

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INFORMATION SECURITY WITHIN THE FRAMEWORK OF ANTI-CRISIS MANAGEMENT

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An important factor of the crisis is the underdeveloped system of innovative communications: the lack of optimal information support for anti-crisis management and the low level of technology transfer. The studies show that information management is based on all anti-crisis management procedures. Thus, the issue of interoperability of anti-crisis management and information technology is relevant.

Considering the fact that the current economic potential is being increasingly determined by the level of development of the information structure the information influence vulnerability increases proportionally. Therefore, it is extremely necessary to provide protection of information flows in the system of anti-crisis management that is an essential condition for survival and improvement of economic activity efficiency

The studies have proved that the global development of a distributed computing environment and cloud technologies (GRID) improves the electronic entering into enterprise computers providing additional opportunities for a systemic economic crisis. The economic activity of modern enterprises is impossible without an effective production management system; it provides complex automation of the processes of collection, transfer, storage of economic information and making management decisions. In this regard, the issue of information security support in the context of anti-crisis management is becoming topical.

While studying the scientific sources we have discovered that physical inaccessibility to a computer does not guarantee the integrity and security of economic information since the advent of computer networks [4, 10].

The studies have shown that the most significant effect of information security risks for modern enterprises is economic and image losses [13, 14]:

- Disclosure of commercial information can lead to serious direct losses on the market.
- The information about major theft of information greatly affects the reputation, resulting in commercial transaction losses.
- Competitors can make use of information theft, if it unwitnessed, in order to completely ruin the enterprise, enforcing fictitious or intentionally unprofitable transactions.
- Wrong information at the stage of transfer as well as at the stage of storage at the enterprise can lead to huge losses.
- Repeated productive information attacks on the enterprise reduce the customers' trust of the company, which will affect the level of income.

We should identify an important component of information subsystem in the system of anti-crisis management.

The scientific studies indicate that the following categories are applied to information systems and they are the methodological basis of the information component of anti-crisis management [12]:

- reliability – the guarantee that the economic system works in normal and abnormal modes as planned;
- accuracy – the guarantee of accurate and complete implementation of all management decisions;
- access control – the guarantee that different groups of people have different access to information objects, and these access restrictions are constantly accomplished;
- controllability – the guarantee that a full check of any component of software package and a database of economic information can be performed at any time;
- identification control – the guarantee that a client who is currently connected to the business processing system is one and the same person;
- special failure tolerance – the guarantee that with the special introduction of errors within the pre-agreed norms, the economic system will work as specified.

At the present time, the issue of scientific foundation for the criteria and the development of information security evaluation methodology is a priority.

Now, the following organizational and legal documents can be distinguished. They have made a considerable theoretical and practical contribution to solving the problem of economic information security [9]:

- Evaluation criteria of computer security systems of enterprises, known as the «Orange Book».
- Information Technology Security Evaluation Criteria adopted by Europe. These criteria are developed considering the identified shortcomings and limitations when using «Orange Book» and they are corrected and extended concerning the first ones.
- Canadian security evaluation criteria of reliable company computer systems in competitive safety.
 - the US federal criteria, developed on demand of the US government, are focused on removing the constraints and problems of practical application and the shortcomings of the «Orange Book».
 - the International Standard ISO / IEC 15408 – «Information Technology Security Evaluation Criteria» or Unified Management Criteria.
 - The working draft standard CEM-97/017 – «Common methodology for Information Technology Security Evaluation» for management.

The above-mentioned referenced documents, and especially the last two ones, make a significant contribution to the development of a unified international scientific and methodological foundation for solving the problem of information security of enterprises on products and information technologies.

Information security is an important component of the general economic security of an enterprise, and the conducted research has shown that management of the socio-economic system of any enterprise should be based on a clear information and communication platform. The formation of an effective work procedure with information flows of a modern enterprise is an important foundation of the anti-crisis management system. The research [2, 6, 7, and 11] has demonstrated that in order to solve the problems of information security support of an enterprise, together with the formal methods for modeling processes and evaluating systems, it is necessary to widely use decomposition and structuring methods of the systems and processes components, informal methods evaluating and decision-making.

This means that the analysis system apparatus must be used at all the stages of the life cycle of information security systems.

But the existing standards, documents, and communication crisis tools on their basis do not provide answers to a number of key questions: how to create an information system so that it is protected at the required level that is objectively verifiable; how to practically form the mode of economic security and maintain it in conditions of the constantly changing external environment and structure of the system itself; what is the real level of information security and how effective is the system of economic and management information protection [3].

If we consider anti-crisis management as an integral system, the external environment provides constant challenges to the conditions of enterprise existence that poses the threat to economic security.

The system approach to creating mechanisms for the protection of information systems requires the following positions [15]:

- The concept of consistency is not simply the creation of appropriate protection mechanisms against crisis factors, but is a regular process that is carried out at all the stages of the enterprise's life cycle. At the same time, all means, methods and measures used to protect information are combined into the holistic mechanism - the system of anti-crisis management.

- The main postulates that have not lost their relevance today are outlined in the first papers on information security: absolute protection cannot be created; the information security system should be comprehensive; must be adapted to constantly changing market conditions.

- It is necessary to add other axioms to the above mentioned. Firstly, the system of information security should be the system itself, but not simply, in many ways, by chance and chaotic set of some management technologies, technical and organizational measures, as is often observed in practice. Secondly, the systemic approach to the protection of economic and management information should be applied starting from the preparation of the technical specification to the assessment of the efficiency and quality of the information security system within anti-crisis management [3, 5].

- Unfortunately, the need for the systemic approach to information security issues

is still not well understood by decision-makers in modern anti-crisis management systems.

- Managers, economists, and producers, one way or another, have to deal with information security issues today. This is due to the fact that in the near future we will have to live in the society (environment) of information technologies, where all social problems of mankind are to be solved, including the issues of economic security and anti-crisis management.

Thus, according to the research results, information risk may be due to the reflection of incomplete information about the financial position and internal business processes, inaccessibility of information concerning the situation of commodity and financial markets, the lack of information about the business environment, asymmetry of information, unpredictable changes in legislation, etc. As a result, mistakes can be made in choosing anti-crisis strategy, sources of financing for reorganizational measures, the development of production-technical, organizational-legal, social measures, etc., which makes it impossible to withdraw the enterprise from the crisis situation [2, 7, 8].

The research has proved [1, 15] that the current design of information support of enterprise management should be guided by the current concept of management, which requires the combination of process, system, situational and scenario approaches. The process approach to management characterizes information support as a series of consistent, continuous, interdependent actions aimed at achieving the goal. The system approach requires the allocation of the subject and object of management and the development of measures to combine their characteristics. Situational approach assumes that the management of the information support development of the management system should provide preventive effect on various situations occurring outside the enterprise and within it [15]. The scenario approach requires assessing the sensitivity of the enterprise economic position parameters, depending on the choice of the management decision.

However, it should be admitted that today in scientific and practical circles there is no methodological basis that would allow for theoretical generalizations on information security in the context of anti-crisis management.

In our opinion, the system of anti-crisis management should provide the effective solution to the following tasks: early diagnosis of crisis phenomena; urgent reaction to challenges and threats to the environment; studying and implementing the opportunities for the enterprise to recover from the crisis state.

The studies have shown that causing damage to the intellectual property of enterprise can lead to such effects as the loss of market positions, permanent and temporary competitive advantages or the reduction of trademark cost. That is why making decisions should be based on the qualitative assessment of possible effects.

In order to maintain the confidentiality, integrity and suitability of information in the process of effective anti-crisis management, it is expedient to develop information security strategy in the context of anti-crisis management. The implementation of

strategic directions will allow enterprises to reduce both possible material losses and to maintain competitive advantages and positions on the market.

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INFORMATION SECURITY THREATS ON THE PART OF THE PERSONNEL: SPECIFICS OF ORIGIN AND REALIZATION

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According to a survey of the leading national IT companies, most Ukrainian companies allocate 5-15% of the budget to protect information systems. Accordingly, the information security budget directly depends on such parameters as the size of the enterprise and the individual business needs related to the specifics of its activity [1, 8].

Only after an asset valuation, threat model generation and risks assessment you can assess the expenditures on the implementation of integrated solutions to ensure information security of an enterprise. Along with this, the complex of measures to ensure information security, both the external perimeter of the information network and internal IT-systems, varies depending on the type of an organization, the stages of its development and the degree of IT structures maturity, as well as the level of users consciousness.

Just a few years ago, a two-level mechanism to protect information systems was applied as the most effective approach. Namely, reasonably believing that the main threat to the information security comes from outside (the Internet), ensuring protection of the external network perimeter had become the task of prior importance. The preventive measures were limited to the introduction of firewalls on unix-based operating systems. On the other hand, internal protection, as a rule, was organized on the basis of using antivirus programs in operating systems of local users. However, such a set of measures to ensure the security of the corporate information network is insufficient [3, 6].

Providing information security at the physical level is critical for the overall and comprehensive protection of information and for the continuity and stability of the operation of the information systems. The factors such as access control, fire security, backup of business critical data, leakage control and availability

of information have the greatest impact on the information security in general, either directly or indirectly. The two-level security mechanism remains relevant in the global informatization environment. However, the rapid development of information services and increased use of the Internet has led to an increase in the number of external threats. In this regard, the protection of the outer perimeter of the information network is necessary to restrict external access.

Information security risks from the personnel constitute a separate group of information security risks for the organization, but the range of causes and conditions for their implementation is extended.

The most dangerous are the intentional threats that come from both external and internal sources. Therefore, it is expedient to distinguish the following types of threats of this group:

- threats related to the intentional actions of the persons who have access to the information systems of the enterprise, including users and other employees of the enterprise, who pose threats directly within the enterprise (internal violator);
- threats related to the intentional actions of the persons who do not have access to information systems of the enterprise and realize threats via external communication networks of general use or networks of international information exchange;
- threats related to the intentional actions of the persons who do not have access to information systems and realize threats via technical channels of the information leakage [7].

In the context of the above-mentioned discription, it is relevant to distinguish between accidental and intentional sources of threats to information security.

Random (unintentional) sources involve such vulnerabilities as errors made when designing the enterprise information system and its elements, software errors; various kinds of failures and damage which are intrinsic in the information system. Such sources include the suppliers of various types of services, personnel of organizations and emergency services, etc. Actions (threats) coming from these sources are due to ignorance, inattentiveness or negligence, from curiosity, but without malicious intent.

The intentional sources manifest themselves in the malicious actions of intruders [6]. The main purpose of this type is the intentional disruption of the enterprise work or the termination of the operation of the enterprise system, distortion, modification or destruction of information via penetration into the information resources of the enterprise using unauthorized access.

Internal entities (sources) are represented by qualified professionals in the field of development and operation of the software and hardware property, which are extremely important regarding the specifics of the tasks they perform, and which are dependent on the structure and basic functions of the software and hardware protection of information. These sources, as a rule, have access to use the equipment and technical means of the network. It concerns the main staff, representatives of

the information security service, supporting staff, technical staff. Among internal sources of threats a special place is occupied by the threats in the form of false actions and / or violations of the requirements of operational and other documentation by the employees of the organization.

In the course of the study, a list of five types of offenders (including external violators) was arranged depending on the range of the expected damage from their actions. The average score (level of danger) per each type of offender has been calculated (Fig. 1).

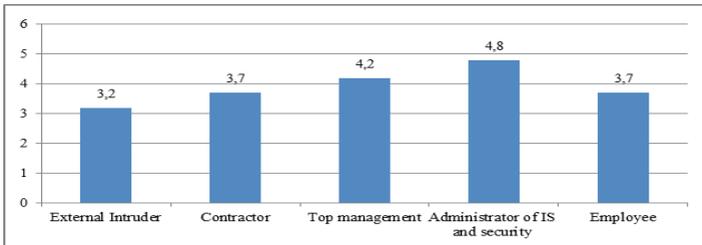


Fig.1. Map of the offenders types relevant to the severity of the expected losses for the business. The average score is calculated on the basis of [1, 4]

According to the analysis, the employees with the enhanced rights of access to information and information infrastructure - network administrators, databases, information security systems and others – represent the greatest ganger. However, the distribution itself turned out to be almost homogeneous, the difference in results is within the range of 1,6 points (in the range of 3,2-4,8).

On the basis of the classification of threats to information security of the enterprise from the personnel and the formed map with the types of offenders in accordance with the severity of the expected losses for business, it is logical to draw a structural and logical scheme of subject-object relations (Fig. 2). The description of the information security risks from the personnel is presented as a model of factors - a system of causes and conditions that contribute to the realization of such risks. The overall structure of the factor model of information security risks on the part of personnel is presented in Fig. 2.

Risk factors within the proposed model are linked to a single network of causal relationships. The risk factors in the proposed model are divided into two levels:

- the risk factors of the first level directly affect the actual implementation of the risks, they consolidate the impact of the totality of risk factors of the second level and allow you to simplify the work with the model;

- the risk factors of the second level are relatively insignificant phenomena that can be processed each separately (evaluated, managed) by the organization; there are numerous interconnections between the factors of this group.

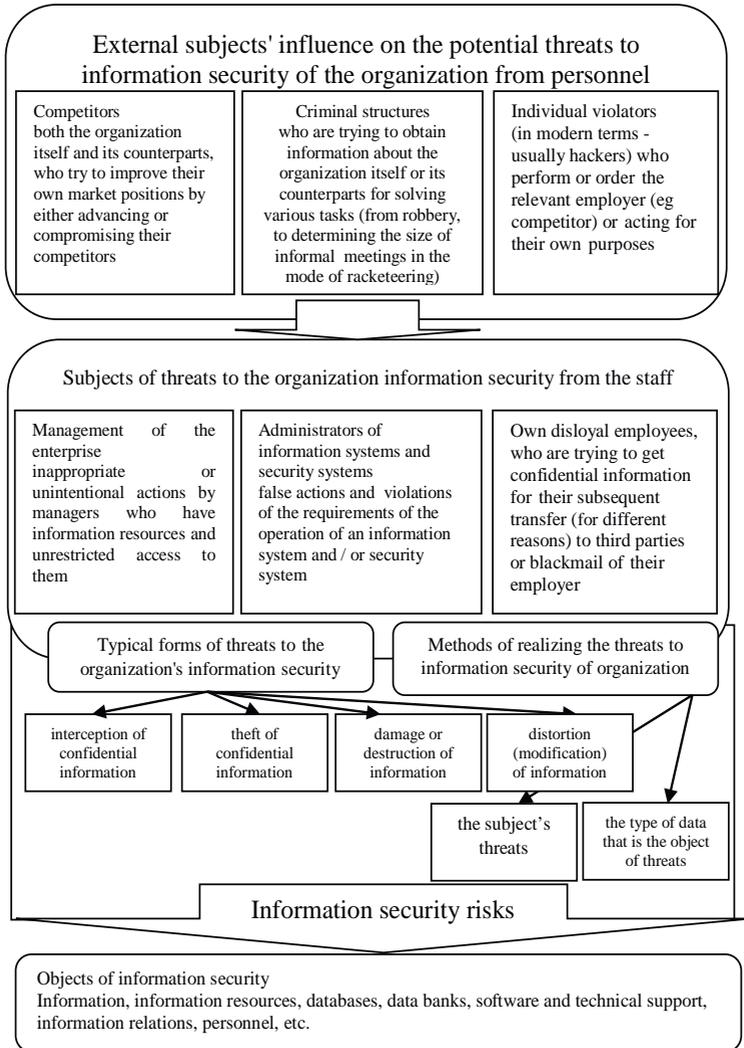


Fig.2. Structural-logical scheme of subject-object relations in protection of information from the personnel of the enterprise[author's development]

Risk factors of the first level - these are the phenomena that directly and most strongly influence the possibility of realizing the threats to information security from the staff in the organization. Risk factors of the second level are essential in the model due to their plurality and networked structure of the first level factors. All system factors are interconnected within a huge causal network, in which there is a part that is a subject to monitoring and control and the part that is hidden from the

management control of the organization. It is obvious that increasing the information security from the staff threats can be achieved by assessing and monitoring the organization of the second level risk factors.

