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Poltava State Agrarian Academy

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

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PREFACE

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

With best regards,
Iryna Markina,
Honored Worker of Science and Technology of Ukraine,
Doctor of Economic Sciences, Professor,
Poltava State Agrarian Academy,
Ukraine

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

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

Iryna Markina,
Doctor of Sciences (Economics), Professor,
Poltava State Agrarian Academy, Poltava, Ukraine,
Khan Abdul Arif,
Owner & Director of LLC «Eurasian consulting agency», Mumbai, India

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

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

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

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

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

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

According to most scientists, economic security of agricultural enterprises can

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

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

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

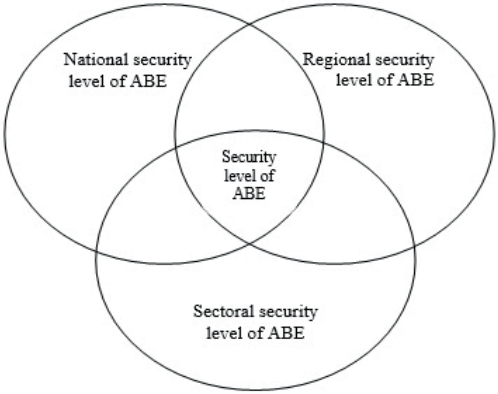

Fig. 1. Levels of providing economic security of an agrarian business entity [formed on the basis of 6, 11]

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

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

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

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

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

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

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

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

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

1) objective ones, which are associated with the inherited state of the economy;

2) subjective-objective reasons caused by market transformation of the economy;

3) subjective ones caused by miscalculations and mistakes in managing the agro-food sector and the economy in general (fig. 2).

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

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

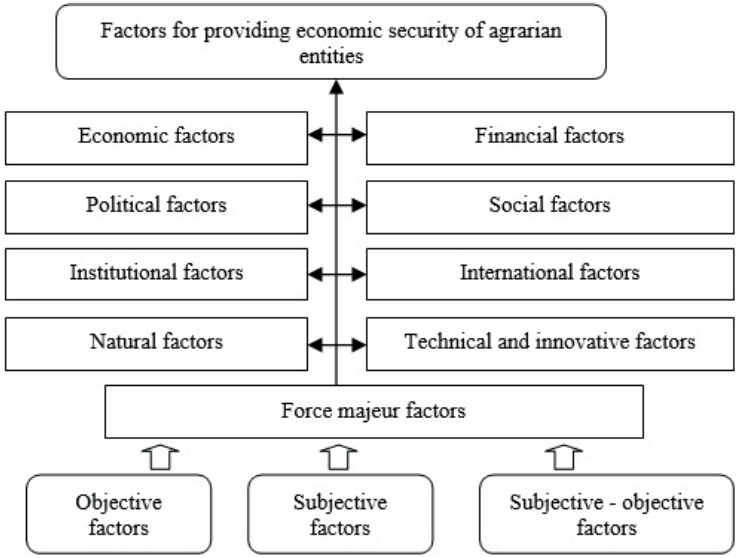

Fig. 2. Factors for providing economic security of the agro-food sector of Ukraine [formed on the basis of 4]

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

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

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

Besides, the priority directions for improving economic security of agricultural

enterprises can include the following:

1) creation of a large-scale modern production capable of applying advanced technologies and using high-performance equipment;

2) organization of machine-technological stations or agricultural consumer cooperatives for technical and technological support of the activities of peasant farms and personal part-time farms;

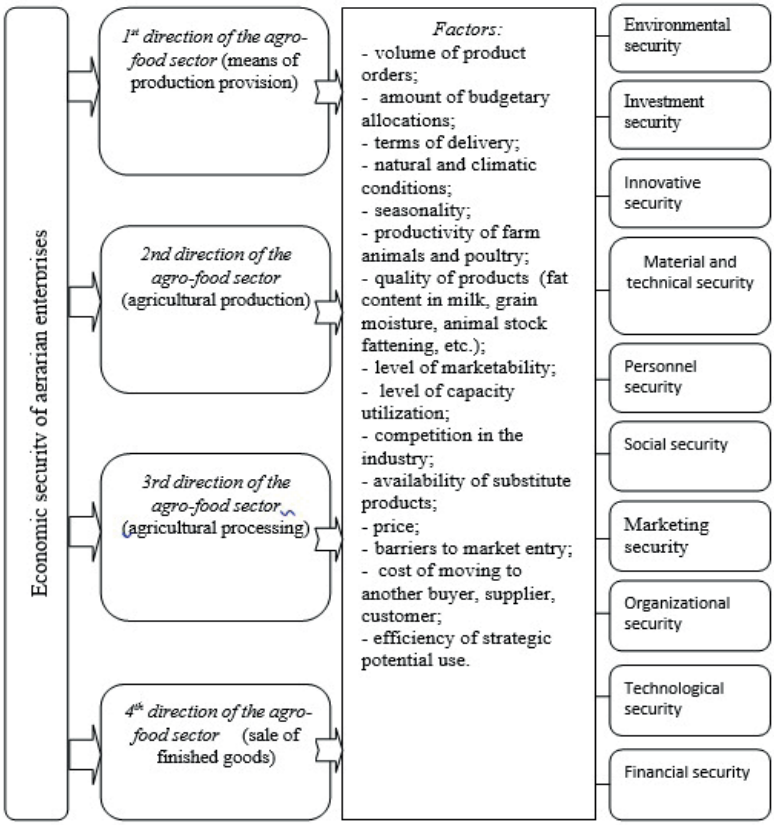

Fig. 3. Factors and components of economic security of agro-food business entities [formed on the basis of 6]

3) development of rural infrastructure: sale and supply cooperatives; information and consulting services; municipal guarantee funds;

4) optimization of social policy in the agro-food sector in order to increase a social component in the development of the branch (increase of the level of salaries of the employed in the agro-food sector);

5) modernization of the agro-food sector in order to upgrade fixed assets and

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

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

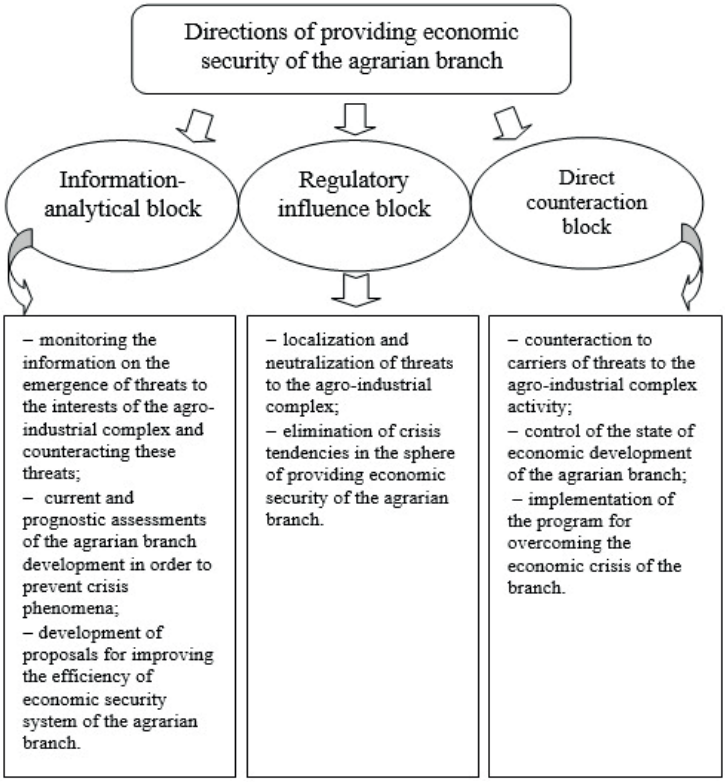

Fig. 4. Conceptualization of the directions for providing economic security of the agrarian branch [formed on the basis of 4, 5]

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

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

disasters;

- budget financing: direct budget financing, subsidies, governmental grants, compensations, state targeted programs;

- financing of land management measures, integrated agrochemical cultivation of fields, agro- and forest melioration;

- pursuing the policy of reasonable protectionism: providing national producers with conditions for normal competition with the foreign market;

- refund of expenses for the maintenance of village social infrastructure owned by agricultural organizations;

- stimulating the inflow of investments into the agricultural sector.

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

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BUSINESS PROCESS IMPACT OF PHYSICAL ACCESS CONTROL SYSTEM (PACS)

Viktorija Riashchenko,
Dr.oec., Prof., Expert of Latvian Council of Science,
ISMA University of Applied Science, Riga, Latvia,
Marga Živitere,
Dr.oec., Prof., Expert of Latvian Council of Science,
ISMA University of Applied Science, Riga, Latvia,
Jevgenija Dehtjare,
Dr.oec., prof., ISMA University of Applied Science, Riga, Latvia,
Dmitrijs Matjakubovs,
Student of ISMA University of Applied Science, Riga, Latvia,

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

already using PACS are limited to standard usage.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

the biometric personal data.

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

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

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

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

Klaudia Pataki Szemereyné,
Budapest Corvinus University,
International Relations Multidisciplinary Doctorate School
Mayor of Kecskemét City, Budapest, Hungary

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

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

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

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

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

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

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

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

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

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

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

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

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

II. 2006 Change of Direction in Economic Policy.

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

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

The investment boost was implemented with two main actions:

1. Municipal bond issue;

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

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

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

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

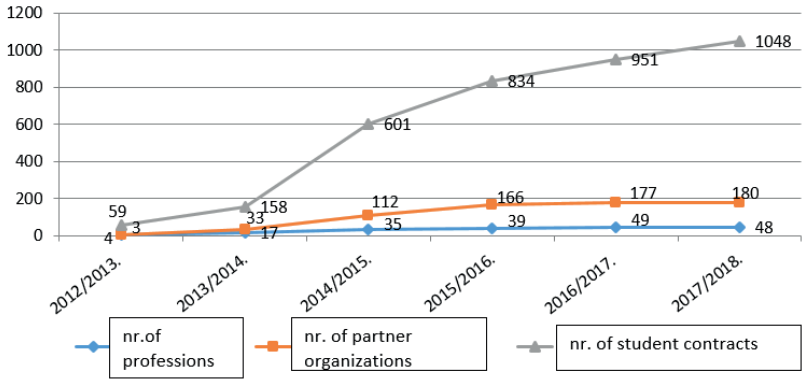


Chart 1: The improvement of dual training in Kecskemét

Source: Bács-Kiskun County Chamber of Commerce and Industry

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

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

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

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

III. Kecskemét job market.

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

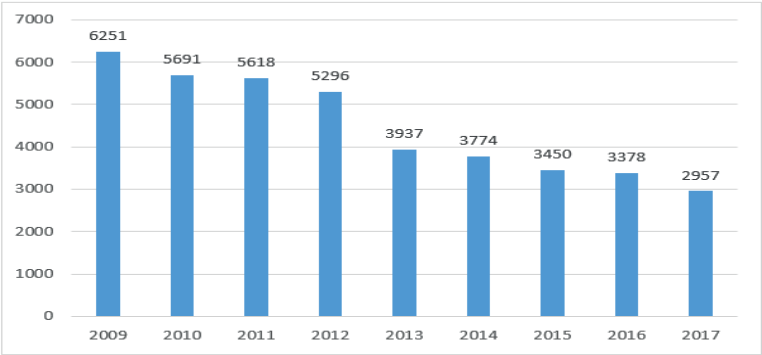


Chart 2: Number of registered job-seekers in Kecskemét
Source: KSH, T-Star, NGM, TEIR

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

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

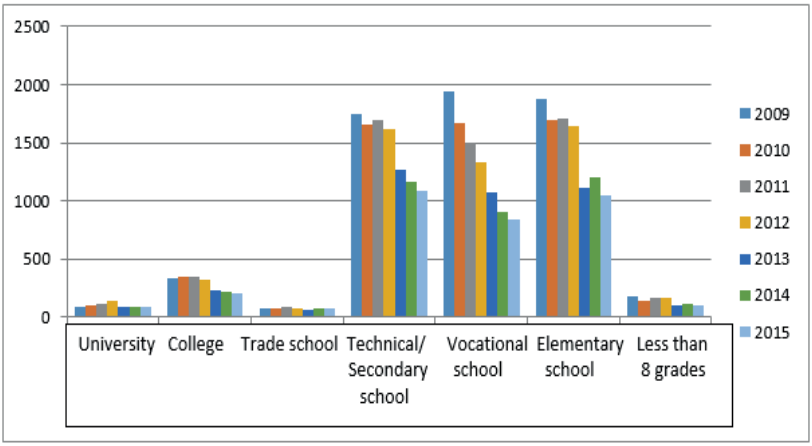


Chart 3: Number of job seekers in Kecskemét by school qualifications
Source: BKMKH

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

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

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

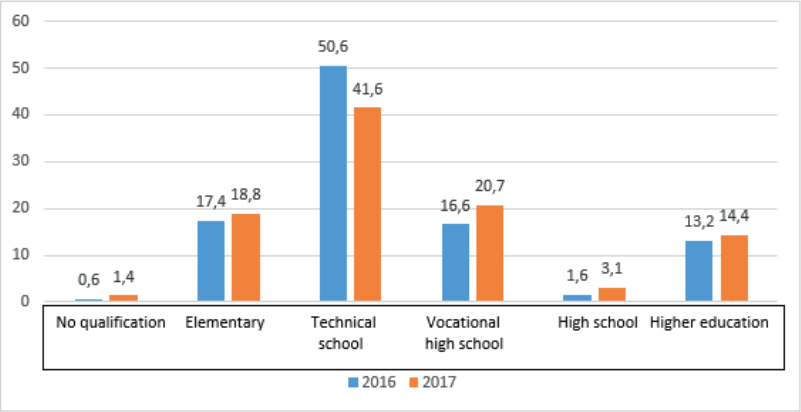


Chart 4: Labour needs of Kecskemét businesses by qualifications
Source: AIPA Ltd. 2017 survey