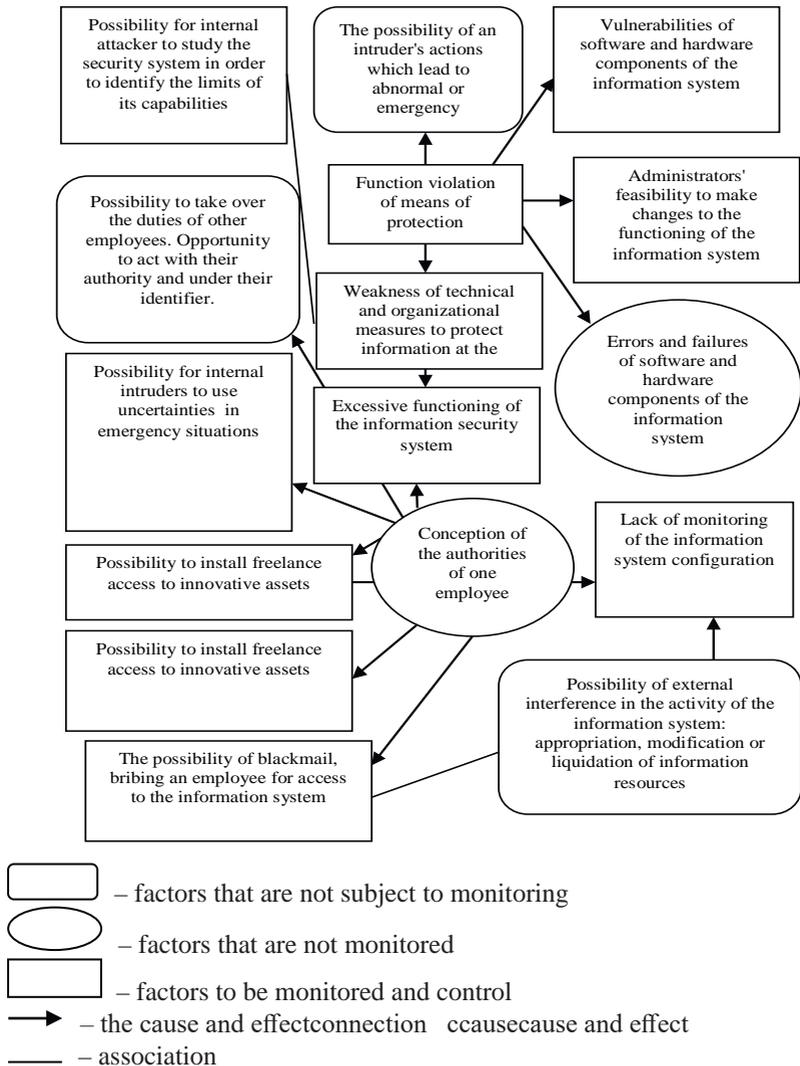


Fig. 3. Networked model of the risks for information security on the part of the personnel [developed on the basis of 2]

The proposed system of factors model can be used for:

- determining a set of factors that are subject to monitoring and control and

development of methods of their measurement;

- determining a set of the superintended factors and establishing a mechanism for their control;

- organization of the control system of information security risks related to personnel with the help of the established mechanisms;

- implementation of a set of successive measures to bring the information security risks from the personnel to the expected level, ei minimize them.

In addition, the model of information security threats from the staff can be used to solve the following tasks in response to the indicated threats:

Comparative analysis of the danger level for the organization coming from various threats to information security on the part of personnel;

Support activities for the development of the organization's internal regulatory and organizational-administrative documents;

Analytical support for the activities to identify areas of the increased risks for information security on the part of staff;

Other tasks related to both the adoption of decisions on the protective measures and utilization of such protective measures.

Thus, when we integrate the proposed structural-logical scheme of subject-object relations of information protection from the threats on the part of personnel at the enterprise and the networked model of information security risks it will facilitate the formation of an effective system of information security of the enterprise, constant support of the atmosphere of responsible attitude to the security issues, reduction of the negative influence of the human factor on the security of information systems and the state of information security, and as a result, to choose the appropriate situational measures to counteract the emergence and realization of information threats from the personnel at the enterprise.

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THEORETICAL BASES OF MANAGEMENT OF THE PROFESSIONAL SAFETY OF ENTERPRISE IN THE TRANSFORMATIONAL ECONOMY

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Ukraine’s economy over the past decades has undergone an extremely ambiguous and difficult period of transformation, caused by socio-economic changes, increasing competition, globalization processes, and so on. The main purpose of these changes is to ensure the company’s economic security, since security is a universal category that reflects the security of the subject of economic relations at all levels: from state to person.

For the domestic economic science, the process of providing and organizing personnel security becomes essential, which is a prerequisite for minimizing social and economic threats and risks of production and commercial activity, and increasing the efficiency of enterprise management. Determining the place and level of influence of the staff component in the overall system of financial and economic security of the organization requires a thorough research [6].

The theoretical aspects of personnel security management became the object of studying domestic and foreign authors, in particular: I. Burdi, S. Vasilchak, A. Dzhobavy, Z. Zhivko, A. Kibanova, O. Kirichenko, V. Kravchenko, O. Lashchenko, V. Savchenko, I. Chumarina, L. Shwyka and others. However, the theoretical foundations of personnel security management require more detailed consideration and generalization.

The purpose of the article is to synthesize and analyze the theoretical foundations of personnel security management of enterprises in a transformational economy.

Practical experience proves that at the present stage of the development of management methods in organizations the staff takes on top priority as the most important tool for effective performance. The staff affects all aspects of the organization's life, and is inextricably linked with financial and economic security [6].

Previously, the problems of the safety of the operation of personnel were considered through the prism of the work of the personnel department, within the framework of the implementation of the processes of labor protection and personnel motivation, without being separated and not perceived as an independent object of management.

Investigations of experts prove that the most complex link in the security system is personnel, and the very human factor can have the greatest impact on the efficiency of the enterprise. That is why personnel security is one of the top priorities in the structure of economic security.

Analyzing the theoretical foundations of personnel security management of enterprises, it is first of all to determine its conceptual basis. Due to the increased attention to personnel security, today there are many interpretations of concepts related to personnel. Many modern scholars interpret this concept in their own way.

Famous Russian scientist I. Chumarin believes that “ personnel security is a process of preventing negative effects on the company's economic security at the expense of risks and threats associated with personnel, its intellectual potential and labor relations in general” [10].

I. Bourda defines personnel security as an integral part of the company's economic security, whose priority is to protect against risks and threats to create the conditions for the most effective human resource management as a determining resource to ensure a high level of enterprise competitiveness [1].

O. Lashchenko characterizes personnel security as the state of the economic system, in which there is an effective interaction of all its functional components. It provides security and the ability to withstand internal and external influences and personnel-related threats. At the same time, it is able to carry out diagnostics, content and structural analysis and forecasting of the influence of personnel on internal and external indicators of the functioning of the economic system [8].

According to L. Shwaika and H. Zhidetskaya [11], the most complete definition of personnel security was given by a well-known specialist in personnel management A. Kibanov. He believes that personnel security is a general direction of personnel work, a set of principles, methods, forms of an organizational mechanism for defining goals, tasks aimed at preserving, strengthening and developing human resources, creating a responsible and highly productive united team able to respond in a timely manner on a continuous basis changing market requirements, taking into account the organization's development strategy [5].

Another approach to the characterization of the essence of personnel security was expressed by S. Vasyachak and I. Matyunyak, who believe that the main objective of personnel security of the enterprise is not only to prevent negative

influences from the personnel, but also to protect the workers themselves, create favorable conditions and incentives for their work. . At the same time, it should be borne in mind that staff is a productive resource, to which, unlike other resources, it is necessary to apply the principle of humanity and social protection. The task of the security service is not only to counteract the negative impact that comes from the staff, but also counteract those factors that are directed toward it [2].

It is interesting to note Zhivko Z., that personnel security is not only a state but also a company’s ability to counteract internal and external threats, protecting the interests of the enterprise, improving human capital, supporting an efficient human resources management system and providing safe working conditions [4].

Summing up the above, it is appropriate to conclude that all definitions are related to each other, but the approaches of the authors differ in the emphasis on separate elements of the essential characteristics of personnel security.

Therefore, it is worthwhile to argue that personnel security as an element of the company’s economic security aims to implement such labor, social and cultural relations that guarantee the enterprise a break-even. Thus, personnel security of an enterprise must be considered as a set of its components (Table 1) [7].

Table 1

Components of personnel security of the enterprise

Security components	Security
Life activity	Health safety, physical safety
Professional	Labor safety: informational, intellectual, pension and insurance safety
Social-motivational	Financial security: career, technological, aesthetic, administrative security
Anti-conflict	Psychological security: patriotic and communication security

As I. Chumarin notes, there are 3 main factors influencing the personnel security of the enterprise:

- hiring (search of candidates, selection, adaptation, certification, training);
- loyalty (solidarity, identity, engagement);
- control (regulations, restrictions, valuation operations) [10].

According to L. Shwaika and H. Zideczka, the following factors in the management of personnel security are also important: incentives for personnel, that is, motivation, the problem of personnel turnover and the improvement of the skills of employees. The authors also note that the management of personnel security of the company covers, in addition to some specific components of it, the whole set of personnel management process - from attracting and finding workers to their adaptation, forging a corporate and patriotic spirit, controlling work, career growth or dismissal. And only with the overall effective work of all these components can be achieved stability and growth of business, because the staff is the foundation of any enterprise, and effective and efficient management of them can become its main

competitive advantage [11].

One has to agree with V.A. Savchenko [9], which gives the following interpretation of the concept of professional development of personnel: as a purposeful and systematic impact on employees through vocational training during their work in the organization, in order to achieve high efficiency of production or services, increase the competitiveness of the personnel in the labor market, ensuring the implementation of new, more sophisticated tasks by the workers on the basis of the maximum possible use of their abilities and potential opportunities. Agreeing with the above, it should be noted that professional development of personnel is one of the main in the development of personnel security of the enterprise.

In the ever-growing role of the company's staff as the main link in ensuring competitive advantages and attaining strategic goals, there is a growing worsening of the socio-psychological climate in the teams, the spread of conflict disputes, which significantly reduce the loyalty of staff and make the company unprotected from the negative impact on economic security.

It becomes clear that the personnel security of the enterprise is endowed with specific, inherent only features, and its provision and constant support is a rather complicated process of enterprise management.

It should be understood that the threats to the enterprise by their own personnel cannot be completely prevented, but they can be managed and minimized. This should be understood by the top management of the organization of any level to play a leading role in ensuring the security of the organization and integrate the actions of the relevant units, especially the security and personnel management.

Thus, in today's economic conditions, the main objective of ensuring the economic security of an enterprise is to achieve maximum stability of functioning, as well as to create the basis and determine the prospects of growth for the achievement of business objectives, regardless of objective and subjective factors (threats, negative influences, risk factors , etc.). Changing business conditions in Ukraine has led to the appearance of new kind of problems in the enterprises, one of which is the problem of ensuring the personnel security of the enterprise.

Accordingly, personnel security can also be defined as a process to prevent potential and actual human-resource hazards (employing labor potential, human capital development, human resources management, improving labor relations, etc.) [3]. Consequently, the organizational security of the personnel security system is increasingly needed, which is considered as a process of preventing negative effects on the company's economic security through the risks and threats associated with personnel, its intellectual potential and labor relations in general. Therefore, the organizational and economic prerequisites for the formation of an effective system of personnel security management of the enterprise will be promising directions for further research.

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PART 5: MANAGEMENT OF ECONOMIC SECURITY IN CONDITIONS OF INTEGRATION PROCESSES: CASE OF UKRAINE

ECONOMIC SECURITY OF THE COUNTRY AS AN IMPERATIVE OF NATIONAL SECURITY AND SUSTAINABLE DEVELOPMENT FACTOR IN OVERCOMING THREATS

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The publication contains findings of the investigations conducted within the research “Trends of Modernization of Economy Management Systems” (State Registration 0118U001636) under the direction of Doctor of Science (Economics) Tetiana Ponomarenko to the order of Academician Yuriy Bugay International Scientific and Technical University.

ABSTRACT. In response to intensified integration processes, issues of forming a set of steps ensuring Ukraine’s economic security, developing methods of confronting new external and internal threats and overcoming destructive factors become more and more urgent.

Integration processes will enhance Ukraine’s economy and its ability to resist destabilizing actions of internal and external threats, facilitate the community’s sustainable development and competitiveness in the world economic system.

The sustainable development strategy “Ukraine-2020” [1] states that integration in the European Union political and economic structures is Ukraine’s major priority. The association agreement between Ukraine and the EU provides for systemic social and economic reforms aimed at the country’s democratic development, economic welfare and enhanced security as a basis for increasing stability of the national economy and fulfillment of requirements of the EU membership.

Several Ukrainian scholars and practitioners including I. Burakovskiy, L. Voloshchenko, M. Kyzym, T. Melnyk, V. Movchan, V. Nyzhnyk, T. Ostashko, T. Ponomarenko, V. Reznikov, V. Sidenko, V. Tochylin have studied the issue of enhanced integration impacts on the country’s development. At the same time, the country’s economic security and formation the concept of its provision in the context of enhanced integration require greater publicity.

This section of the monograph is intended to present theoretical principles of

the problem of Ukraine's economic security in the age of its active integration into the world economy; the legal field where tasks of forming a complex system of economic security are solved; consequences of Ukraine's entrance to the World Trade Organization and signing the economic part of the EU Association Agreement in terms of their impact on Ukraine's national interests, opportunities for ensuring sustainable development and potential new threats; highlighting major achievements of Ukrainian scholars searching for an appropriate concept of the country's economic security and its basic principles.

Economic security of the country as an imperative of national security. The notion of security comes from the phenomenon of insecurity, which in various forms occurs as threats to economic systems' activity. That is why, insecurity and threat are initial notions in considering security problems.

Insecurity is a real possibility of affecting negatively the community, an individual, a state, the environment, or an enterprise resulting in harm, damage, deterioration and expenses. Insecurity is a fully perceived, yet not fatal possibility of doing harm to anyone or anything that is determined by availability of objective and subjective factors capable of affecting the economic system [1].

Insecurity types can be classified according to: the character of direction; sources of insecurity (natural, technogenic, social); the probability rate (real, potential); the range and scale of possible negative consequences (international (global, regional); national or local (within a country); private (an enterprise, a company, a person); areas of social life and types of human activity.

A threat is the most concrete and direct form of insecurity or a set of conditions and factors causing insecurity for the state's interests, society, companies, individuals, national values and lifestyles [1]. Threats are negative changes of the external political, economic or natural environment which do appreciable real or potential damage to the state as a whole, its structural elements as well as Ukrainian citizens' vital, political, and economic interests.

Threats can be classified by various features, namely: the character of origin (natural, technogenic and social); human activity (political, economic, social, legal, military, environmental, demographic, scientific, technological, intellectual, informational, etc.); the source of origin (internal (the source is inside Ukraine) and external (the source is abroad)); probability of occurrence (real, potential); consequences (general (concerning the whole Ukraine), local (separate Ukrainian regions), private (individuals).

Threat sources of technogenic origin are determined by the condition inherent in a technical system, an industrial or transport object, which can occur in the form of negative impacts of the technical system on a person and the environment in case of a technogenic emergency. The negative impact reveals itself as direct or indirect damage to an individual and the environment as compared to standard functioning of technical objects.

Threat sources of social origin are determined by the condition inherent in a

country's social and political regime which results in a set of living conditions not meeting people's vital interests and needs [1]. This social and economic condition can turn into a social conflict, which is the highest level of social and political contradictions in the society and characterized by acute collision of aggrieved parties (people, social and political groups). The Ukrainian Revolution of Dignity, which took place in 2014, is a present-day example of a conflict. The threat of social origin in the subsequent period (2014-2018) is noted for Ukrainians' deteriorated living standards resulting from economic stagnation, corruption, able-bodied population withdrawing abroad, adoption of some faulty legislative decisions, etc.

Natural threats include: global disasters (floods, earthquakes, volcano eruptions, tsunami, tornadoes, hurricanes, landslides, temperature changes, magnetic storms, solar and moon eclipses, ozone holes, greenhouse effect, contamination, destruction of natural balance, epidemics, disequilibrium of natural self-regulation mechanisms, exhaustibility of the planet's resources, etc.

To eliminate natural threats, Ukraine's economic development priority is step-by-step steadfast introduction of technological, managerial and other decision-making systems enabling increased efficiency of natural resources use, improvement, or at least, maintenance of the environment quality on local, regional and global levels. This development type is called sustainable, which, according to Cambridge English Dictionary, means causing little or no damage to the environment and, thus, able to continue developing for a long time. It is the only widely-recognized long-term type of economic development of the world economy and therefore of the Ukrainian one as well.

Threats to the community can be external and internal. The basic external threats include: 1) a trend of turning Ukraine into a fuel-raw material periphery of developed countries that has an inefficient economic structure; 2) increase of the external debt and unsatisfactory balance of export-import operations; 3) excessive dependency on super state financial and political organizations; 4) a low level of the country's energy independence; 5) imperfect migration policy.

Internal threats include: 1) the ineffective structure of the gross domestic product and unsatisfactory dynamics of its growth; 2) excessive monopolization in the key areas of the economy; 3) the country's low investment and innovative activity; 4) currency withdrawal from the country; 5) destruction of the scientific and technical potential; 6) deepening of property stratification of Ukraine's society; 7) corruption and criminalization of the economy; 8) a low level of state institutions' efficiency; 9) an unsatisfactory level of independence of legal proceedings.