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

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

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

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

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

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

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

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

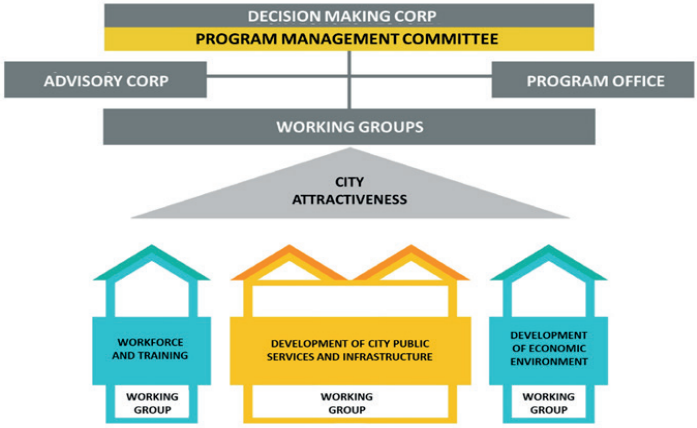
working groups, which play an active role in the issues of workforce supply and training, development of urban infrastructure, public services and business environment, as well as answers to the issues of urban attractiveness.

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

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

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

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



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

IV.2. Establishment of an Employment Pact.

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

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

IV.3. Establishing an Employment Board.

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

IV.4. Flats with lease designation rights.

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

IV.5. Preferential land sale program.

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

V. Measures to retain labour.

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

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

- More flexibility from employers.

- Training for employees, supporting work with professionals (e.g. psychologists, mental health professionals).

- Continuous measurement of employee satisfaction, and as a result, implementing problem management solutions.

- Establishing employee recommendation programs.

- Gamification, playful method of employee training, resulting in more effective work.

- Creating family friendly workplaces that primarily help establishing the work-life balance (e.g. employing pregnant and young moms, job sharing, operating a nursery, summer camps for children).

- Widening the recruitment zone to attract the appropriate number of qualified personnel (e.g. resettlement allowances).

- Employer branding.

- Using social media.

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

- lower number of staff;

- mobility;

- high expectations with regards to wages and improvement opportunities;

- using smart devices.

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

VI. Global workforce trends.

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

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

and employees are headed for sectors creating higher added value.

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

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

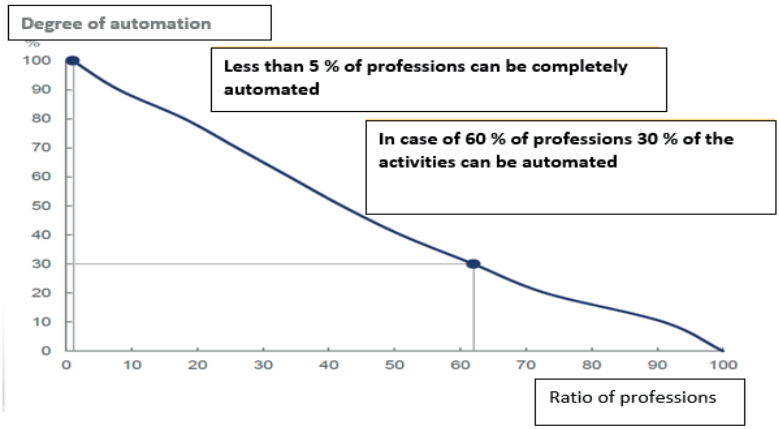


Chart 5: McKinsey's results on the possibility to automate professions.
Source: McKinsey (2017)

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

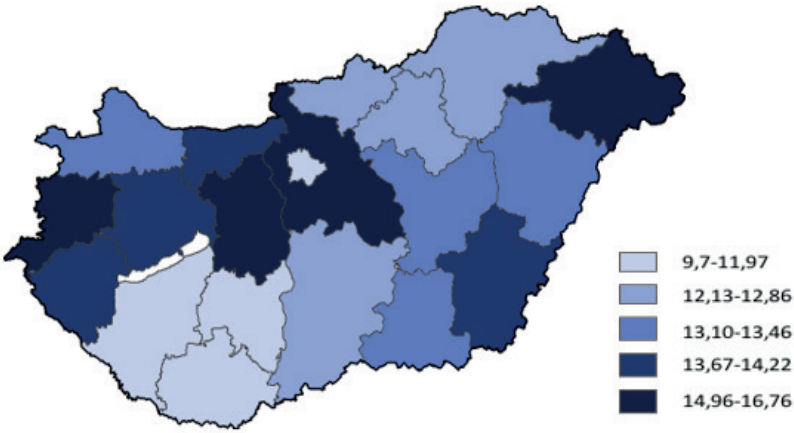


Chart 6: The impact of automation on the national job market
Source: GVI (2016)

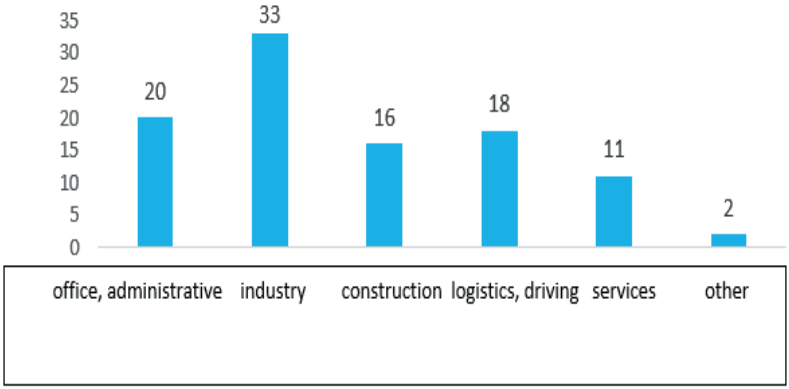


Chart 7: Distribution of automation potential between different sectors
Source: GVI (2016)

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

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

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

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

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

Chart 8: Skills expected by employers in 2015 and in 2020
Source: WEF (2016) https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/, own edit

VII. Potential solutions.

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

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

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

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

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

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

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

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

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

1. Establishing a regional workforce demand forecast system

2. Establishing a graduate tracking system

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

3. Periodic corporate training of vocational trainers

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

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

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

VIII. Summary.

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

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ECONOMIC EXPLORATION AS A NATIONAL SECURITY FUNCTION: A THEORETICAL ASPECT

Anatolii Balanda,
Doctor of Sciences (Economics), Professor,
Professor at the special Department Military Diplomatic Academy,
Kyiv, Ukraine

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Tamás Kaiser,
Faculty of Public Governance and International Studies, Associate Professor,
Head of Department of Governance and Public Policy,
National University of Public Service, Budapest, Hungary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

fulfil. One of the gretest deficiencies of the 1990 Act on Local Self-Governments was the lack regulating the meso-tier, the weakening of the counties, which has deepened by the proliferating decontrated organs, ans last but not east, the lack of institutioalized coordination between the relavan local and territorial actors.

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

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

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

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DETERMINANTS OF ENHANCING EXPORT ORIENTATION OF UKRAINE'S SERVICES SECTOR

Tetiana Melnyk,
Doctor of Sciences (Economics), Professor,
Kyiv National University of Trade and Economics, Kyiv, Ukraine,
Kateryna Pugachevska,
Ph.D. in Economics,
Kyiv National University of Trade and Economics, Kyiv, Ukraine

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

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

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

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

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

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

- in the structure of world trade in services the highest growth rate of export of tourist and other commercial services (by 70%);

- the rapid growth of the computer services market, accounting for 72% of ICT services exports, reaching $ 353 billion;

- expansion of telecommunication services due to the fact that mobile communication is accessible to almost everyone (99.7 mobile numbers per 100 inhabitants in 2016);

- in the field of transport services, which had the highest growth rate up to 2008, there has been a downward trend since 2014 due to the availability of excess transport capacity;

- further expansion of global value chains in order to optimize the conditions of production of goods and services (value added of final suppliers – 29.2%, suppliers of production components – 70.8 %, including service providers – 37.7%);

- introduction of new forms of organization of trade in services based on the use of digital technologies.

Table 1

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

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

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

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

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

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

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

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

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

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

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

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

Table 2

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

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

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

Table 3

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

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

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

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

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

Table 4

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

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

Continuation of the Table 4

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

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

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

Table 5

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

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

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

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

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

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

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

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

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

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

• material resources processing services (26.5%);

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

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

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

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

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

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

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

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

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

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FISCAL SECURITY AND INFORMATION AND ANALYTICAL SUPPORT: THEORETICAL ASPECT

Nataliia Prokopenko,
Doctor of Sciences (Economics), Professor,
PHEE «European University», Kyiv, Ukraine,
Elena Hudz,
Doctor of Sciences (Economics), Professor,
State University of Telecommunications, Kyiv, Ukraine,
Andrii Tymoshenko,
Ph.D. in Economics, Associate Professor,
PHEE «European University», Kyiv, Ukraine,
Anastasiia Poltorak,
Ph.D. in Economics, Associate Professor,
Mykolayiv National Agrarian University, Mykolayiv, Ukraine,
Andrii Lutsenko,
Postgraduate student, PHEE «European University», Kyiv, Ukraine

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

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

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

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

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

Table 1

Scholar' views determining the information support essence

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

Source: generalization was based on the publications in the table

Table 2

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

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

Source: generalization was made based on research results

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 3

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

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

Source: Generalized by the author based on research findings

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

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

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

• decision support systems, which, in turn, involves building a decision support system based on the ability to share models of management with specific users;

• MIS-management information system;

• structured system analyses and method;

• computer aided system engineering;

• computer aided design specification technology

• system-functional technology;

• process technology»;

• SAP / R3;

• Oracle E-Business Suite;

• Baan I;

• Microsoft Business Solutions – Axapta, it can be adapted to fulfill the tasks related to the intelligence of the situation in the fiscal sphere of the country and to use the latter in developing new approaches in defining fiscal security vectors in the perspective of the country's accession to the European integration processes.

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

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

• related to the country's accession to the European integration process;

• studying the experience of the countries that have undergone these processes;

• choosing the type of fiscal innovation;

• planning fiscal security

• measures in terms of selected areas;

• analysis of financial and economic status and financial capabilities in the implementation of certain fiscal measures;

• indicators calculation of implementation effectiveness of security;

• fiscal modifications;

• development of options for formation and implementation of fiscal in security order to achieve positive effect;

• monitoring the state of implementation of fiscal measures;

• obtaining information from foreign sources for the purpose of adaptation to domestic fiscal practice.

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

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

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

• objective outlining the purpose and tasks of fiscal modifications;

• determining the stages of development and implementation of fiscal innovation developments;

• outlining the period for which fiscal measures are being implemented or the fiscal strategy is being developed;

• defining indicators by which the effectiveness of the implementation of fiscal reforms in the country's economy will be determined;

• providing information from foreign sources to adapt the experience of the world to solve the tasks;

• modeling alternative options for formation and implementation of fiscal security in the context of European integration in the changing situation on the world financial market;

• developing methodological recommendations for the formation of the information array in view of the fiscal transformation society needs.

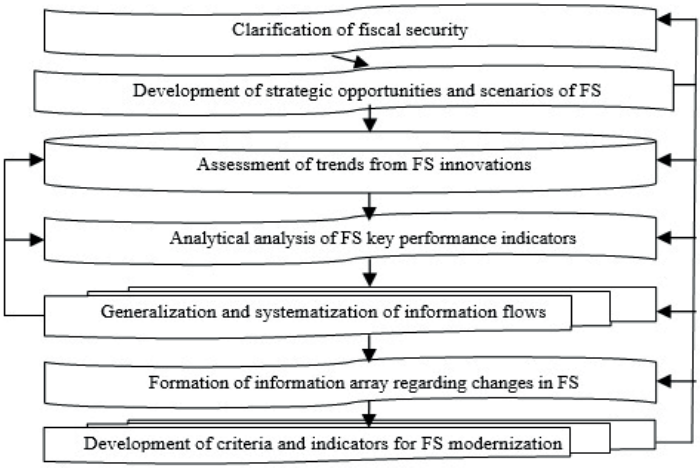

Fig. 1. The chain of information and analytical support for the formation and implementation of financial security(FS) in the context of European integration

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

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

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

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

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

Larysa Rudenko-Sudarieva,
Doctor of Sciences (Economics), Professor,
Yuliya Shevchenko,
Postgraduate student,
SHEE «Kyiv National Economic University named after Vadym Hetman»