To prevent social threats, a complex strategic programme of Ukraine's economic development should be developed and implemented to partially or fully eliminate the mentioned negative phenomena. This will both eliminate part of the threats and increase the economy's and society's resistance to those remaining.

Under Law of Ukraine No. 2469 "On National Security of Ukraine" dated 21.06.2018, Ukraine's national security strategy implementation is based on the

country's economic and intellectual potential using mechanisms of state-private partnership with international consulting, financial, logistics support [4].

The appendix to Ukraine's Cabinet of Ministers Resolution No. 1277 dated 29.10.2013 defines economic security as "a state of the national economy that enables maintenance of resistance to external and internal threats, providing high competitiveness in the world economic environment and characterizes ability of the national economy for sustainable and balanced growth" [5].

An imperative of the national economic security (NES) is: the internal material basis; a rather high level of productive forces able to provide essential part of natural and cost elements of the extended reproduction of the national product; the stable internal social and political basis of economic security; a rather high level of social consensus concerning long-term national ideas that enables formulation and adoption of a social and economic development strategy to be implemented through the state policy steadily supported by the majority of the population.

As a rule, major factors and tasks of increasing economic security of any country are as follows: provision of continuous economic development; formation of the efficient economic structure; reduction of the budget deficit and government debt; increase of living standards and social protection levels.

These tasks determine the country's economic security strategy which implies substantiation and formation of major priorities of national development at a certain historic stage within the framework of certain national interests, and creation of mechanisms to address current problems.

In the course of globalizing, national economic security is becoming more integrated into the international one. Manifesting itself in spheres of influence of other kinds of national security (social, political, military, environmental, legal, technological, cultural, intellectual, informational, demographic, genetic, psychological etc.), penetrating into and interacting with them, economic security accumulates their influences but still stays a basis for national security.

A state is a major subject of providing security.

Besides the state, producers of goods and services, households and individuals are also security providing subjects.

A state's economic system on the whole and its main components, a society and its institutions, economic entities of all levels of the economic system are objects of economic security.

Security is achieved through a single state economic security provision policy, a system of economic, organizational, political etc. actions responding to threats to individual's, society's and country's vital interests.

To create and maintain the necessary level of protection of security objects, a system of legal standards is being developed to regulate relationships in the sphere of security. For this purpose, principle directions of government bodies' activities and management in the sphere are also being determined; and bodies responsible for security as well as mechanisms for controlling and supervising their activities

are being formed.

The current system of Ukraine's economic security requires improvement: it should exercise a number of principal functions, prompt determination of potential and real threats, their analysis and neutralization (or prevention) through relevant legal, administrative, economic and information actions. At present, Ukraine does not have a complex system of threats monitoring, determination of their level and developed measures for their prevention or neutralization.

National economic security comprises the following components: macroeconomic, financial, foreign economic (international), investment, scientific and technological, energy, production, information, demographic, social, food security etc.

Production security is the state of the country's production which ensures the most efficient use of available production capacities, their modernization and extended reproduction, increase of the production innovation and national economy's competitiveness levels:

- demographic security is the state of the country, society and labor market protection against demographic threats which ensures development of Ukraine considering the whole range of balanced demographic interests of the country, society and individuals in accordance with constitutional rights of citizens of Ukraine;

- energy security is the state of economy that facilitates efficient use of the country's energy resources, availability of the sufficient number of energy producers and suppliers, availability, differentiation and environmental compatibility of energy resources;

- foreign economic security is the state of compliance of foreign economic activities with national economic interests that ensures minimal losses caused by negative external factors and creates favorable conditions for economic development due to the country's active participation in the world division of labour;

- investment and innovation security is the state of the country's economic environment that stimulates national and foreign investment into expansion of the country's production, facilitates development of high-tech production, integration of research and production spheres in order to increase efficiency, enhance specialization of the national economy when manufacturing products with a great added value share:

- macroeconomic security is the state of economy with balanced macroeconomic reproductive proportions;

- food security is the state of the country's food production capable of complete satisfaction of needs of every member of society in food of appropriate quality, assuming its balance and general availability;

- social security is the state of the country's development which enables decent and qualitative living standards for its population regardless of the people's age, gender, income level, promotes development of the human capital as the most

important component of the country's economic potential;

- financial security is the state of the country financial system which allows of creation of financial prerequisites for stable social and economic development, provision of its resistance to financial shocks and imbalances, creation of conditions for maintaining integrity of the country's financial system. In its turn, financial security consists of the following:

- banking security is the level of financial stability of the country's banking institutions that enables efficient functioning of the country's banking system and its protection against external and internal destabilizing factors regardless of conditions of its functioning;

- security of the non-banking sector is the level of stock and insurance market development that enables complete satisfaction of society's needs for definite financial tools and services;

- debt security is the level of internal and external debts with considered costs of their servicing and efficient use of internal and external borrowings and the optimal correlation between them, sufficient for satisfaction of urgent social and economic needs that does not threaten the country's sovereignty and financial system;

- budget security is the state of solvency and financial stability of government finance that enables government bodies to most efficiently exercise their functions;

- currency security is the state of exchange rate formation which is characterized by the society confidence in the national currency unit, by its stability, and creates optimal conditions for steady development of the national economy, attraction of foreign investments, integration of Ukraine into the world economic system and defends from shocks on international currency markets;

- monetary and credit security is the state of the monetary and credit system that provides all the national economy subjects with qualitative and available credit resources in the amount and under conditions beneficial to achieving increase of the national economy.

In its turn, financial security comprises the following: banking security; security of non-bank financial market; debt security; budget security; currency security; monetary and credit security.

In terms of levels of economic security system building there can be singled out the following components: global (international) security, national security, enterprise security, and security of an individual.

Global economic security is the state of protection of international economic relations against threats of their destabilization. It is provided through creating conditions for execution of international agreements that stipulate protection of each country's national economic interests against external threats.

Enterprise security is the state of protection of an enterprise against negative impacts of the economic environment and ability of the enterprise to function steadily and develop in accordance to its statutory goals.

Security of an individual is the state of protection of vital interests of an individual

in the economic sphere against disservice and living standards degradation.

It should be noticed that the components are similar at different levels of economic security system building, i.e. one may talk about both the countries and enterprise financial security or draw a parallel between social security of a country and personnel security of an enterprise.

International economic security (IES) is a complex of international conditions of co-existence of agreements and institutional structures when each member country of the world community is enabled to choose and implement its own strategy of social and economic development without any external pressure and interference, in the climate of mutual understanding and collaboration.

This can be implemented through abandonment of imposing development models, economic and political enforcement. It is essential to understand that in a long-term outlook all countries will benefit from other countries' progress rather than from their plunder. Legal guarantees of IES consist in recognition of the principle of equality of countries regardless of their social and political order. IES should ensure collaboration of countries in solving both national and global problems. IES should become a basis for peaceful nuclear-free co-existence.

It should be noticed that building systems of national security in various countries is one of the factors of ensuring international economic security.

Advanced countries of the world demonstrate worth-while practices of building national security systems. For instance, Japanese scholars have developed the concept of "comprehensive national strength" [6] to the order of the National Economic Planning Agency. According to experts, the concept is synthesis of traditional and new methods. The method of calculating the so-called "comprehensive national strength" index embodies three great parts consisting various components.

The category "ability to contribute to the international community" is the centerpiece of the comprehensive national strength index. This means countries' financial- economic, scientific-engineering and political-diplomatic potentialities to commence creation and development of international social and economic projects, systems, organizations, corporations. The components of the index are:

1) basic potential consisting of the economic force, financial capacities, science and technology;

2) opportunities for implementing the basic potential globally that include currency and financial resources, consensus for international policy issues, ability to perform efficiently on the global stage.

The second category of the "comprehensive national strength" index reveals ability to survive in crisis and extreme international conditions. It consists of the following components: geographical conditions; population size; natural resources; economic force; defense forces; national morals; diplomacy and collaboration in the field of defense.

The third category estimates the potential of "possible power pressure", i.e. ability of a country to lobby their own interests. This means that each country is

guided by its own interests that are supported by: military force; strategic materials and technologies; economic power; diplomacy.

After calculating values of each of the three above-mentioned components, weighted average values of the three elements of the “comprehensive national strength” index are determined for each country which is the “comprehensive national strength” index.

The concept of determining the “comprehensive national strength” index can be applied to comparing states of national security in various countries.

The President of Ukraine plays a leading role in the national security issues. All executive authorities responsible for fulfillment of the key security types report to him.

Under section 5 of Ukraine’s Law “On the National Security of Ukraine”, dated 21 June 2018, the President of Ukraine governs the national security and defense field in compliance with the Ukraine’s Constitution. In particular, he:

- 1) ensures state independence and national security;
- 2) heads the National Security and Defense Council of Ukraine, brings into force its decisions in the statutory manner.
- 3) indicates real and potential threats and hazards and takes required actions to eliminate them.

Under section 85 of Ukraine’s Constitution, The Verkhovna Rada of Ukraine executes parliamentary control and passes the laws of Ukraine which determine and regulate the activity of security authorities.

Within the authority determined by Ukraine’s Constitution, it ensures various types of national security, economic security as well.

The Cabinet of Ministers of Ukraine as the highest authority within the system of executive authorities:

- ensures the state sovereignty and economic independence of Ukraine; conduct of national and international policy; implementation of Ukraine’s Constitution and laws;
- ensures the conduct of financial, price, investment and tax policy; labour and employment policy; social welfare; education, science and culture; conservancy of nature, environmental safety and environmental management;
- establishes and ensures the conduct of international business activity and customs affairs;
- directs and coordinates the work of ministers and other executive authorities in the national security field.

The National Police of Ukraine perform the following key functions ensuring national security of Ukraine:

- 4) financial crimes enforcement within the most criminogenic and vital for Ukraine’s economy fields, first of all credit and financial and banking;
- 5) anticorruption efforts;
- 6) illegal migration combating;

- 7) involvement in environmental security provision;
- 8) involvement in data security provision;
- 9) involvement in international security provision (cooperation establishing with worldwide national security organizations; partaking in peace-keeping, rescue and humanitarian operations under UN and OSCE auspices).

State Border Guard Service of Ukraine conducts the state policy in the field of the state border security as well as Ukraine's sovereign rights protection in its economic zone [7].

The National Bank of Ukraine establishes and conducts monetary policy in the interests of the state security of Ukraine according to the main concepts of monetary policy [9].

The National Bank of Ukraine establishes and conducts issuance financing policy in the interests of the state security of Ukraine. The following functions of The National Bank of Ukraine can be related to the national security field:

- 1) provision of Ukraine's currency unit stability;
- 2) establishing and conduct of monetary policy;
- 3) determination of development trend of current electronic bank technology; creation, coordination and control of electronic payment facilities, payment processors, automation of bank operations and bank data security facilities;
- 4) representation of Ukraine's interests in central banks of other states, international banks and other credit institutions where collaboration is maintained at central banks level;
- 5) provision of foreign-exchange reserves accumulation and storage, operating them and precious metals;
- 6) evaluation of monetary, financial, price and currency relations;
- 7) the state policy implementation on the state secrets protection within the National Bank system;
- 8) identification of the peculiarities of Ukraine's banking system functioning in the event of a martial law or a special period introduction, preparedness activity of the National Bank system;
- 9) elaborating the Monetary Policy Fundamentals and presenting them to the Verkhovna Rada of Ukraine for reporting, monitoring of compliance with the Monetary Policy Fundamentals;
- 10) analyzing the impact of Ukraine's monetary policy on the state of social and economic development of Ukraine and developing proposals for introducing appropriate changes in it;
- 12) banking regulation and supervision in order to ensure the security and financial stability of the banking system, protecting the interests of depositors and creditors.

General jurisdiction courts conduct legal proceedings in cases over Ukraine's national security diminishing.

Public control over the national security provision is carried out by citizens of

Ukraine through public associations.

In accordance with Ukraine's Constitution and laws, as well as the constitutional provisions, public associations registered in the statutory manner are ensured the right to receive the information on security sector activity from the state authorities, receive information from the state authorities in accordance with the established procedure, information on the activities of the components of the security sector.

Mass media, covering issues of national security and defense, inform the society about the state of Ukraine's national interests' protection.

Potential of Sustainable development model in overcoming threats. Development of basic principles of sustainable development of the world economy and economies of different countries as its integral parts has become an area of focus for the world scientific elite and authoritative international organizations. In 2015, the Summit of the United Nations Organization on sustainable development issues approved global Sustainable Development Goals (SDGs) [2] which are observed by all world countries by determining their own indicators.

The SDGs include 17 goals and 169 particular tasks approved at the General Assembly meetings in September 2015, namely: overcoming poverty; solving the problem of famine; health maintenance; high-quality education; gender equality; clean water and adequate sanitary conditions; use of renewable energy; decent jobs and economic growth; innovations and infrastructure; reduction of inequity; cities and communities living according to sustainable development principles; responsible consumption; the planet's protection; provision of life under water; provision of life on the Earth; peace and justice; cooperation to achieve goals.

The Global Goals of sustainable development were adjusted to specific features of Ukraine's development. In September 2017, The Government of Ukraine presented the National Report "Sustainable Development Goals: Ukraine" [2] compiled by the Ministry of Economic Development and Trade, which determined the basic indicators of achieving SDGs. The report was ratified by the inter-ministerial work group on the issues of SDG introduction in Ukraine under the chairmanship of Minister of Economic Development and Trade of Ukraine, Humanitarian Coordinator, UN Coordinator in Ukraine, Permanent Representative to the UN Development Programme in Ukraine (N. Walker).

In Ukraine, consultations on SDG issues were conducted on both central and local levels. More than 800 leading experts in specific areas of SDGs took part in determining national tasks of ensuring assessment impartiality and conformity of forecasting indicators. Local consultations were held in 10 Ukrainian regions involving central and regional government bodies, local self-government, communities, international organizations, public institutions. The work was supported by all UN agencies in Ukraine, in particular, UN development programmes in cooperation with the Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine.

The sustainable development goals actually continue the tradition of the

Millennium Development Goals (MDGs). For the last 15 years, this document has been a strategy enabling the Ukrainian community to control the authorities by applying the monitoring of 33 key indicators [3].

The SDGs in Ukraine represent a new system of mutually agreeable managerial steps according to economic, social and environmental (nature-saving) parameters aimed at creating social relations based on principles of trust, solidarity, generation equality and the safe natural environment. Ukraine's sustainable development is based on inalienable human rights to life and appropriate development. The SDGs in Ukraine are to enhance integration of all efforts of the authority branches to ensure the country's economic growth, implement Ukrainians' striving for justice, efficient use of natural resources and overcome the current environmental crisis, all this calling for in-depth and profound changes in Ukraine. Achievement of the SDGs is conditioned by elimination of corruption in all spheres of the country's development as this phenomenon is a substantial obstacle to the country's advance.

In his report at the UN Summit during the 70th Session of the UN General Assembly, President of Ukraine, Petro Poroshenko presented his general vision of Ukraine's development by 2030: "To achieve the Goals of Sustainable Development on the national level, Ukraine is going to implement new programmes and projects aimed to enhance macro-economic stability, environmental balance and social integrity. The SDGs will provide a general basis for further transformations in Ukraine" [2].

POTENTIAL, OPPORTUNITIES AND THREATS OF INTEGRATION FOR ECONOMIC SECURITY OF UKRAINE

Ukraine as the World Trade Organization member. An important task for the Ukrainian government is making use of benefits provided by Ukraine's WTO membership in order to expand export opportunities of domestic commodity producers and protect the economic interests of the state at foreign markets.

The Ministry of Economic Development and Trade is appointed by the central executive body to be responsible for the co-operation between Ukraine and the WTO.

In 2018, it has already been 10 years since Ukraine gained full membership in the World Trade Organization. «Ukraine's accession to the WTO became an important aspect and system factor for ensuring further development of the state and gave impetus to structural changes in the country's economy, in particular by adapting its legislation to world rules,» said the First Vice Prime Minister - the Minister of Economic Development and Trade of Ukraine Stepan Kubiv.

The main positive results of Ukraine's accession to the WTO are the expansion of opportunities for the development of Ukrainian national business and the creation of a number of benefits for it, of which:

- WTO membership allowed domestic exporters to obtain a predictable and

favorable non-discriminatory regime at the markets of the Organization's members, enabled settling of current trade problems and controversial issues in both bilateral and multilateral formats.

- The accession to the WTO allowed for initiating talks on making a number of free trade agreements with the main and prospective trade partners of our state, such as the EU, the European Free Trade Association (Iceland, Liechtenstein, Norway and Switzerland), Montenegro, Canada, Turkey, Israel. Some of the agreements are already partially made.

- The state has extended the possibilities of using trade defense instruments, protective measures regarding a balance of payments, certain non-tariff measures, a mechanism for settling disputes, etc.

- Within the framework of the negotiation process on Ukraine's accession to the WTO, the EU and the United States assigned Ukraine the status of a market economy country, which is an important positive factor in conducting antidumping investigations on Ukrainian goods.

- After joining the WTO, Ukraine acquired the right to participate directly in the multilateral trade negotiations of the Doha Development Round and in the negotiations on the accession of new members to the WTO to uphold the state interests in trade and economic sphere.

- Admittance to the information system of the WTO and benefits from using the system of early information exchange provided the possibility for Ukrainian enterprises to access information and sources of information on changes in trade regimes of WTO members, and to initiate a dialogue and discussions with the aim of improving trade conditions.

- The in-depth analysis of trade regimes provided the possibility to consider changes and trends of the economies of the WTO members and became a solid ground for expanding export opportunities of domestic companies, protecting their interests at foreign markets.

«Ukraine has regained its credibility as a reliable and foreseeable trading partner in the WTO. We have learned how to properly use tools and capabilities of this organization to make them work for business, such as settling of trade disputes, access optimization to the markets of the countries joining the WTO, removal of the barriers at foreign markets, participation in global trade talks to create brand new parameters of World Trade », - said the Deputy Minister of Economic Development and Trade - Trade Representative of Ukraine Natalia Mykolska [10] .

Ukraine's ratification of a number of new WTO agreements should be mentioned as one of the key achievements of the last years of Ukraine's WTO membership. Mainly, these are agreements on trade facilitation and accession to the Agreement on Government Procurement. Together with WTO members, an important decision on export competition is made. It ensures the abolition of export subsidies in agriculture providing Ukrainian exporters with fair competition with other world exporters of agricultural products.

Equally important achievements are the successful completion of the first «Ukrainian Trade Policy Review» – a so-called «international audit» of Ukraine in the WTO, and a consistent response to the trade aggression on the part of the Russian Federation.

At the same time, it cannot be argued that Ukraine has managed to ensure the effective use of its membership in this international organization over the years of its membership. To do this, it is required to carry out a lot of work, including the implementation of Priority Actions Plan prepared by the Government prior to 2020 and the Export Strategy of Ukraine for 2017-2021. Therefore, the important task to be fulfilled by the Government is to ensure Ukraine's active participation in the WTO to expand its foreign economic relations and to sustainably increase and diversify export of Ukrainian goods and services.

Meanwhile, Ukraine has proved itself to be one of the main players at the international market of agri-food products, in particular in segments of sunflower oil, cereals and oilseeds. Apart from that, it was possible to diversify the geographical structure of supply of domestic agricultural products through deeper immersion in the system of global trade within the WTO and by signing new agreements on the establishment of free trade zones. Having lost the greater part of the Russian market after the start of military aggression in Eastern Ukraine, Ukrainian exporters quickly reoriented to other, even exotic, markets of the world. In recent years, export of products and services to the EU countries has tripled.

However, over these 10 years Ukraine has not been able to overcome substantial scarcity of foreign trade in goods. For example, the scarcity of trade in goods in January-March 2018 reached USD 1.691 bn, an increase of 25.4% compared to the same period last year. As a matter of fact, Ukraine has reached a surplus in service trade, but this figure is not decisive for the above-mentioned period – USD 245 m.

For 10 years of Ukraine's membership in the WTO, no dramatic changes in the domestic commodity structure of agricultural products occurred. A significant predominance of crop production over livestock has remained within 80% and 20% respectively. In addition, there is a gradual decline in the proportion of ready-made food from more than 20% in 2008 to 16-17% in 2018.

Despite the fact that the WTO terms prohibit import restrictions, Ukraine repeatedly faced with Russia's discriminatory actions concerning the import of meat, dairy and confectionery products, as well as the blockage of inbound goods at the border. In 2016-2017, there was a bilateral embargo between Ukraine and Russia for the supply of most groups of agri-food products.

However, in this difficult situation Ukraine has entered the European market with fruit and berry products, and Ukrainian meat products have found wide geographical diversification. Now they are mostly bought by European, Asian and African countries.

Although Ukraine managed to strengthen its position at many new foreign markets, it was mostly achieved due to raw materials, not high-tech. Besides,

Ukraine lags behind in the issues of proper certification and standardization of its products.

Ukraine needs to increase the competitiveness of domestic products, otherwise there is a risk of its transformation into a raw material supplement of developed countries and a large market for foreign goods.

Analysis of opportunities and threats of creation of free trade zone Ukraine-EU. In 2014, the European Union (EU) and Ukraine signed the Association Agreement (AA), which represents a new stage in the development of European-Ukrainian contractual relations, with the aim of political association and economic integration.

After signing the political part of the EU-Ukraine Association Agreement at the Ukraine-EU Summit on 21 March 2014, both parties signed the economic part of the agreement on 27 June 2014. The complete Association Agreement between Ukraine and the EU came into force after its ratification by all EU member states.

The Association Agreement contains provisions on the establishment of a deep and comprehensive free trade zone (DCFTZ). The DCFTZ was created to provide Ukraine with preconditions for modernization of its trade relations and economic development by opening the European Union markets along with gradual elimination of customs tariffs and quotas, and a comprehensive process of harmonization of laws, regulations and rules in trade-related fields. It was assumed that these would provide a background for bringing the key sectors of the Ukrainian economy in line with the EU standards. The economic part of the Association Agreement became partially operational since 1 January 2016.

An important part of the agreement was the introduction of a visa-free regime for Ukrainian citizens. A large number of civilians has already experienced benefits of increased mobility and positive impact of this factor on society.

Under conditions of openness of Ukraine's economy due to its accession to the World Trade Organization and the EU Association Agreement, our state must solve the following priority tasks: to increase export potential of the Ukrainian commodity producers; improve investment potential of the country; strengthen the competitiveness of national producers; achieve a positive export and import balance, and trade and current balance of payments.

The solution of the above-listed tasks actualizes the need for an optimal combination of Ukraine's foreign economic openness and protectionist policies based on real capabilities and needs of national production and interests of domestic consumers.

Ukrainian scientists emphasize that the successful integration of the country's economy into consistent foreign goods, services, capital and currency markets is possible provided that the respective national markets are developed. Western economic thought substantiates positive impact of «economic expansion» of developed countries on developing ones. But in developing countries, more critical assessment is made on the positive effects of economic globalization.

Proceeding from the essence of modern protectionism doctrine, the main

principle of the integration strategy of our state into the world economy should be pragmatic observance of the priority of Ukraine's national economic interests and their protection using the possibilities of European integration institutions and international trade unions, in particular the World Trade Organization.

At the same time, the efficient use of protectionist actions, including the incentive provision to national producers, will be achieved only if they are directed at the most promising sectors of national economy.

It is impossible to encourage all sectors of national economy at a time applying protectionist actions. Some of them should be targeted at import substitution, while the unprofitable in Ukraine products are to be imported. But in general, one should realise that any product being in demand with the Ukrainian nation, in case it is produced in the country, contributes to the increase of national security level.

Unfortunately, today the state support of certain branches of national economy, enterprises and regions is carried out inconsistently and without science-based criteria resulting in low efficiency of Ukrainian foreign economic activity.

The integration strategy of Ukraine's economy to the world economy is not limited to the liberalization of foreign economic activity. It also includes stimulating the national economy growth as a whole, enhancing the role of national producers, strengthening Ukraine's role in international cooperation.

It should be noted that protection of national production from negative external influences must only complement actions aimed at ensuring economic growth taking into account broad interests of domestic consumers.

Protectionism is common in many developed countries, but it is not sufficiently provided by Ukrainian legislation. Protectionist actions are always temporary and set for a limited period of time sufficient for establishing certain industries and market segments.

First of all, protectionism is needed in order to strengthen viable and structural industries and sectors of economy in market environment. At the same time, protectionist means of foreign economic activity regulation should not hinder the improvement of national economy. The establishment of protectionist barriers is essential for developing countries to ensure emergence of new national industries, structural adjustment of existing capacities or overcoming of crisis phenomena in certain industries.

The most widespread protectionist instrument is customs tariff for goods importation. Customs tariff ensures not only the replenishment of the state budget, but also encourages structural adjustment of the Ukrainian economy, which is no less important for its successful integration into the world economy. To achieve this goal, it is required to determine the development priorities of our state and build a concept of institutional strategy of Ukraine's integration into the world economy.

It is important to anticipate possible threats to the national economy and gain benefits for the state from integration.

The integration vector of Ukraine's national economic interests' implementation

should include:

- on import of goods: differentiation of customs duties according to the main directions of structural policy; use of compensatory and anti-dumping duties to promote the development of national producers;
- on export of goods: incentive and development support of export-oriented industries; promotion of Ukrainian products to foreign markets; an increase of high value added goods in the export structure;
- concerning investment flow: improvement of the national legislation on foreign investment in Ukraine and Ukrainian investment abroad and ensuring its execution; exert effective customs and banking control over agreements with non-residents in order to reduce capital export.

Ukrainian economists argue that targeting exclusively external factors of growth deprives our country of additional opportunities for developing the competitive national economy. To this end, the state should ensure the actions that stimulate restructuring of the economy, improve investment climate, reduce business rates and credit costs.

To stabilize financial and economic situation, most countries provide state financial support to private banks and financial and non-financial corporations in certain sectors of real economy, and take other actions to support national economy.

Similar actions were taken by the governments of France, Germany, Italy, the USA, the Great Britain and the BRIC countries (Brazil, Russia, India, China). Despite the fact that such actions are defined as protectionist by the European Commission for Competition, the European Union itself carries out covert protectionist actions through import non-tariff restrictions in the EU countries.

Developed countries are increasingly introducing protectionist actions not only in the field of trade in goods and services, but also in investment activities. In particular, the Australian government officially stated that foreign investment not responding to the national interests of Australia was to be blocked after the Investment Agency of the State Currency Administration of China bought 1 % of assets in each of the three Australian banks – National Australia Bank, Commonwealth Bank of Australia, and Australia & New Zealand Banking Group in 2008. Similarly, the USA, Canada, Japan, Germany and France sometimes act in contradiction to the fundamentals of the WTO on free flow of capital, goods and services.

Thanks to protectionist actions in the form of export subsidies paid to cotton producers since 1994 up to now in the United States, this country was able to become the second leading producer and the number one exporter of the world. The rate of state financial support for this industry in the United States is 89.5%. Despite Brazil's protests (the fifth largest world cotton producer) and repeated sanctions and bans of the WTO, the US Congress re-approved a program of assistance to its farmers in the amount of USD 289 bn in 2008, with the largest share of this amount being allocated to producers of cultivated plants, in particular cotton.

Ukrainian scientists draw attention to how well, in comparison with Ukraine,

China uses the WTO rules to protect its national interests. By the way, Russia has also defended the interests of national exporters for a long time in accordance with the RF Law «On special protective, anti-dumping and countervailing measures for importing goods».

Thus, the global financial and economic changes occurred in 2017-2018 showed that our country must above-all consistently defend its national interests in the foreign economic activity being a prerequisite for the economic security of the state and counteracting to the numerous global challenges and threats.

Scientist A.M. Poruchnyk substantiated the need for Ukraine to introduce a model of economic development, which he called «mobilization», based on a combination of national resource base and global economic drivers. For Ukraine not to remain on the periphery of global progress and the new order of world economy regarding its development strategy, it is required to take into consideration that the mechanism of international economic relations in the XXI century is fundamentally changing and is being increasingly based on a high level of coordination of regulatory actions, either within one country or between countries. Nevertheless, each state is primarily concerned about protection of its national economic interests.

The practice of modern international relations shows that the formation of a new world order is developing according to a scenario that reflects the middle ground between the two alternative models mentioned above. Consequently, the integration vector of Ukraine's national economic interests implementation should become one of the main components of its institutional market model of effective development, while the issue of making use of economic openness through the regulatory functions of the state, the optimal combination of foreign economic liberalization and protectionist policies requires further implementation of legislation and within authority of all executive bodies [15].

This approach is significant because instability at the international financial, currency and commodity markets and recurrent crises (2008-2009) indicate that the current global financial and economic system is inadequate. Therefore, the issue of concerted international actions for the world economy development considering national economic interests of each country is observed by both Ukrainian and foreign scientists, specialists and politicians. A Professor of Yale University (the USA) Paul Kennedy emphasizes the viability of the Bretton Woods system reformation pointing out that the international structures in the financial and economic field created in 1944-1945 are in line with the needs of the 21st century. Such organizations as the IMF, the World Bank, the WTO, OPEC, UNIDO and other sectoral regulatory bodies can no longer ensure stability of global economic processes. The analysis of scientific papers, the proceedings of the G-20 summits, the World Economic Forums and other sources on the current state of the world economy shows that there is a need to improve the concert of states in the development of both national economies and the global economy as a whole.

In the face of globalization challenges every country has to decide whether to

solve problems of national economy itself or to join forces with other states. Ukrainian academician V. Heyets, after analyzing the practice of the Eastern European states, emphasizes that convergence with the EU allows counting on developed European countries, but national economic interests of different countries are not identical, so we must think about national interests first.

Ukrainian scholars - representatives of the scientific school of globalization (O.H. Bilous, D.H. Lukyanenko, A.M Poruchnyk, etc.) [15] believe that states are not completely sovereign or relatively sovereign as they are interdependent. Therefore, in a context of post-industrialism and a new global environment, the world needs a new quality of coexistence – controllability and democratic solidarity in development processes.

Present world has to solve a difficult issue – to reach a compromise concerning interstate harmonization of actions aimed at eliminating global risks along with ensuring national economic interests of every state.

According to the resolution of September 2009 Summit, the G-20 is proved to be the main international coordinating forum for addressing the global economy, while the World Bank is responsible for such global issues as food security and climate change.

Having allocated USD 5 bn to support global economy, of which USD 1 tn through the International Monetary Fund (IMF), the G-20 adopted an essential resolution to introduce a system of global control over the activities of hedge funds, which significantly limits freedom of speculative capital movement. The international coordinator for the global market, called «Financial Stability Board», was established at the G-20 London Summit [18].

It is remarkable that along with the efforts of the leading G-20 nations to join forces for the development of the world economy and declared fidelity to high ideals of free international economic competition, one of the first effects of the 2008-2009 global crises was the introduction of protectionist actions by 17 countries of G-20 after the Washington Summit. After many years of countries' sovereignty dilution, there is a tendency to certain strengthening of national state approaches, primarily in the field of economic security.

Analysis of the Association Agreement between Ukraine and the EU have performed in the Table 1.

Far-Eastern vector of economic relations as a significant component of Ukraine's economic security. As mentioned in the analytical report of the National Institute of Strategic Research, modern world development is characterized by improved performance of Asian states in the economic, political, investment, and scientific and technological spheres. The countries of Northeast Asia (China, Japan, South Korea) are transforming into a driving force of world development.

Table 1

Analysis of the Association Agreement between Ukraine and the EU

Advantages	Disadvantages
Liberalization of «basically all» tariffs and duties	Reduction of revenues to the state budget as a result of reduction of rates of customs payments and curtailment of domestic productions
The gradual harmonization of Ukrainian standards with pan-european, Ukrainian customs officials technical assistance of colleagues from the EU	Implementation of additional restrictions on trade of Ukrainian goods in the EU markets because of non-conformity of the product standards, differences in customs system and procedures, etc.
Reducing corruption by simplifying customs procedures	The need for modernization of customs and retraining of personnel, which requires additional expenses from the state budget.
Opportunities	Threats
Increasing of the competitiveness of Ukrainian agricultural and food products through the introduction of appropriate standards of health protection and citizens' interests to EU standards	Withdrawal from the FTA of the main agricultural product nomenclature due to non-compliance with EU standards
Access to the EU market, to consumers with high purchasing power	Contrary to the manufacturers of industrial goods already supplied to the CIS countries (and with which all standards are agreed upon), the introduction of new (often more rigid) EU standards
Possible elimination of the main problems of the metallurgical industry, expansion of the presence of Ukrainian metal products in the EU markets	Low investment attractiveness of the metallurgical industry (outdated fixed assets, low quality and value added of production), trade in metal products is limited by non-tariff barriers, such as distorted competition, through the provision of state aid
The growth of the share of machine-building products in the overall structure of imports. Unification of the standards of industrial products of Ukraine and the EU will promote the development of industrial production and the entry of Ukrainian enterprises to the European chain of production and supply	Existing problems of non-conformity of machine-building products with technical and other EU standards are additionally complicated due to the general unfavorable investment climate and inefficient border crossing system.
The development of the energy sector within the framework of the agreement is possible in the context of the development of trans border electricity markets, and subsequently in the gradual formation of a single energy market with the EU	The weak ability of Ukrainian energy companies to export electricity due to underdeveloped infrastructure and differences in technical standards and rules under which the energy markets of the EU and Ukraine operate
Application in the mutual trade of protective, anti-dumping, countervailing measures on the basis of the WTO Agreement	Losses for individual industries due to their low level of competitiveness
Improving the business environment and increasing the volume of foreign investment	The threat of crowding out the domestic producer from some sectors of the domestic market
Saving or creating an FTA with other countries	Increase in unemployment due to reduction of production by economic entities and increase of labor force motivation to migration to other countries
	Reduction of state budget revenues during the adaptation period

Therefore, at the present stage, Ukraine's foreign economic policy is to be targeted at finding the best relationship models with each of the countries of this region [16].