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

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

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

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

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

1. The concept of investment behaviour of TNCs.

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

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

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

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

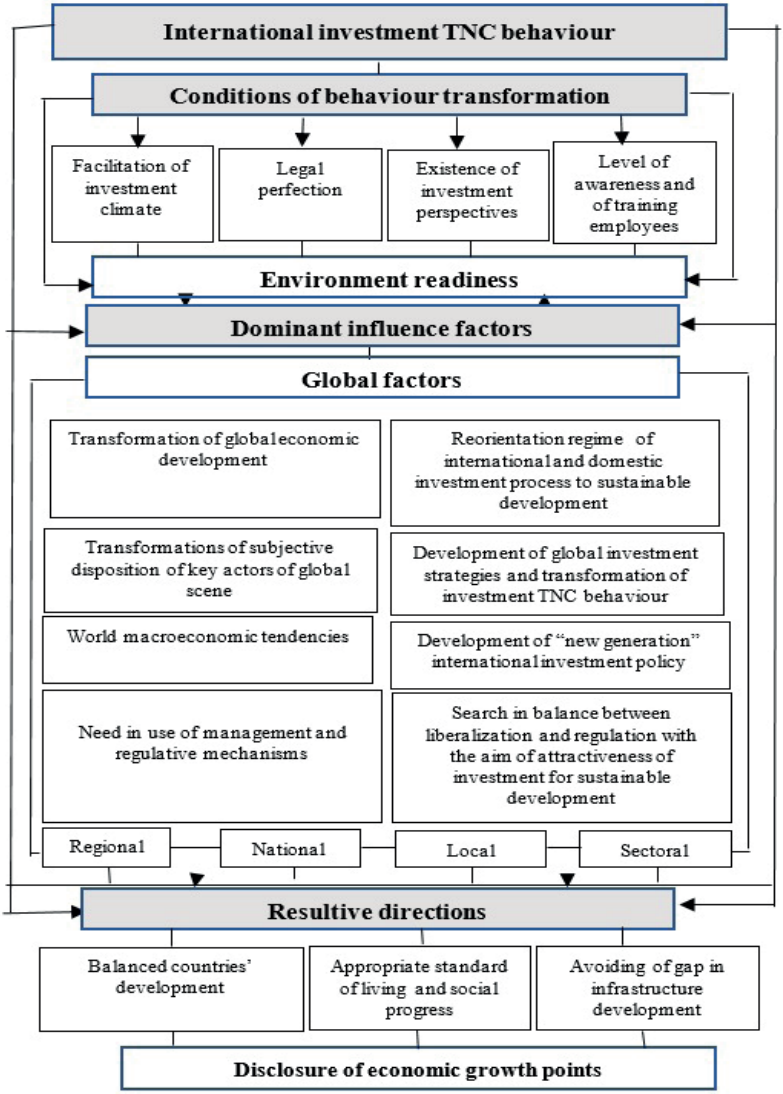

Fig. 1. Conditions, factors and results of expected transformation of TNCs' international investment behaviour (supplemented on the basis of [12])

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

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

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

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

Table 1

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

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

3. World macroeconomic trends

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

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

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

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

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

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

Development of next generation investment policy.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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INSURANCE MARKET SAFETY REALITIES AND PROBLEMS OF TODAY

Volodymyr Kochetkov,
Doctor of Sciences (Economics), Professor,
Nadiia Solovei,
Ph.D. in Economics, Associate Professor,
National Aviation University, Kyiv, Ukraine

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

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

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

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

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

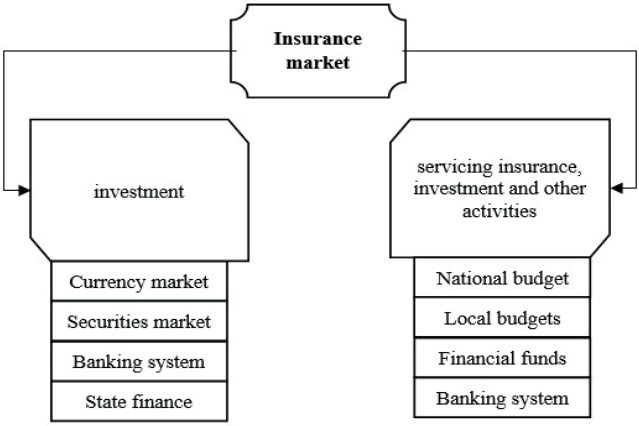

Fig. 1. The place of the insurance market in the financial system of the country
Source: Developed by the author.

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

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

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

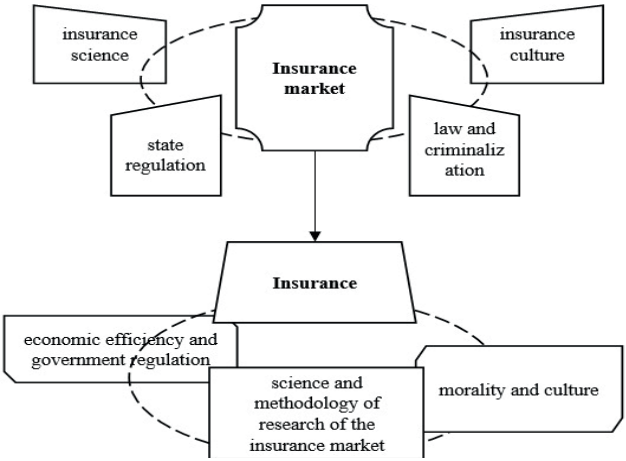

Fig. 2. Model of insurance market formation
Source: Developed by the author.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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KEY ASPECTS OF INTERNATIONAL ECONOMIC SECURITY MANAGEMENT IN THE XXI CENTURY

Oleksandr Stoian,
Doctor of Sciences (Public Administration), Associate Professor,
Tatiana Cherniuk,
Lecturer,
Petro Mohyla Black Sea National University, Mykolaiv, Ukraine

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

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

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

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

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

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

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

1. GDP decline – 30 %. Exceeding its value leads to irreversible losses [1].

2. Inflation 5 – 6 %. The average annual inflation rate of more than 6-10 % requires special restrictive measures.

3. Unemployment rate of 10%. In the period of reforms it can reach 15-20 %, but its duration can not exceed 3-5 years.

4. The income gap of 10% of the richest and 10% of the poorest segments of the population should not exceed 6 - 8 times. If this figure exceeds 10 times or more, society is at risk of instability. The income concentration indicator (Gini coefficient) in developed countries is 0.15 ÷ 0.17.

5. The presence of a fraction of the population with incomes below the subsistence level of 8-10% leads to a crisis and stagnation of the economy [2].

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

a) migration and external borders (giving young people hope for the future);

b) internal and external security (counter-terrorism and defense cooperation);

c) economic and social development (job creation, digital development).

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

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

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

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

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

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

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

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

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UKRAINIAN FOOD SECURITY: SOCIO-ECONOMIC COMPONENTS

Halyna Fyliuk,
Doctor of Sciences (Economics), Professor,
Tatiana Lytvtnenko,
Ph.D in Economics, Associate Professor,
Natalia Shmalii,
Ph.D. Student,
Taras Shevchenko National University of Kyiv, Ukraine

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

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

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

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

Table 1

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

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

Source: compiled by author based on [2]

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

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

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

Table 2

Strengths and challenges of Ukraine in food supply

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

Source: compiled by author based on [2]

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

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

have impeded human development?

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

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

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

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

Table 3

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

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

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

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

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

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

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

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

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

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

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

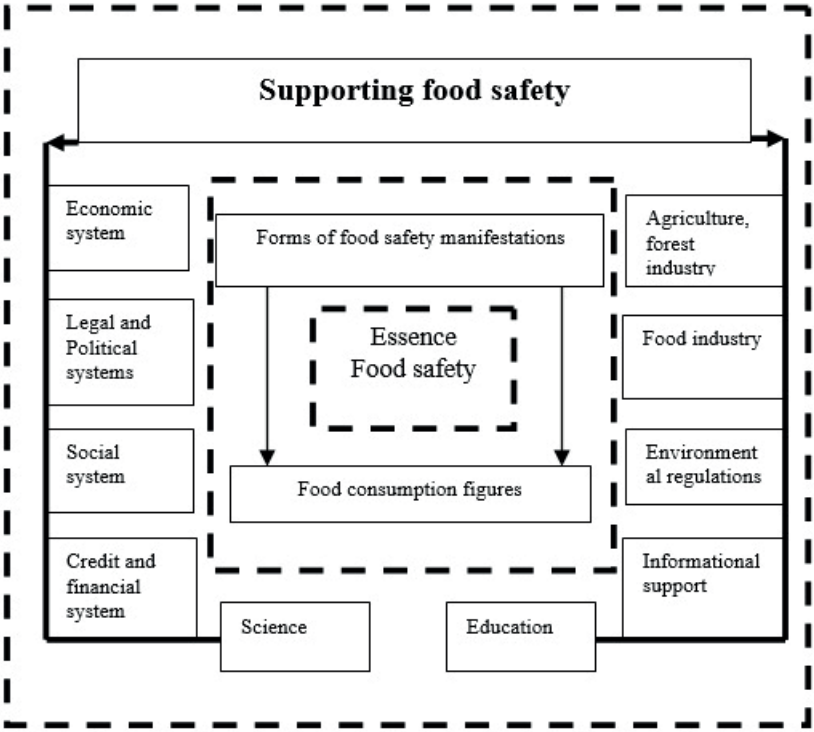

Fig. 1. Components of the concept of food security
[composed by the authors]

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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ROSPECTIVE DEVELOPMENT TRENDS IT-TECHNOLOGIES AND INFORMATION PROTECTION TECHNOLOGIES

Dmytro Diachkov,
Ph.D. in Economics, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine

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

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

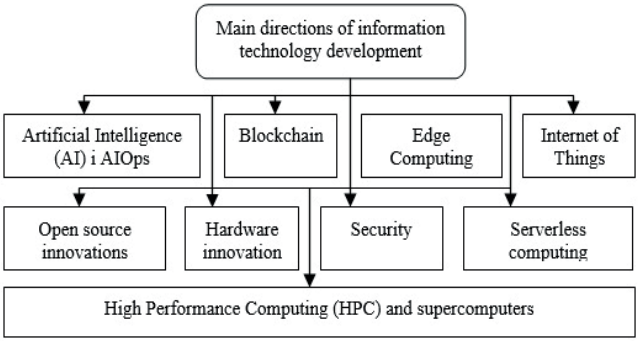

Fig. 1. Trends in information technology development [created by the author on 3, 7]

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

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

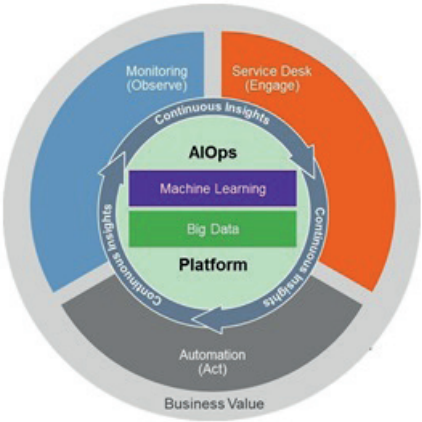

Fig. 2. Model of functioning of artificial intelligence [7]

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

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

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

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

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

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

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

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

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

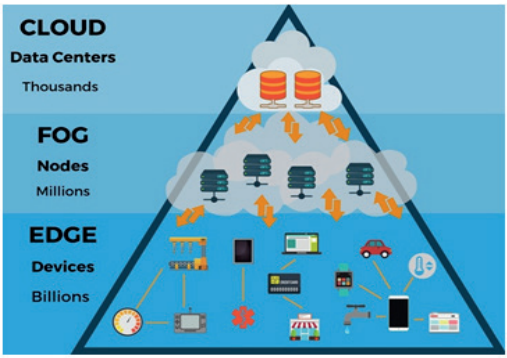

Fig. 3. The pyramid of functioning Edge Computing [7]

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

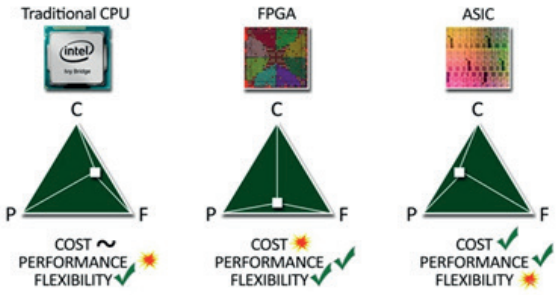

Fig. 4. Types of hardware depending on «cost-performance-flexibility» criteria [7]

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

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

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

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

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

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

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

- security of critical assets. Critical object – an object that has a significant effect on national security, the suspension or disruption of which leads to an emergency or significant adverse effects on the defense, security, international relations, economy, other economic or infrastructure of the country, or for the life of the population living in the respective territory for a long period of time. The specified direction includes the development and implementation of critical systems security systems;

- development of cyber weapons. Unlike, the first direction, it is the creation and implementation of «attack» systems, including addressing infrastructure, staffing, legislative and other tasks. These include developments similar to those of Ntrepid (the essence of their solution is to manipulate discussions on social networks);

- cloud security. In this area there are many unresolved issues in the field, among them: regulatory regulation, technical support, development of new information security, organizational interaction. Regulation of information security in the cloud and ensuring data security should become one of the most important areas of information security development for the corporate sector in the near future;

- voluntary certification in the field of information security and new tools of «trust» Existing certification systems do not meet current market needs. An alternative certification system is required. New tools of trust can be included here. Corporate market experts point out that the state certification system does not solve all the tasks of the business. Engineering and technical protection of companies'

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

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

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

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

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

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

within medical systems development companies;

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

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

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

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

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

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

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

Ihor Garasymchuk,
Ph.D. in Technical, Associate Professor,
State Agrarian and Engineering University in
Podilya Kamianets-Podilskyi, Ukraine,
Valentyn Dranus,
Ph.D. in Economics, Associate Professor,
Petro Mohyla Black Sea National University, Mykolaiv, Ukraine,
Liubov Dranus,
Ph.D. in Economics, Associate Professor,
Petro Mohyla Black Sea National University, Mykolaiv, Ukraine