Interaction of Ukraine with the specified Asian states during 2016-2018 became an important component of foreign policy. The significant developments occurred in the bilateral relations which attracted attention to the foreign policy efforts of the Ukrainian state it puts to develop the Far Eastern vector of its foreign policy.

The strategic partnership relations between Ukraine and China, declared at the time of L. Kuchma presidency and enshrined in the relevant agreements in 2011-2013, began to recover and strengthen during 2016-2017. This is evidenced by the intensification of bilateral cooperation in such sensitive areas as space, military and technical cooperation, and contacts between the security agencies of both countries.

The main achievement of Ukrainian-Chinese relations at the present stage was the meeting of the President of Ukraine P. Poroshenko and the Chinese President Xi Jinping, held on 17 January 2017, within the framework of the World Economic Forum in Davos. Japan is an important country in the Asia-Pacific region and a key partner for our country; relations of global partnership are established between Ukraine and Japan, especially given that in 2016 they were elected as a non-permanent member of the UN Security Council for 2016-2017. Besides, 2017 was declared to be the Year of Japan in Ukraine by a decree of the President of Ukraine.

Ukraine is interested in developing a political dialogue and comprehensive economic cooperation with the Republic of Korea being a promising economic partner in North-East Asia.

According to the results of 2016, Asian countries, including the Republic of Korea, are the key partners of Ukraine in the regional structure of the agricultural trade turnover, with the share of 40.9%. Exports of agricultural products in January-September 2017 increased by 24.3% compared to the same period last year and amounted to USD 13.7 bn, or 41.7% of Ukraine's total exports. The geography of main regions – importers of Ukrainian agricultural and food products has not changed over the last year. Mostly we continue to export to Asia; the amount for the period specified is USD 5.525 bn.

During 2016, the Ukrainian-Chinese relations improved to certain extent.

However, there are no grounds to state that a high level of interaction is restored.

There was a pause in the senior level dialogue and uncertainty in further implementation of the Strategic Partnership Development Program, enacted in Beijing in December 2013, between Ukraine and China aimed at large investment and economic projects conduct in 2014-2018.

The lion's share of questions regarding Ukrainian-Chinese interaction concerns the Ukrainian part and requires reaction from the Government, ministries and executive departments of Ukraine.

Restoration and expansion of bilateral trade in goods and services were agreed upon. Recognizing the problem (volume reduction) has become an important step

forward.

The Sub-committee proposes the following steps: to prepare a list of export-import goods; to encourage companies to participate in exhibitions and fairs; to set up cross-border e-business platforms; to improve a regulatory mechanism, simplify trade procedures; to create joint ventures in the industrial sector.

In response, Ukraine proposed to sign the Action Plan Ukraine-China on the joint implementation of the New Silk Road Economic Belt Project at the next meeting of the Sub-committee.

The Chinese part, supporting the search for new opportunities for economic growth, such as implementation of new projects in the agroindustrial complex, construction of affordable housing, modernization of port and railway infrastructure, emphasized the importance of previously made joint resolutions implementation.

The meeting of the Sub-Commission resulted in signing the Protocol and the Memorandum on mutual understanding regarding the use of trade defense instruments in international trade. These documents confirm some positive dynamics, but the achieved results cannot be classified as sufficient.

In this context it is appropriate to mention the initiation of the Chinese Business Association in Ukraine, which brings together representative offices of large state and private corporations of China in our country.

In October 2016 several deputy ministers attended the party on the occasion of the Association's first anniversary. This fact was not neglected by the Chinese party.

After two years of almost complete neglect of Chinese foreign policy and economic directions by national officials, some positivity was achieved. In particular, in 2016 on the level of the authorities of Ukraine's ministries and offices there was recognition of the importance of collaboration with the PRC, apposite view of economic collaboration and unbiased attitude to Chinese business representatives in Ukraine.

On 29 August 2016 in Beijing there was held a meeting of Ukraine-China Sub-Commission on military and technical cooperation between the Government of Ukraine and the Government of China. The fact of the meeting itself generated significant interest. Further development of Ukraine-China cooperation in this field of the DIC (Defense Industrial Complex) and arms is of great importance to Ukraine in both economic and security terms. So, during the meeting there was reaffirmed the Chinese government's stance on aggression of Russia against Ukraine.

On the other hand, there are certain problems concerning perception of Ukrainian-Chinese relations in Ukraine. In Ukrainian lower level officials' opinion China is still far and obscure and thus a country of no interest. An average Ukrainian official shows little interest in the Chinese experience, the state of Ukraine-China collaboration in any sphere, and this fact is the major bottleneck of further bilateral collaboration development.

Though China ranks fourth in the list of Ukraine's strategic trade partners, Ukraine accounts for only 0.17% of China's foreign trade. Last year the Chinese

government announced its intention to increase the amount of investment in other countries to USD 500 bn up to 2020. With very insignificant Chinese investment activities (up to USD 70 m) in the country, Ukraine is still a country of potential interest to Chinese economy as it has a free-trade zone with the EU and other countries. According to Chinese experts, possible Chinese investment in Ukraine may reach USD 50 bn.

Creation of the Asian Infrastructure Investment Bank in 2015 is an important step of China in building the New Silk Road Economic Belt. This bank immediately attracted a rush interest of many world countries. Leading EU countries as well as Georgia and Azerbaijan became bank members. During scientific events Chinese experts often wonder why Ukraine shows no desire to use the bank's potential. Nevertheless, Ukrainian officials' attitude cannot be cleared up.

Among the most important Chinese proposals concerning Ukraine the idea of creating a free-trade zone between the two countries is of particular interest. It is quite clear that in conditions of the negative trade balance Ukraine should carefully study all pros and cons.

This must be a complex analysis performed by leading scientists and experts. However, two years after the proposal was made, no information on the analysis of the kind has yet appeared. Georgia has taken the opportunity so far, and Georgia-China FTZ (Free-Trade Zone) has come into being.

Unfortunately, it should be noted that there is corruption in Ukraine-China relations. Corruption in Ukraine's relations with China has resulted in actual loss of leading positions in determining directions of bilateral relations development. The corruption has created a situation which is unusual and obscure for Chinese partners, a "toxic" environment where any initiative capable of strengthening relations between the two countries is destroyed. Only a few Chinese companies do established business in Ukraine. Other companies with great capital can only enter the country under the condition of overcoming corruption, creating favourable conditions for business, determining clear priorities in collaboration with China, learning China's approaches to implementation of the "exit" strategy, capital and investment export, the Silk Road Economic Belt project building.

Despite its difficult financial and economic situation, Ukraine still possesses a range of scientific and production capacities which are of interest to China in the context of development of Chinese leading industries and implementation of important strategic projects in various fields. Ukraine's economic sanctions against Russia narrow considerably exports to the RF, thus demanding search for new markets for machine building, aircraft industries and products designed for military and dual purposes. Here, it is necessary to use already accumulated experience of military and technical cooperation between Ukraine and the PRC in order to adjust it to current conditions. Science and technology make the most powerful and long-lasting basis for the two countries' collaboration. Ukraine's economy requiring fast and efficient modernization, its adjustment to the modern

world market, investment, production, scientific and technological capacities of the PRC can make a considerable resource of development and modernization of corresponding Ukrainian industries, momentum for restoring positions of Ukraine on the world technology markets. Simultaneously, this enables Chinese businesses to fill the corresponding niche on the Ukrainian market which is quickly integrating into united Europe.

Collaboration with China in the space sphere is of a particular interest to Ukraine as it enables rational realization of the Ukrainian space potential. In this sphere Ukraine's financial sources are limited while China is becoming one of the leading investors into space exploration. At present Ukraine is executing 21 contracts with China for over USD 67 m in total. The PRC is known to have a very ambitious and sufficiently financed space programme. China demonstrates clear interest in high-tech imports and Ukraine should consider this fact and use it to the benefit of the national production. At present, engine technology and unit and assembly engineering are considered the most promising in Ukraine-China aerospace collaboration. The PRC is among the first countries to which Ukraine exports its aircraft products, the Chinese aircraft market is the world's most dynamically developing one.

The agricultural field is another very important issue of Ukraine-China collaboration. Agricultural production is conditioned by two important factors - fertile land and innovative technologies. In the recent years China has greatly advanced in growing crops and livestock farming. Availability of great areas of arable land with high productivity potential is strategically important for possible cooperation in this sphere. In mutually beneficial collaboration with China, Ukraine is quite capable of making a significant contribution to international food security and becoming a powerful player on the international food market. For its part, China is able to import strategically necessary volumes of food from Ukraine.

According to its declarations, China's authorities seek to double national consumption of meat, soy and crops in the next two decades. This offers great opportunities for Ukrainian exports. The national agrocomplex requires investment and advanced technologies. Nevertheless, most Ukrainian agricultural companies are oriented to export of crops.

Crops processing and production of meat, milk and other agricultural products with their further exporting to the Far East countries seem more promising. Ukraine should develop and increase capacities of its own food industry exports, it is reasonable to export ready-to-eat flour-based products instead of grain and meat products instead of meat for processing. Modern packing, brand-name goods can be supplied to Asian markets attracting Asian banks' credits.

Collaboration should be focused on the following: complex machine building (DIC, aircraft and ship building, space industry etc.); attraction of Chinese investment in Ukrainian AIC (prioritizing highly productive and technological projects), starting new enterprises for agricultural production and processing, supply of the

Chinese market with a wide range of agricultural and food products; collaboration in the social services sector, development of tourism; export of educational services; development of transport services collaboration.

In its current state “One Belt and One Road“ Initiative (the Silk Road Economic Belt) is one of the most attractive for Ukraine geoeconomic projects. The key principles and advantages of the project are inclusiveness, openness, and profitability for all participants, transition to uniform trade regulations, integration and coordination of countries’ development strategies and programmes. The Chinese project does not contradict Ukraine’s pursuit of further economic cooperation and economic integration with the European Union. On the contrary, it is capable of enhancing Ukraine’s advantages in this process. As an alternative, it can help reduce negative consequences of breach of relations with Russia and overcome Russia’s prohibition on transit of Ukrainian goods to Asia. Potentially, the countries-participants in the project account for 55 % of the world GDP, 70 % of the global population and 75 % all known energy resources.

If the Chinese initiative is implemented, it can impact considerably the geopolitical landscape and result in creation of a range of alternative economic associations and opportunities. An interesting fact is that initially China itself supposed to add about USD 2.5 tn to its river trade turnover in a decade of the strategy implementation.

Since the moment Xi Jinping, the leader of the PRC, announced the initiative to build the New Silk Road in the university of Astana (Kazakhstan) in September 2013, 56% of all Chinese foreign investments has been directed to the countries-project participants. This fact testifies to the Chinese authorities’ close attention to this initiative. China has created the Silk Road Development Fund with capital of USD 40 bn. The Asian Infrastructure Investment Bank (created at the initiative of China, too) with the capital of USD 50 bn and perspective increase to USD 100 bn is gradually turning into a key institution that invests in projects in countries along the Silk Road in addition to capitals invested by Chinese business structures.

Though Ukraine was the first among European countries to declare support of the above Chinese initiative on the highest level in 2013, the course of events in our country resulted in the fact that Ukraine’s participation in the project remains declarative. An attempt in early 2016 to undertake practical steps concerning railway transit of goods to Central Asia and China within the project framework was not economically successful. At present, Ukraine is negotiating decrease of rates for transporting goods by one of the branches of the new Silk Road through Kazakhstan and Trans-Caucasian countries.

Another project negotiated by Ukraine and China concerning development of trade routes is the one of building a deep-water seaport that can actually double Ukraine’s port infrastructure capacities to satisfy needs of the new Silk Road. The port of this kind with the designed annual capacity of 100 m t is being built by Georgia on the eastern coast of the Black Sea near the settlement of Anakhlia.

Investment in this construction makes USD 2.5 bn. The Government of Georgia itself invests only USD 100 m. Ukraine is just studying technical feasibility of building a port of the same capacity on the northern coast of the Black Sea.

Experience of neighbouring Belarus where China invested into creating the “Great Stone” industrial park proves that Chinese investors’ attention can be focused on building technoparks, exchange of technologies and their cooperative development, creation of joint production and Chinese production logistic centers close to markets, movement of excessive production facilities of Chinese enterprises to countries located along the new Silk Road. The volume of investment in the Chinese project in Belarus is declared to make about USD 2 bn with possible further doubling. At that, Belarus investments make USD 500 m.

According to the Strategy of national security of Ukraine dated May 2015 [18], our country seeks development of privileged partnership relations with Japan – the country which Ukraine considers to be its reliable partner on the international arena.

Attending the exhibition of traditional and modern Japanese art “Imaginary Guide. Japan” on 9 November 2017, President of Ukraine P. Poroshenko said that Japan is a supremely important strategic partner for Ukraine and thanked for support and assistance to our country during our hard times.

For Ukraine, development of cooperation with Japan as one of the world’s most powerful economies with considerable technological and investment potential, a leading country in Asia-Pacific (the most dynamic region of nowadays) is of a strategic character. Japan is an active and influential member of the global community and participates in numerous associations (the Asia-Pacific Economic Cooperation (APEC), the “Asia-Europe Meeting” (ASEM)), a G7 member and has allied relations with the USA.

Ukraine-Japan cooperation within the UNO framework is characterized by a high level of collaboration in issues of elections to the UN governing or auxiliary bodies and functional committies.

According to Japanese Embassy in Ukraine, assistance to our country totals more than USD 33.1 bn (as of September, 2017). Construction of terminal “D” of the international “Boryspil” airport was a pilot Ukrainian-Japanese project within ODA. In March 2014, the Japanese government decided to grant a credit within ODA of 108.193 bn yens (about USD 900 bn) for implementation of the Bortnychi aeration station reconstruction project (Kyiv). The project is of supreme importance for improving the environmental situation. The project was signed on the 6 June, 2015 during the visit of Prime-Minister of Japan to Ukraine and ratified by the Verkhovna Rada of Ukraine in September 2015.

Another important direction of support of Ukraine by the government of Japan is the “Kusanone” grant programme for human security projects. For almost 15 years of activities there have been implemented 113 projects of the kind for USD 8.2.m. Within the programme over 80 medical and educational institutions of Ukraine have received assistance in the form of equipment for diagnostics and

treatment, premises repair, installation of modern water purifying systems, facade heat insulation and replacement of old windows. As of October 2014 nine projects were in the process of implementation. Japan participates in the UN projects of restoration of Ukraine's eastern territories in two directions: assistance to residents of the pro-Russian separatist-controlled areas (the residents receive humanitarian assistance) and assistance to internally displaced persons. The latter also receive financial aid from Japan as well other international organizations (UNDP, UNICEF, the International Organization for Migration and the International Red Cross and Red Crescent Federation (IRCRCF)). Besides, additional financial aid was rendered to increase personnel of the OSCE Monitoring Mission.

One of the Ukraine-Japan projects is handover of 1 568 hybrid "Toyota Prius" automobiles to the patrol service of Ukraine's reformed law enforcement system within Green Investment Schemes (GIS). Besides, within this project there was performed heat insulation of facades, windows and roofs of 135 social infrastructure facilities (schools, hospitals etc.), and modernized 135 carriages of Kyiv underground system using Japanese energy saving technologies.

Introduction of modern energy saving and environmentally friendly technologies in various economic sectors (energy engineering, industry, municipal sector) of Ukraine is still a prospective area of collaboration with Japanese companies. Attraction of Japanese investment in development of Ukraine's transport and energy infrastructure, agriculture and its physical facilities in particular is also a promising direction of cooperation.

Japan as one of the largest importers is a supremely targeted and promising market of Ukrainian grain crops. Japan pays considerable attention to Ukraine's agriculture potential. In global terms it is a predictable and solvent consumer of grain and oil bearing crops. The situation will stay unchanged in future. Ukraine is able to enlarge volumes of national grain supplied to the Japanese market. Even now our country ranks fifth in terms of agricultural products imported by Japan and, apparently, can enhance its position on the Japanese market.

Conclusion of the key bilateral Agreement between Japan and Ukraine for the Promotion and Protection of Investment in 2015 provided a favourable climate for investing in Ukraine. This agreement is no doubt an important signal for business circles of both countries and has laid the foundation for enhancing Ukraine-Japan economic collaboration. It should be noted, however, that this agreement is a framework one and it should be followed by other documents aimed at creating favorable conditions climate for Japanese investors.

According to the Embassy of Ukraine in Japan, direct investments in Ukraine as of the end of September 2016 made USD 160.5 m. Japanese investments are mainly concentrated on selling and servicing Japanese automobiles and components and tobacco goods production. Considering direct investments of affiliate branches of Japanese companies located in Europe, Japanese investments in Ukraine's economy amount USD 300 m. Particularly, during the period under consideration

“Fujikura” started operation of a factory in Lviv (Lviv industrial park “Riasne 2”) with manufacturing of electric cabling for automobiles in its work the company relies on advantages of a common market with the EU. The first stage provides capital investments of 6 m Euros and creation of about 300 new workplaces. To turn this primary experience of creating an enterprise with participation of Japanese investors into a trend, united efforts of regional and central authorities should be applied to make conditions comfortable for Japanese business. There is no Ukrainian investment in Japan. Japanese companies demonstrate their interest in investing in production intended for not only internal market but also for export to markets of Europe and the CIS countries or use in final European products. This trend is very promising due to Ukraine joining the common EU market within the framework of enhanced and spacious free-trade zone Ukraine EU.

The Visegrad Group (V4) countries’, especially Poland’s and the Czech Republic’s experience of collaboration with Japan and attraction of direct Japanese investments in their economy is an instructive one for Ukraine. In the recent decade the Czech Republic has succeeded in attracting USD 5 bn from Japan. Nearly 240 Japanese companies currently working in this country have created at least 50 thousand new workplaces and are playing a significant role in Czech economy. The largest Japanese investment traditionally has focused on world automobile manufacturers.

Poland is currently hosting 300 Japanese companies or their branches, 100 of them are engaged in production. Among V4 countries Poland has attracted most of Japanese investment.

In our country there are currently only 40 delegations of Japanese companies, but Japanese business diaspora in these delegations is small, usually 1-2 persons on the part of Japan on top management positions. Nevertheless, leading Japanese companies like “Sumitomo”, “Itochu”, “Mitsui”, “Marubeni”, “Mitsubishi”, “Mitsubishi Heavy Industries” are represented in Ukraine.

Ukraine’s accession to the European common market on signing Ukraine–European Union Association Agreement offers new opportunities for investors and brings momentum to Japan-Ukraine investment cooperation.

Japan International Cooperation Agency (JICA) and the New Energy and Industrial Technology Development Organization (NEDO) conducted pilot investigations due to which energy saving technologies and alternative fuels were introduced in Kharkiv oblast, efficiency of the combined cycle energy facilities in Kyiv was increased, the project increased energy efficiency of Kyiv Underground was implemented, and Burshtyn and Trypilska power plants underwent auditing with the purpose of their further modernization.

Development of Ukraine-Japan collaboration in science and technology holds an important place in Ukraine-Japan relations, especially in the context of implementation of mutually beneficial projects and collaborative investigations conducted by research institutions of both countries.

Despite the fact that there is no contractual basis on the intergovernmental level, collaboration of institutions of the National Academy of Sciences of Ukraine (NASU) and research institutions, companies and business structures of Japan is actively developing. In terms of collaboration of the two countries in the nuclear sphere, collaborative research work on overcoming consequences of the “Fukushima Daiichi” nuclear disaster should be mentioned. Commencement of collaboration with Japan concerning studying and applying the Ukrainian experience of post disaster remedial actions in Chernobyl, so called “Fukushima-Chernobyl” collaboration should be paid special attention to. Considering the difficult situation in Japan concerning the post disaster remedial actions continuing up to present, this new direction of collaboration has gained and will hold priority in relations between two countries in the near future.

In 2013 scientists of the NASU started work on collaborative studies at The Institute of Environmental Radioactivity, Japan. This fact testifies to Japan’s interest in attracting Ukrainian scientists having Chernobyl studies experience to solution of Fukushima problems and exemplifies the practical content of “Fukushima-Chernobyl” collaboration. It should be mentioned that national scientists are engaged in research in the sphere of solid state physics, gene engineering, chemistry etc. at Japanese research centers. At the same time, on the government level Ukraine and Japan cooperate only in the field of Chernobyl catastrophe studies, other fields are not involved.

The Republic of Korea (the ROK, South Korea) is a country with a developed economy. Due to dynamic development through implementation of a range of economic reforms the ROK managed to quickly and successfully integrate in the global economy and become a hi tech industrial developed country. Now the ROK is one of the four “Asian Tigers” – the countries which underwent rapid industrialization. Note that during 1980-1996 South Korea increased GDP from USD 68 bn to 603 bn.

In 2016 the country’s GDP in dollar terms ranked 11th in the world and amounted USD 1.411 tn. The economic growth for two years in succession makes 2.8%. According to estimates of the IMF, the level of the ROK economic development made 3% in 2018.

The ROK ranks 6th in the world goods and services export, 9th – in the world trade. Gold and foreign currency reserves make USD 378.4 bn as of June 2017 (9th largest). According to a number of forecast in case of maintaining growth rates the ROK may rank 9th in the world up to 2025, in terms of per-capita income may rank 3rd.

Major economic partners of the ROK are:

- the PRC (China – South Korea Free Trade Agreement) became effective in December, 2015; bilateral trade made USD 227 bn;
- Japan (in 2016 its turnover made USD 70 bn);
- the USA (Korea – U. S. Free Trade Agreement, KORUS FTA became effective

in March, 2012, in 2016 bilateral trade made USD 144 bn);

- ASEAN countries (the framework ASEAN – Korea Free Trade Agreement was signed in August, 2006);

- the European Union (a free-trade agreement was signed in 2009, partial implementation started in 2011, official ratification occurred in December, 2015) with over 50% part in the country's total turnover.

In 2016 the total amount of investment that came into the ROK made USD 10.8 bn. In particular, the share of the largest Korea's investor – the EU (Germany – 4%, the Netherlands – 9%)- made over USD 7.5 bn which is 3 times larger than for the previous year.

In 2016 Chinese companies invested over USD 2 bn in Korea which is by 3.6% greater than in the previous year. During the last three years Chinese investment in Korea's economy is showing stable and considerable growth: the total amount of direct PRC investment has exceeded USD10 bn. Investments in production (almost 40%), trade (20%), services (15%), information technologies (15%), transport (12%) and other spheres are priorities of the ROK development.

At the state reception held on 10 February, 2017 on the occasion of the 25th anniversary of diplomatic relations between Ukraine and the ROK, Mr. Lee Yang Goo, Ambassador Extraordinary and Plenipotentiary of Korea in Ukraine, said that our countries should keep to three principles: directivity to values, globality and future. Directivity to values is general prosperity, integration and peace-making. Directivity to globality which is to be built on the basis of bilateral collaboration will be expanding on the European continent and further – globally. Directivity to future means that both parties are to collaborate on the basis of future global trends – food, energy and water resources, climate change and the fourth science and technology based industrial revolution. Activities of the Intergovernmental Ukrainian-Korean Commission on Trade and Economic Cooperation (hereinafter referred to as Commission) created in 2008 is an important mechanism of trade and economic cooperation.

On 3 October, 2016 the 3rd meeting of the Commission was held in Kyiv on the results of which agreements were concluded on activation of bilateral cooperation in industry, agriculture, renewable and nuclear energy, transport and development of infrastructure, healthcare, finance and tourism.

In addition, there were created a number of institutional mechanisms that play an important part in enhancing bilateral cooperation, namely:

- Joint Ukrainian-Korean committee on scientific and technological collaboration;
- Joint Ukrainian-Korean commission on collaboration in the sphere of defense and material support;
- Joint committee on collaboration on peaceful uses of outer space.

Collaboration between legislative bodies of both countries – the Verkhovna Rada of Ukraine and the National Assembly of the Republic of Korea – has reached a high level.

The Republic of Korea ranks 5th among Ukraine's trade partners in the Asia-Pacific after China (annual turnover of USD 6.5 bn), India (nearly USD 2.4 bn), Indonesia (USD 2.11bn), and Japan (USD 736 m).

In 2016 sales between Ukraine and the Republic of Korea grew by 2.6% and made USD 668.89 m. Ukrainian exports reached USD 413.7 m (4/6% growth), import from the ROK made USD 255.28 m (0.4% decrease). At that, it should be noted that the bilateral trade surplus made USD 158.42 m

In 2016 supply of crops (maize and wheat in particular) accounted for almost a half of the Ukrainian exports to South Korea (the ROK is the 7th largest crops importer in the world. Maize accounts for 60% of the ROK imports, wheat – 25%, barley, rice and other crops – nearly 15%). According to the South Korean ambassador, besides crops, sunflower oil, organic food and other non-GMO products as well as pork and beef are now the most promising segments of increasing Ukrainian agricultural exports to the ROK market.

Ferrous metals and metal products made almost a third of Ukraine's exports. Other export articles were timber and products, non-precious metals, tobacco. Major goods that are traditionally imported from the ROK were cars, devices and machines, plastic and polymer materials, pharmaceuticals.

It should be noted that in 2016 a working group on designing a large scale programme – the General Plan of Ukraine-South Korea Economic Cooperation was created in the Embassy of Korea in Ukraine. On behalf of Ukraine the group consists of representatives of governmental institutions, science, education, business and sector associations. The activity of the group has resulted in “The White Paper on Economic Cooperation between Ukraine and the Republic of Korea” (2016), and “The Master-Plan of Economic Cooperation between Ukraine and the Republic of Korea” (2017).

Five Ukrainian-Korean economic forums have been held in both capital cities alternately (the 4th and 5th were held in 2017 in Seoul and Kyiv respectively) with support from the Embassy of Korea in Ukraine, Korea Trade-Investment Promotion Agency (KOTRA), Korea International Trade Association (KITA), the Embassy of Ukraine in Korea, Ukraine's Chamber of Commerce and Industry and other stakeholders focusing their efforts on implementation of successful Ukrainian-Korean cooperation.

In October 2013 in Seoul, Then-President of the ROK launched the “Eurasia Initiative” aimed at creating a peaceful community on the basis of economic collaboration and collective innovations. This was announced a month after the head of the PRC Xi Jinping had declared the “One Belt One Road” initiative.

The Eurasia Initiative was supported by the EU in September 2015. Ukraine's position of the intersection of trans-European transport logistics is a good precondition to becoming part of the corridor to supply goods from the EU to Asian countries, and East Asian ones in particular. Achieving ambitious results within this framework requires joint efforts of all the project participants. Accordingly,

attraction of countries-partners at all possible levels appears to be of supreme significance.

Implementation of China's "One Belt One Road" initiative supported by the ROK authorities is now gathering pace with clear focus on the necessary increase of volumes of trade between European countries and South Asian countries. As testimony to this, a new route of rail freight "Port Dalian (Liaoning Province) – Bratislava (Slovakia)" through Ukraine (Chop) was opened on 27 October, 2017. The first train on the route carried 41 containers with electronic machine engineering and consumer products manufactured in China and South Korea for which Dalian is an advantageous transshipment point. This route started working on a regular basis in January 2018.

Korean companies are treating Ukraine as one of possible areas for investments. During the 5th Ukraine-Korea economic forum (July, 2017) Chung Un-chan, ex-Prime Minister of South Korea (2009–2010), pointed out that Ukraine is located in the strategic region of Eurasia and possesses rich natural resources. The Republic of Korea is Ukraine's prospective economic partner. Similarly, Korea is a good strategic partner in the sphere of infrastructure, traditional and alternative energy, finance, agriculture, civil engineering, information and communicative technologies etc.

Agricultural, housing, machine building complexes; the financial sector, energy (incl. renewable); transport infrastructure (implementation of Smart City technologies); joint manufacturing of high-speed transportation; healthcare, information technologies (development of digital society) are considered prospective for Korean investments.

The State Statistics Service of Ukraine reports the total amount of direct Korean investment in Ukraine's economy in the amount of USD 198.7 m (as of July 2017) that makes 0.5% of the total amount of foreign direct investment (FDI) attracted to Ukraine's economy. The country's industry received most of the investment (over 90%). According to Korea's Ministry of Foreign Affairs, investment in Ukraine's economy made USD 358 m (2016).

At present, Korean capital participates in 28 enterprises in Ukraine (incl. the largest Korean companies Samsung Electronics, LG Electronics, POSCO Daewoo and Hyundai Corporation). National specialists are also involved in work. For instance, Samsung Research and Development Institute Ukraine employs over 1000 highly qualified IT specialists working in the sphere of recognition technologies, multimedia content, information security, artificial intelligence etc.

Ten high-speed electric trains Hyundai Rotem travel between major Ukrainian cities and the Hyundai Corporation is planning to create facilities to produce high-speed electrotrains and locomotives in Ukraine. This may help modernize urban transport and related infrastructure with partial localization of the production and maintenance provision.

POSCO Daewoo is one of major players on the Ukrainian grain export market in

countries of Asia and Middle East and an encourager of the project of modernization of agricultural machinery in Ukraine for small and middle farms and construction of a grain terminal in the seaport Chernomorsk. Besides, POSCO Daewoo declared its intention to build grain elevators in Ukrainian ports.

“Hyundai Motor Ukraine”, an official distributor of the famous Korean Hyundai Motor Company, successfully cooperates with numerous Ukrainian auto dealers. There is no direct Ukrainian investment in Korea. Considering the fact that Ukraine and Korea both adopt principles of free trade, that there is a free-trade regime between Ukraine and the EU, it is quite expedient to start negotiating a Ukraine-Korea free-trade agreement.

It also reasonable to start, within technical assistance projects, a system experience exchange between the Republic of Korea and Ukraine concerning export-credit agencies’ activities, creation of free trade zones, implementation of projects on creating industrial parks in Ukraine.

Ukraine’s potential crops export capacities offer favourable prospects on the South Korean market. Both countries demonstrate their interest in collaboration in the agricultural sphere.

Ukraine wants to increase agricultural exports to South Korea, while the ROK is intent on increasing its investment in Ukraine’s agriculture (growing agricultural crops, e.g. quality sorts of onion to be exported to the EU; import of Ukrainian meat, dairy production etc.) through implementing joint agricultural investment projects.

Obviously, considering experience of the ROK in development of modern greenhouse facilities, it may become one more prospective direction of collaboration of the two countries.

Current Ukraine-Korea trade volumes in the agricultural sphere make a considerable part of the total sales. Only in 2016 the agricultural turnover between our countries made nearly USD 283 m, of which Ukrainian exports amounted USD 278 m. Korean investors are ready to grow grains in Ukraine for export to the ROK and other markets. The projects of the kind are under way in Poltava and Cherkasy oblasts.

The parties express mutual interest in scientific and technical cooperation and activation of collaboration in such priority directions as peaceful use of outer space, energy saving and information technologies.

Korea notes a high level of development of space technologies in Ukraine, fruitful collaboration of the “Pivdenne” design bureau and “Pivdenmash” SP with Korea Aerospace Research Institute (KARI). In 2013 the first Korean Earth observation satellite KOMPSAT-5 (also known as Arirang-5) was launched on a “Dnipro” launch vehicle. The second launch was performed on 21 November 2013 (STSAT-3) and the third one – on 26 March 2015 (KOMPSAT-3A).

To expand humanitarian, educational, scientific ties with Ukraine, over 1 000 Ukrainian students study the Korean language at 10 higher and secondary educational institutions of Ukraine including Taras Shevchenko National University of Kyiv,

Kyiv National Linguistic University, Kyiv gymnasium of Oriental languages. In July 2017, Ukrainian-Korean Educational Centre started working at the National Technical University “Igor Sikorsky Kyiv Polytechnic Institute”. It should be noted that both parties are developing a new Agreement on Ukraine-Korea educational cooperation and expanding collaboration in science and technology.

1. In contemporary geopolitical conditions strategic cooperation with the PRC remains an important reserve for providing Ukraine’s urgent needs. Appropriate use of the current external potential of Ukraine-China collaboration in various fields is capable of pushing Ukraine forward on its way to modernization and economic movement, strengthening Ukraine’s position on the world arena.

2. China’s “One Belt One Road” project does not contradict Ukraine’s pursuit of further economic cooperation and economic integration with the European Union. On the contrary, it is capable of enhancing Ukraine’s advantages in this process. As an alternative, it can help reduce negative consequences of breach of relations with Russia and overcome Russia’s prohibition on transit of Ukrainian goods to Asia.

3. Introduction of active Ukraine-China dialogue on a “17+1” basis will close the issue of Ukraine’s geopolitical identity and strengthen significantly the country’s agency in present-day international conditions.

4. The present state of Ukraine-China relations is insufficient due to weak mutual information sharing concerning processes occurring in the countries, especially those of the “Ukrainian crisis”. To enhance the situation, it is reasonable to diversify cooperation forms of informing corresponding governmental structures and country leaders.

5. Ukraine-Japan relations possess great potential making them an important and very promising direction of Ukraine’s foreign policy that is capable of becoming a significant factor of ensuring needs of economic and political development of our country.