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

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

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

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

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

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

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

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

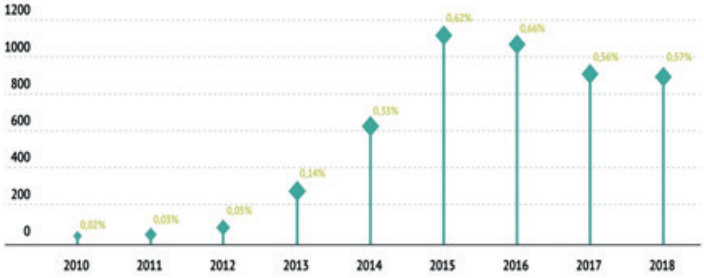

Fig. 1. Electricity production by wind power plants in Ukraine.
Share in total electricity production, Million kWh

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

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

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

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

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

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

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

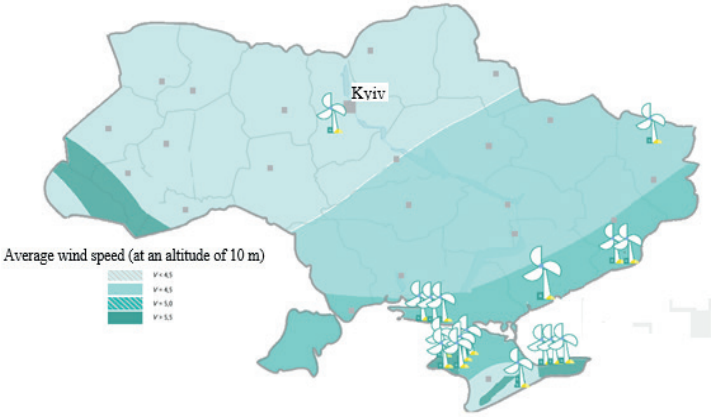

Fig.2. General description of wind streams on territory of Ukraine

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

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

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

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

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

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

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

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

1.Ukraine's Alternative Energy Financing Program.

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

2. Program of Innovative vouchers.

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

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

The vouchers of two categories are offered:

• voucher up to 20000 euro (most companies that will win in a competition will get the Innovative vouchers with the average sum of sponsorship from the side of EBRD in a size up to 20000 euro);

• mega - voucher up to 50000 euro (for companies with projects, that have potential to become a breakthrough, 5 mega-vouchers are offered in a size up to 50000 euro).

3. Government credit programs.

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

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

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

Priority industries for investment credits on the program is agriculture, processing industry, projects in the sphere of energy efficiency and renewable energy and others. Enterprises with the number of workers not more than 250 persons and by annual earnings not more than 10 million euros in an equivalent will be able to take advantage of credit on the program for the physical entities, businessmen, that conduct activity not less than3 years, have profit for the last 4 quarters in succession and positive credit history in a bank not less than 12 months, and also not belong to the large companies. Maximal term of investment credit – 6 years, and to the credit on 6, and to the credit on addition to the turnover means – 2 years. A maximal size of credit is 100000 euros.

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

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

6. Sponsorship of State Finance Institution for Innovations.

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

directions of financing are:

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

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

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

Tatiana Ostapenko,
Ph.D. in Economics, Associate Professor,
Oles Honchar Dnipro National University, Dnipro, Ukraine,
Oleksandr Neklesa,
Senior Research Fellow,
Dnipropetrovsk State University of Internal Affairs, Dnipro, Ukraine,
Yana Paleshko,
Ph.D. in Economics,
Dnipropetrovsk State University of Internal Affairs, Dnipro, Ukraine

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Consumer household monetary expenditures on the purchase of goods and

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 1

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

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

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

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

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

SEEP_RT2018= 64029464.83-761424.4/761424.4=83.1 %.

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

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

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

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

Hanna Burdelna,
Ph.D. in Economics, Associate Professor,
Black Sea Petro Mohyla National University, Mykolayiv, Ukraine,
Anna Bozhenko,
Lecturer, Black Sea Petro Mohyla National University,
Black Sea Petro Mohyla National University, Mykolayiv, Ukraine

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

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

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

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

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

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

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

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

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

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

- the principle of preventive action, which provides the maximum possible and timely detection of dangerous values of indicators of a state or a dangerous process that poses a threat of emergencies, and taking concrete measures aimed at neutralizing such a threat and minimizing its consequences:
- consideration of all factors influencing the amount of risks associated with the placement, construction and operation of potentially hazardous facilities, the creation of new equipment, technologies and materials;
- periodic adjustments to risk standards:
- priority is given to international cooperation in the field of risk management in

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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AGRARIAN SECTOR AS A FACTOR OF ENSURING NATIONAL FOOD SECURITY

Elena Varaksina,
Ph.D. in Economics, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine

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

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

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

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

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

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

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

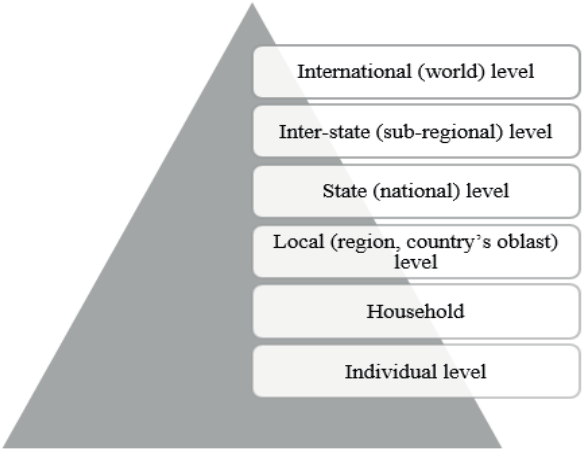

Fig. 1. The hierarchy of food security levels
Source: 1 and supplemented by the author

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

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

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

Thus, the formation of competitive agrarian sector is extremely essential

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

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

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

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

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

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

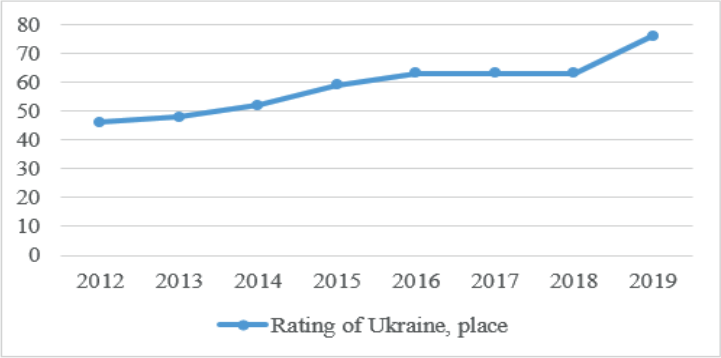

Fig. 3 Rating of Ukraine in the system of the global food security, 2012-2019
Source: 7