6. Japan’s active position helps counter the aggressor. At that, Japan expects Ukraine’s clear understanding and, above all, deliberate actions in implementing the Minsk arrangements, reforming, economic integration with the EU, remedying corruption.

Within Ukraine-Japan economic and trade relations framework our country prioritizes complex development of the relations that involves active trade and economic cooperation with the emphasis on attracting investments in strategic energy, agriculture and transport fields. Japan’s experience is of supreme importance to Ukraine in terms of energy security issues and energy industry reforming through implementation of Japanese innovative technologies.

7. Priority directions of Ukraine-Japan collaboration are:

- maintaining a high level of the political dialogue and regular contacts on high and highest levels;
- enhancement of trade, economic and investment cooperation, in particular through use of financial instruments of Japan Bank for International Cooperation

(JBIC) and Japan International Cooperation Agency (JICA), transition to practices of planning bilateral economic cooperation development, in particular planned turnover levels;

- investing in introduction of new technologies and innovations, production, transportation and use of traditional energy carriers;

- attracting Japanese investment in the infrastructure projects, within the programme of official assistance in particular;

- investing in our country's agricultural infrastructure – building of grain elevators, terminals, growing grain and bean crops considering Japan's interest in providing its food security and high level of the country's dependency on agricultural imports;

- cooperation in the agricultural sphere, in particular Ukrainian agricultural exports to Japan, within the Japanese food security programme;

- collaboration with Japanese companies in the sphere of Ukrainian export-oriented production (metallurgy and chemical production) modernization.

8. Several issues of Ukrainian-Japanese relations still require further collaboration of the parties. These are the asymmetric visa regime and establishment of direct air links between Kyiv and Tokyo. Settlement of the issues will facilitate both active economic collaboration and tourism.

9. Activation of the political dialogue and trade-economic collaboration with the Republic of Korea is an important task of Ukraine's foreign policy nowadays. Use of investment and technological capacities of this "Asian tiger" is an additional opportunity for modernization and re-industrialization of Ukraine's economy.

10. Priority directions of Ukraine-Korea collaboration are:

- further enhancement of Ukrainian exports to the ROK;

- declaration of interest in intensifying trade economic collaboration and setting its goals and tasks within the framework of high and highest level contacts;

- strengthening of the contractual basis of the economic collaboration;

- active development of production and investment collaboration and setting its goals and tasks;

- active development of production and investment collaboration through production localization by joining efforts at Ukrainian enterprises;

- involvement of the Korean diaspora in Ukraine that may become a bridge between the two countries' economy and society as well as another factor of further dialogue enhancement.

11. As for the nuclear-missile issues, North Korean regime will go the whole way as it is its existence that is at stake. Coordination of the DPRK plans and actions with Chinese authorities is now a must and Beijing will in no case allow or support them. That is why the major and only task is the search for a political solution of this problem on the basis of multilateral negotiations.

- transition to practices of planning bilateral economic cooperation development, in particular planned turnover levels;

- investment in introduction of new technologies and innovations, production, transportation and use of traditional energy carriers;
- attraction of Japanese investment in the infrastructure projects, within Japan's programme of official assistance in particular;
- Japan's investment in our country's agricultural infrastructure – building of grain elevators, terminals, growing grain and bean crops considering Japan's interest in providing its food security and high level of the country's dependency on agricultural imports;
- cooperation in the agricultural sphere, in particular Ukrainian agricultural exports to Japan, within the Japanese food security programme;
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PROPOSALS ON THE CONCEPT OF ECONOMIC SECURITY OF UKRAINE

In terms of Ukraine's national economic interests, some controversial processes are taking place. On the one hand, the state-monopolistic crony capitalism keeps developing. On the other hand, some fragments of the market-type capitalistic model are generated, this calling for support from the corresponding government bodies to promote this new model type in Ukraine.

The model of the state-monopolistic capitalism provides for creating self-contained oligarchic groups based on the state-monopolistic property and aimed at developing the export-oriented and raw-material model of the economy. It means that the clan that "has seized" and is re-distributing the state property in their own interests comes to power. This group of people tends to be transformed into the upper caste with features of financial oligarchy [18].

The economic model characterized by the property totally monopolized and owned by crony-corporate groups forming a power oligopoly system gives rise to a corresponding monopoly model of power. The single upper caste keeps a tight hold both of power and property. This model type is characterized by: massive lumpenization of the state population; extremely high quantity of the bureaucratic-managerial and penalty-police apparatus; control over citizens' income sources and business activity; censorship and complete control over mass media including the financial-economic one; decline of intellectual, scientific, research and educational activities; creation of a "carnival-type nation" model [15].

If we analyze all these parameters and compare them with the real situation in Ukraine, an obvious coincidence is observed. Thus, there are some reasons to consider a caste-monopolistic model of the state capitalism the ruling one in our country, the caste oligarchy being its driving force [15]. This model results in formation of a pyramid-type society, its apex being represented by financial oligarchy (5% of citizens). These are ruling castes that became property owners

in the unluckiest for most citizens way having seized the former national property created by all people in the former USSR times and keep parasitizing on the state-owned sector by grasping the monopoly part of the community income. Oligarchy formed in our country belongs to a monopolistic type and is cosmopolitical and comprador in its essence [19]. It controls the Supreme Council of Ukraine and other bodies of state power, in particular medium segments of administration in the legislative, judicial and executive branches.

According to Ukrainian policy maker, economist and scientist, as for the middle part of the society pyramid is composed of two parts:

1) influential forces in the state government structures who serve the Ukrainian crony oligarchy's interests. At present, this stratum is able to form segments within the taxation bodies, the State Security of Ukraine economic departments, the Ministry of Internal Affairs and the Ministry of the Economic Development and Trade. This stratum also includes representatives of security structures, top managers, mass media (in particular, television), and the scientific elite, who do not always have Ukraine's national interests in mind, as well as a great number of other members of the society;

2) the middle class people (about 15% of the citizens) whose condition is depressed now;

3) the lower stratum (about 70% of the citizens) is presented by a great number of lumpenized people of low income, deprived of any property and having no impact on either oligarchs or the authorities [23].

It is evident that the model of the state-monopolistic capitalism established in Ukraine presents a threat as it is aimed at creating an inequitable society based on exploitation, corruption and moral insanity. This model results in irrevocable rapid depopulation of the Ukrainian nation. The authorities and oligarchy providing their financial support are in continuous conflict of interests with the principles of forming a competitive national economy and sustainable development of society as well as the goals of turning Ukraine into a powerful Central European state.

Many representatives of the state power, public organizations and political parties of Ukraine realize the need of changing the country's economic model.

Present-day global challenges like the scientific-technological, informational, energy and environmental revolution call for corresponding changes in the economic development model of our country. It is natural that Ukraine is unable to become competitive, if its economic model keeps functioning guided by principles of authoritarianism or monopolism. In response to current worldwide challenges and opportunities, Ukraine is to build a democratic development model of its society and the corresponding economic model to become a competitive country in the heartland of Europe.

The Prime Minister of Ukraine Volodymyr Hroisman, a candidate for presidency Yuliia Tymoshenko and other political and public figures are focusing their attention on this problem. However, the public believe that definition and formation of a new

economic model will be hindered by the ruling crony financial-corporate groups as well as other cosmopolitical formations because this problem concerns profits and property re-distribution for the benefit of certain economic entities and groups.

The economy of Ukraine is a small-scale open economy; much of its GDP includes exported raw materials and products of low value added. Due to de-industrialization in the last 27 years and absence of the state strategy for new industrialization, at the beginning of 2019, the country remains a raw-material-based economy with cheap labour force and low living standards. Notwithstanding the fact that Ukraine is one of the largest countries in the centre of Europe, its domestic market is actually underdeveloped because of ineffective demand of population. That is why, Ukraine's market potential as a development driver and a compensator of external economic threats and challenges remains unemployed. This raw-material status is extremely dangerous for the country as it is characterized by dependency on the world raw-material market and fluctuations of global financial markets. The national economy accounting for 0.15% of the world GDP [20] is operating on highly competitive and risky raw-material markets and has almost no influence on the world prices unlike developed industrial countries forming prices for their own high-tech products. In other words, the Ukrainian economy is functioning in accordance with a raw-material model being an appendage of highly developed industrial countries.

Until our state transforms into a new-type industrial country dominating in certain fields of the world high-tech innovative markets, it will remain in deep global external dependency formed by price, financial, institutional, technological, demographic and information channels that threaten Ukraine's security [20]. Considering this situation, it is essential to have an idea of global economic and technological trends to determine current risks and threats to Ukraine's economic security and work out a corresponding strategy either to overcome them or reduce their impact on the economy.

Global financial and economic trends of the early 2019 [20]:

1. There appear some fundamental changes in the monetary and financial control paradigm established in the world economy in 2008 (following the beginning of the financial and economic crisis). Due to the introduced programmes of "quantitative easing" [25], the global financial system was saved, lending to the real economic sector was stimulated in developed countries of the West, their economic advance was restored and new industrialization 4.0 was promoted [26].

According to experts, in the nearest future, the increase of interest rates of the world leading banks is expected, this leading to possible fluctuations (volatility) on the world financial and currency markets resulting in increased debt service expenditures of developing countries including Ukraine, thus escalating its vulnerability to exchange rate risks [20]:

- Risks of escalating interstate trade wars are growing, this being reflected in increased protective import tariffs for trade partners (in particular, the USA-China, the USA-Turkey, etc.).

- The world GDP rates are slowing down. According to the World Bank's predictions [20], the world GDP growth will slow down up to 3.05 % in 2019 and to 2.9% in 2020.

In particular, the real GDP increase of the US is expected to be equal to 2.7% in 2018, 2.5% in 2019 and 2% in 2020;

- the EU economy growth: 2.1% in 2018, 1.7% in 2019, 1.5% in 2020; in Poland: 4.2% in 2018, 3.7% in 2019, 3.5% in 2020;

- the real GDP dynamics in Japan: 1% in 2018, 0.8% in 2019, 0.5% in 2020;

- the slowdown of China's economy: 6.5% in 2018, 6.3% in 2019, 6.2% in 2020.

India demonstrates the best economic dynamics: 7.3% in 2018, 7.5% in 2019, 7.5% in 2020.

Only 45% of all the countries are expected to accelerate their economic advance, this figure being 56% in 2017.

The fourth industrial revolution and transition to the sixth technological mode of the world economy are gaining momentum (Table 2).

The development of the fourth industrial revolution in developed countries can escalate inequality among countries, their polarization in response to their success in global competition which does not employ natural resources and cheap labour force, but intellectual capital and innovative technologies.

The global economic and technological trends of the early 2019 create the following challenges for Ukraine.

At present, over 35 countries accounting for a greater amount of the world GDP have developed and introduced their own national innovative strategies. Both advanced and developing countries are engaged in step-by-step transition from market fundamentalism strategies [21] to the active state control over economy and intensive state stimulation of innovative development.

The documents by the EU, the OECD [21] and some other international organizations as well as those determining the countries' economic strategies call innovations and up-to-date high technologies key drivers for steady increase of economies and living standards both at present and in future.

The global economy has entered the competition phase on the level of the knowledge economy when intellectual capital and high technologies become major drivers of economic advance. With this fact in mind, a country's competitive position on the world market will be determined by its global innovative advantages. Therefore, there is a so called global race of developing innovations and obtaining these competitive advantages.

Many world governments are introducing quite aggressive innovative strategies based on the system of institutional, legislative and fiscal-monetary mechanisms and tools aimed at intensifying the national high- tech capital and attracting that of the world [20].

Table 2

Characteristics of technological modes

Technological modes	The first technological mode	The second technological mode	The third technological mode	The fourth technological mode	The fifth technological mode	The sixth technological mode
Formation and prosperity	1770-1830	1830-1880	1880-1930	1930-1970	1970-2010	2010-2060... (according to experts)
Basic resources	Water energy	Steam energy, coal	Electric energy	Energy of hydrocarbons, the beginning of nuclear power engineering	Atomic power engineering	Alternative energy sources, nanoenergetics, intellectual capital
Major industries	Textile industry	Transport and ferrous metallurgy	Heavy mechanical engineering, electrical engineering	Automobile industry, nonferrous metallurgy, oil processing, synthetic polymer materials	Electrical engineering and microelectronics, information technologies, genetic engineering, telecommunication software, space technologies	Industrial application of nano- and biotechnologies, atom-based technologies, new materials, additive technologies of 3-D printing, IT and telecommunications, artificial intelligence industries, robotization, new air- and space-industries
Nucleus of the technological mode	Textile machines	Steam engines, steam drivers of machines	Electric engine, steel	Internal combustion engine, petrochemistry	Microelectronic components	Nanotechnologies, biotechnologies, artificial intelligence, robots, new air- and space-technologies
Institutional environment	Competition of businessmen and association in partnerships	Production concentration in large-scale organizations, development of corporatization, capital concentration based on principles of limited liability	Merging of companies, production concentration in cartels and trusts, domination of monopolies and oligopolies	Transnational corporations, oligopolies on the world market, vertical integration	Global value chains, international integration of small- and medium-scale businesses based on IT, outsourcing, integration of production and sales	High concentration of competences in clusters. Horizontal networks of interrelated educational, scientific, research, IT industrial organizations, service and financial companies in innovative clusters, development of national innovative economic systems of the 2nd level (clusters formed by cluster structures). Competition and cooperation inside clusters and on the global scale (coopetition).

There is a full-scale process when innovative business and technological institutions enter the countries with the most favourable investment environment. In other words, creation and development of national innovative systems capable of attracting massive investments and achieving a rapid technological advance become an effective competition tool. The states are implementing their industrial and cluster-based strategies, introducing fiscal incentives, changing paradigms of their monetary and financial policies. The countries lagging behind these processes are losing global competition and their traditional markets and facing the threat of continuous (secular) stagnation [20].

In accordance with [20], the Blumberg Innovation Index-2018 determines the top ten countries with the most developed innovative clusters including Northern Korea, Sweden, Singapore, Germany, Switzerland, Japan, Finland, Holland, France and Israel [23].

2. The world restrained demand for Ukraine's exported industrial products of low value added will determine high volatility (changeability) of their prices, and therefore, increased vulnerability of the national economy as to currency, bank and payment crises in case of maintaining the current model of raw-material-type economy.

3. The energy paradigm is changing as fossil fuel is replaced by renewable energy sources accounting for 90% of all the energy at the EU power plants.

4. There is a transition to a new technological mode with additive 3-D printing technologies. According to experts' predictions, 3-D printing will become the production basis for numerous fields from medical equipment to aircraft construction.

5. There is increased application of innovative materials replacing conventional ones (for example, grapheme replaces ferrous metals, aluminium, etc.). There are massive changes in the world production based on developments of material studies and nanotechnologies. According to the US Scientific Fund, by 2020, the world trade of products manufactured by means of nanotechnologies will have exceeded USD 5 tn.

6. The role of IT, digital technologies, automation, robotization and artificial intelligence systems is enhanced, reaching fully-featured substitute of people in the industry. The top-100 global companies are investing over USD 250 bn into these areas every year, their annual profits accounting for over USD 4 bn [20].

7. Transnational companies are changing their strategy. The trend of locating their capacities in cheap labour-force countries is changing into that of allotting more complicated and precise manufacturing of the new technological mode closer to the markets of highly-qualified personnel and product consumption. The western countries are returning their production capacities replacing industrial outsourcing by insourcing as well as conducting the national industrialization 4.0.

8. The significance and influence of scientific and industrial innovational clusters that are technological nuclei or points of merging successful countries' economies are growing. They become suitable places for concentrating scientific

centres, interdisciplinary research laboratories, global and local technological companies, auxiliary production and services, institutions of voucher funding. The major feature of these innovative economic systems and scientific-industrial clusters is concentration of ideas and high-level competences in one geographical zone around an academic institution, interdisciplinary and cross-field character of joint production, openness to global informational and material flows and simplicity of business operations. Great amounts of investments from state and private funds to develop clusters are a predominant trend.

9. Transition to the fifth stage of production development (massive personalization) is outlined. It means that the world production has passed four development stages in choosing its position on the scale “individual approach-standardization” and goes to the fifth stage (Fig. 1).

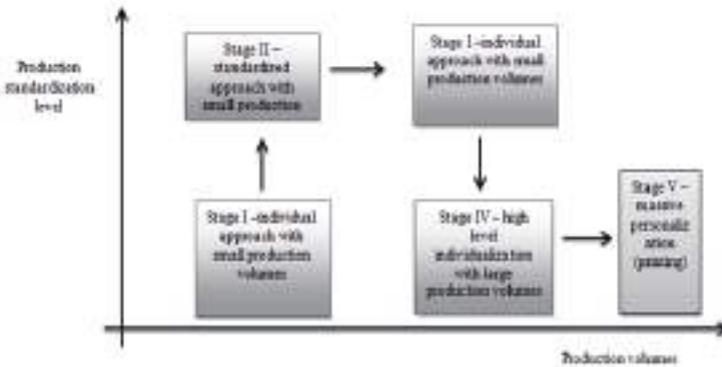


Fig. 1. Stages of production development and global trends of transition to the fourth technological mode

10. In the nearest future, countries’ global competitiveness will be determined by the following areas: biotechnologies and high-tech medicine, material studies and nanotechnologies, new technologies of transport control (automobile, aircraft, and space industries), electronics, informational and digital technologies, computer design, big data analysis, blockchain, telecommunications, automation, robotization, and artificial intelligence, 3-D printing, alternative energy engineering, etc.

Thus, Ukraine’s global markets and environment are under the action of fundamental technological and institutional changes causing substantial transformations and escalated polarization of countries’ incomes depending on how successful they are in terms of their innovative development and adaptation to the knowledge economy. The countries’ global competition for innovative competitive advantages leads to active application of state innovative development strategies as catalysts of developing their national innovative economic systems. In these conditions, countries become either innovative leaders in some fields and through

application of competitive advantages greatly increase their national wellbeing or risk lagging behind technological changes and turning into raw-material appendages with cheap labour force which cause systemic social and demographic crises and continuous stagnation [20].

Thus, in the present-day geopolitical situation, Ukraine is facing global economic and technological challenges which escalate the risks to the national economic security against the country's economic backwardness.

Ukraine's national interests. Among the most important national economic interests determining the Ukrainian state's future, the nation's wellbeing and prosperity, the following ones are distinguished:

- creating a self-sufficient, competitive, socially-oriented, powerful national economy;
- creating a reliable system of the economic security of Ukraine, ensuring its independent, advanced social and economic development;
- transforming the economy structure;
- ensuring efficient development of the national industry;
- conducting protectionist measures aimed at supporting national manufacturers;
- providing the energy security and substantial reduction of energy- and material-intensity of the national GDP;
- fulfilling radical modernization of manufacturing and developing its science-intensive branches;
- creating closed-loop industrial cycles to manufacture strategic products, in particular, military equipment and weapons;
- searching for and exploiting oil, gas, coal, gold, diamond and other deposits;
- providing alternative sources of oil and gas;
- creating a powerful military and industrial complex, in particular, the rocket and space industry;
- maintaining and developing Ukraine's intellectual and scientific-technical potentials;
- securing Ukraine's share of the former USSR external state debts and assets (gold reserves, diamond and currency funds, financial resources, the property abroad, foreign countries' debts);
- creating sufficient state gold and currency reserves;
- implementing the energy- and resource-saving policy;
- implementing advanced economic transformations on the basis of the national reform model;
- providing a wide range of institutional changes aimed at developing the national economy;
- implementing the reform of the taxation system, enhancing the stimulating impact of taxes on production development;
- ensuring financial stabilization, overcoming the payment crisis;
- overcoming inflation;

- implementing the land reform, supporting farms;
- implementing the agro-industry reform, recovery of rural regions;
- implementing the monetary reform and providing convertibility of the national monetary unit;
- attracting internal investments to develop the national economy;
- increasing Ukrainians' wellbeing;
- the state's solving social problems (unemployment, poverty, crime, housing, etc.);
- providing people with food products, improving the structure and quality of consumption;
- developing the domestic market and demand;
- fighting against the black economy;
- creating a socially homogenous environment in all the regions of the state, eliminating imbalance in their social and economic development;
- ensuring people's employment and high-level labour resources;
- creating equal social and economic opportunities for all Ukrainian citizens;
- Ukraine's taking an appropriate position in the world labour distribution and the international trade, integrating into the world economy;
- transforming economic relations with other countries on the principles of equality and mutual benefits;
- enhancing competitiveness of national products;
- improving the product structure of export and import;
- ensuring the geographical balance of export and import;
- increasing the export potential, enhancing a positive balance of the foreign trade activity;
- supporting national exporters, promoting manufacturers of import-substituting products, especially those of critical import;
- protecting the national market from unfavourable actions of the world market conditions and foreign competition;
- Ukraine's efficient use of its own geographical position to perform international transit.

Potential and current threats to Ukraine's economic security. According to the character of their origin, threats to the state economic security are divided into external and internal.

External threats of the present-day historical period of Ukraine's development are formed under the action of current global risks. According to the experts of the World Economic Forum of 2019, they include escalated economic confrontation of the world largest countries, violation of multilateral trade agreements and rules, and political confrontation among the largest countries.

The top-10 global and most probable threats also include massive cyber-attacks that become a recent trend of informational wars, spread of fake news, and possible loss of countries' trust to the current security agreements. The report also indicates

global advance rates reaching their maximum. The economic policy not so long ago allowing competitors to gain profits in trade relations is often considered a strategic tool of competition nowadays. Stable international economic relations are threatened and this may have negative consequences for the world market [16].

Prevailing world trends determine the character of external threats to Ukraine's economic security. In terms of the early 2019, they can include:

- high dependency of the Ukrainian economy as a whole and its essential areas on: external economic conditions of the world market and international financial and trade organizations; imported high-tech and strategic products, including energy resources;
- restricted supply of certain home-produced product groups to the EU and US markets because of the quantitative control;
- Ukraine's step-by-step losing its energy transiter status from Russia to Western European countries;
- destruction of Ukraine's economic complex integrity due to military actions in the eastern part of the country;
- underdeveloped transport infrastructure that seriously confines the volume of export-import operations.

Internal threats to the country's security are formed due to negative factors affecting the civil society, namely, reduced quality of living standards, economic and financial crises, escalated corruption and criminality, political instability. The factors of these threats are given below.

1. Labour migration and people's massive departure abroad.
2. Intensified property stratification of the community.
3. Low incomes of vulnerable segments of population and high percentage of poor citizens. A low income-level does not enable decent living standards of the majority of Ukrainian people to satisfy their needs in food required for active living. Persistently high numbers of poor people do not encourage the domestic demand for services and products and provide a social basis for increasing criminality including, drug addiction, crimes, prostitution, tramping, etc.
4. Increased costs of obligatory paid services in healthcare and housing and utilities sectors that greatly exceed the growth of people's real incomes; shifting these extra expenses onto the middle-income people who provide increased solvent demand and savings.
5. Low quality of mass services in healthcare and housing and utilities sectors.
6. Delays in salary payments, enterprises' stoppage.
7. Population decline and aging that will cause extreme reduction of the state's labour potential and growing demographic load on able-bodied people.
8. Low-income people's restricted access to public health, education and culture that causes deterioration of their physical and spiritual conditions.
9. An increased gap between economic conditions in different Ukrainian regions as well as among the country's capital, cities and villages.

10. The unsatisfactory environmental situation in Ukraine's industrial regions causing people's increased sickness and death rates.

11. The authorities' incompetence resulting in low legal, financial and contractual discipline in all activity areas, massive income concealing and tax evasion, economy criminalization and corruption of economy management.

12. Imperfection of the judicial system.

13. Unsatisfactory rates of establishing the most important institutions of the modern market economy.

14. The structural deformity and inefficiency of the Ukrainian economy expressed in prioritizing its raw-material orientation, underdevelopment of science-intensive and high-tech industries.

15. Sufficiently low competitiveness caused by: a retarded technological base of most industries, high energy- and resource-intensity of production; the country's low investment and innovative activity, technical and technological lagging behind advanced countries; reduced intellectual potential due to "brain drainage" abroad, loss of intellectual work prestige; insufficient funding of research including that financed from the budget; escalated violations in the informational and intellectual areas;

16. Increased risks of accidents and technogenic disasters with considerable negative environmental consequences because of: considerable wear of basic production capacities, especially in case of continuous technological cycles, transport communications and gas pipelines; increased volumes of accumulated industrial wastes, radioactive and toxic substances, imperfect utilization and burial technologies.

17. Insufficiently stable condition of the monetary and bank system caused by: disproportions of Ukraine's foreign trade balance; probability of sudden fluctuations on the currency market; high "dollarization" of the Ukrainian economy and non-confidence to the national currency, etc.

18. The lack of positive impact of the taxation-budget system on the economic advance due to: an insufficient budget-financial potential to promote production, updating of production capacities on the basis of innovative systems and technologies; low encouragement of taxes; the imperfect system of the state currency control.

19. Increased gap between economic conditions in different Ukrainian regions, as well as among the capital, cities and villages.

20. The underdeveloped stock exchange market.

21. The imperfect state-property privatization policy, etc.

Modern threats are characterized by the fact that they are constantly transferred from one area into another, for example, from the military area to that of political, economic, informational, social, environmental, and language problems and vice versa.

The instable situation in the Ukrainian economy, the potential threat of the next world economic crisis and the Russian pressure are portending economic

destabilization in 2019. Russia is expected to intensify its economic pressure which can be quite effective because of the remaining economic dependency of the Ukrainian energy and bank sectors and active dual-purpose products trade with such satellite-countries as Kazakhstan and Belarus. In 2019, the gas negotiations as to continued transit of Russian energy-carriers across Ukraine in 2020 will be of great importance as the alternative “Northern” and “Turkish” flows remain underutilized.

The National Bank of Ukraine has named presidential and parliamentary elections, labour migration and the world crisis to be the threats to the Ukrainian economy in 2019 [17]. The permanent representative of the ICB Gosta Ljungman indicates the following challenges for Ukraine in 2019 [18]: preservation of macroeconomic stability; attraction of investments; enhancement of state institutions; structural reforms.

The above mentioned crisis trends characteristic of the current Ukrainian economic condition have determined internal threats to Ukraine’s national interests, their level and character being as hazardous as those of the external ones.

The mentioned internal threats to the national economic interests enable us to conclude that at present, Ukraine is unable to create the economic system capable of ensuring the state’s advance and its independence in forming and implementing the home and foreign policies to build the civil community that would meet current world-recognized democratic standards.

Strategic tendencies of ensuring the economic security on the national and regional levels. The economic security problem is unique in each country, yet some similar features for all countries include: availability of possible threats to national interests; determination of assessment methods; formation and implementation of steps to eliminate threats.

The priority of ensuring the economic security of Ukraine is formation of the economic development model that would guarantee: realization of the citizens’ social and economic interests according to the Constitution of Ukraine (Article 3) [3]; ensuring macroeconomic stabilization and the country’s sustainable development in the longer term in the globalizing conditions of the world economy.

Solution of the problem of Ukraine’s rapid economic decline partly owing to the current military conflict in the country’s east calls for updating the national strategy of the economic development and the external economic policy to adapt Ukraine’s economy to new conditions, challenges and threats.

The priority of the external economic policy implies ensuring the country’s competitiveness in the foreign trade relations as this complex and multi-aspect notion determines the level of the state’s external trade security.

The state’s foreign trade security is the condition of the foreign trade ensuring increased export of domestic products characterized by high technology and considerable value added, the products with no competitive advantages in the country and not manufactured here for some reasons; raw-material products used by raw-material enterprises, all these ensuring the national economy development

and enhancing the country's competitive advantages in the global environment [12].

The basic steps of ensuring Ukraine's external economic security include:

1) increasing efficiency of current free trade areas and creating some new ones in collaboration with trade partners as well as entering new trade blocks (for instance, the Transatlantic Free Trade Area - TAFTA). With respect to this, in order to implement the potential of the Agreement on the free trade area with the EU which is Ukraine's most large-scale international project, it is necessary: to adjust Ukrainian technical regulations to meet EU standards; to develop a system of steps to assist national manufacturers in certifying their potentially competitive products to export them to the EU markets; to create a database of importers and lobby quota increase for Ukrainian products; to organize an international informational campaign to create a positive image of the "Ukrainian product" brand;

2) developing a logistics infrastructure of export activity, namely: creating new logistic routes for transporting Ukrainian products and imported raw materials to manufacture them; ensuring the functioning of product supply routes between China and Europe ("New Silk Road"); participating in the investment projects of building grain storehouses on the Nile river banks to increase export of grain to the region; participating in the project of turning the territory along the Suez Canal into an international logistics centre and an industrial hub to intensify product flow from Ukraine;

3) introducing an effective investment policy of attracting foreign investments in order to use non-monetary factors of increasing competitiveness of the industrial sector and integrate the country's economy into value chains and industrial networks on the regional and global scales;

4) adjusting mechanisms of protecting the national economic interests to meet the best world practices as well as define and fix equal directions of the external competitive policy which implies: developing and implementing the state programme of enhancing competitiveness of Ukrainian enterprises on external markets considering the following aspects: planning priorities, quantitative and qualitative availability of Ukrainian producers in international value chains; dynamic responses to anti-competitive discriminatory steps against Ukrainian producers on external markets;

5) considering possible expansion of Ukraine's representation in leading bodies of the World Trade Organization and international financial organizations, etc.

External economic security results from high competitiveness determined by the country's ability to create the national business environment, in which domestic producers can constantly develop their competitive advantages, take and maintain stable positions in certain segments of the world market.

Therefore, the national strategy of Ukraine's economic development should be aimed at creating a powerful economic potential to facilitate the economy growth on the innovative basis and a developed system of market institutions, having a considerable intellectual potential and investment resources, reacting to changes of

the world market conditions in a flexible way and diversifying production accordingly. This very strategy ensures implementation of the national interests to enhance the economic security and high living standards of Ukraine's population [26].

The level of the economic security in Ukrainian regions is mostly determined by efficiency of enterprises functioning, their competitive positions and activities creating the basis for the state's security. Real economic sector enterprises' activity is a source of increasing the country's economic potential and competitiveness.

Security of the real sector enterprises is an objective prerequisite of enhancing the state's economic security in the globalization age and a priority of the national economic policy. Improvement of competitive positions and intensification of national enterprises' industrial activity is an essential factor of regional development and security due to the increased gross regional product and allocations to local budgets, improvement of such structural components of the regional economic security as financial, social, technological, food supply, demographical, energy and environmental, as well as enhancement of the innovative component of the national competitive economy [12].

At the same time, the insufficient security level leads to formation of the environment in which enterprises are not motivated to do legal business, long-term capital investments in the innovative areas of low-profitable and capital-intensive types of activity as well as energy-saving and environmental sectors, form a resource basis of the economic development and be a social partner of the state. It results in structural, field and regional disproportions and reduced levels of the state's economic security.

In the globalizing economy, ensuring enterprises' security, especially in basic industries, is a priority of the state policy of guaranteeing the state's economic security. These enterprises' security is an objective prerequisite of entrepreneurial sector development, enhancing such structural components of the state's security as financial, social, technological, food supply, demographical, energy and environmental, as well as reducing probable realization of serious threats to the national interests in the economic sphere.

Before another world economic crisis starts, it is essential for the government to implement some measures to enhance Ukraine's long-term economic security, namely: encouragement of the economy's structural transformation, transition from raw-materials export to that of end products; diversification of the energy-carrier market; recovery and development of the domestic market of products and services; avoidance of external debt increase; reduction of the Russian products and services share; the search for new markets, in particular in Asia and Africa; provision of low and stable inflation; creation of a stable, transparent and efficient bank system; restoration of extensive crediting; efficient control of the financial sector; free capital movement; financial inclusion.

Conclusions. Integration into the world economic space is a strategic benchmark for Ukraine. The European choice of Ukraine is due to long-term national interests.

The formation of economic security is a dynamic process that encompasses economic, political, social aspects, issues of democratization and spirituality. In the conditions of activation of integration processes, the problem of formation of a complex of economic security of Ukraine, development of ways of confronting new external and internal threats to national economic interests become actual.

On the basis of theoretical developments of scientists, a number of international and Ukrainian scientific schools [26] gaining theoretical and practical weight in the concept of national security, which is based on the following provisions:

- activation of integration processes affects all spheres of the country's society;
- threats to the national economic interests of the country are manifested in the economic, political, social and spiritual spheres;
- under the influence of integration processes, the problems of ensuring economic stability of Ukraine have to be diagnosed;
- possible scenarios for ensuring Ukraine's economic security are bifurcated;
- structuring of problems of economic development of the country's security is cognitive;
- there is a need for decomposition of components and threats in the process of strategic planning of the country's economic security;
- the uneven development of economic security and its components in Ukraine and the EU member states determines the choice of the cluster of countries for integration;
- corruption is the main destructive factor that reduces the level of economic security of Ukraine.

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Markina I., Aranchiy V., Safonov Y., Zhylinska O. and other. Security of the XXI century: national and geopolitical aspects: [collective monograph] / in edition I. Markina. – Prague. – Nemoros s.r.o. – 2019. – Czech Republic. — 500 p.

Scientific publication

**Security of the XXI century:
national and geopolitical aspects**

Collective monograph

In edition I. Markina, Doctor of Sciences (Economics), Professor

English language

Passed for printing 15.02.2019

Circulation 500 copies

ISBN 978-617-673-845-9

Nemoros s.r.o.,
Rubna 716/24, 110 00, Prague 1
Czech Republic, 2019