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

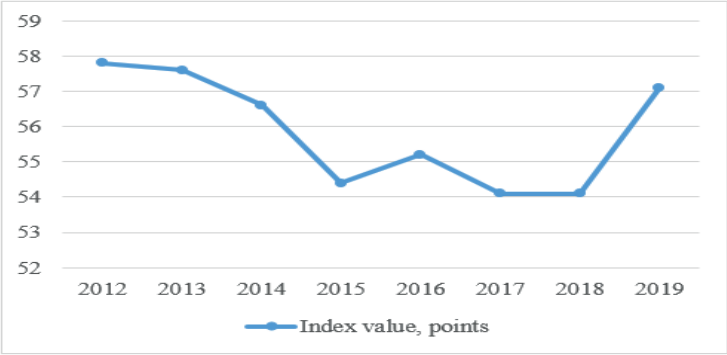

Fig. 4. The value of food security index, 2012-2019
Source: 7

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

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

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

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

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

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ANALYSIS OF THE CYBER SECURITY POLICY OF UKRAINE

Oleksandr Chernonoh,
Master in Public Administration,
The General Staff of the Armed Forces of Ukraine, Kyiv, Ukraine,
Serhii Ivko,
Ph.D. in Technical Sciences, Senior Lecturer,
Poltava State Agrarian Academy, Poltava, Ukraine,
Artem Moskalenko,
Ph.D. in Technical, Head of Department, Poltava Institute of Business,
Private Higher Educational Institution Academician Y. Bugay
International Scientific And Technical University, Poltava, Ukraine

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Cybersecurity threats are actualized by influence of the following factors:

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

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

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

6,500 of them were targeted.

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

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

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

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

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

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

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

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

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

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

Valentyna Aranchii,
Ph.D. in Economics, Professor,
Rector of Poltava State Agrarian Academy, Poltava, Ukraine

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

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

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

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

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

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

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

- effective cash flow management reduces the need of an enterprise to borrow capital;
- cash flow management is an essential instrument in ensuring the acceleration of an enterprise capital turnover;
- effective cash flow management reduces the risk of enterprise insolvency;
- effective cash flow management contributes to the formation of additional investment resources for financial investments, which are a source of profit for an enterprise [4].

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

- information authenticity;
- balance;
- efficiency;
- liquidity.

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

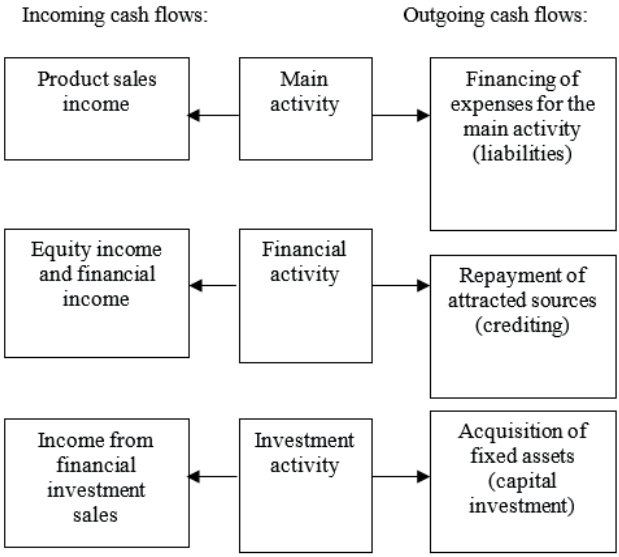

Fig. 1. Directions of cash flow movement [3]

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

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

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

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

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

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

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

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

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

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

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

Accelerated cash flow attraction is achieved by:

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

The slowdown in an outgoing cash flow is achieved by:

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

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

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

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

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

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

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

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

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

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

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

- information function – formation of information flows based on control;
- accounting and control – comparison of planned and actual values to measure and evaluate the degree of pursuing a goal;
- analytical – creation of basic controlled indicators for assessing the performance of an enterprise in determining the degree of impact of various factors on the value of the final result;
- planning – coordination of individual financial plans in relation to the overall plan, both within the short- and long-term planning.

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

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

Róbert Tóth,
Chief Economist, Ph.D. Candidate,
Department of Economics and Business
Hungarian Chamber of Commerce and Industry,
Petronella Gyurcsik,
Head of Department, Ph.D. candidate,
National Tax and Customs Administration, Hungary,
Krisztina Sisa,
Associate Professor, Budapest Business School,
Kozma Tímea,
Associate Professor, Budapest Business School,
Boglárka Szijártó,
Teacher, Ph.D. Candidate,
Budapest Business School, Budapest, Hungary

The present study aims at summarising the specific characteristics and basic principles of the lean approach, with a special emphasis on its effect on the accounting system and financial culture. The universal importance of the lean thinking for all operating organisations, profit or non-profit alike, is also highlighted. Lean accounting started to spread following the academic appearance and increased business application of lean management and lean philosophy. Lean accounting is becoming more and more popular among businesses of the production sector thanks to those practising accounting specialists who recognised the need for changing the accounting system.

The 2008 crisis showed that economic operators need to change in order to avoid economic recession of such a grand scale in the future (Lentner,2015). Its key could lie in changing financial behaviour, which plays a decisive role in improving a country's competitiveness (Gáspár-Thalmeiner, 2019; Lentner, 2007, 2019). In today's rapidly changing economic environment, efficient communication with clients and partners, optimal financing structure made it necessary to develop

strategies that help guarantee value-creation in key corporate processes (Andrássy-Lentner, 2005). In today's globalised and turbulent world economic conditions, economic operators put more and more emphasis on applying management systems that are principally made up of financial decision support information, thereby aiding planning, strategy-making and investment structure development managerial tasks. To develop their vision of the future and their strategy, as well as defining actual objectives and tasks, businesses heavily rely on internal financial and funding perspectives (Zéman,2017, Zéman-Lentner,2018). By the beginning of the 2000s, the lean method was considered the decisive strategy of production systems. One of the major aims of a business applying lean management is to identify and eliminate loss-making activities. According to this approach every activity that does not create value is loss-making. The lean corporate culture is characterised by the creation and maintenance of a zero waste system, elimination of loss-making activities, identifying and solving problems, proper information flow and communication, and customer-centeredness. (Balogh et al., 2020) The study also discusses the connection between the lean approach and the accounting information system. A traditional cost-calculation does not motivate a lean corporate behaviour. In the case of traditional cost management, production cost management is complicated; determining the actual cost of an activity, a product or a service is only possible by means of complex and wasteful operations. This type of data collection system is contrary to lean thinking. Traditional cost-calculation does not provide the information needed to support and motivate lean production. The cost calculation method of the lean approach is called Value Stream Costing (Baggaley, 2003).

An overview of the lean method. Basically means streamlining and a lean company is streamlined. What does it actually means for companies? Lean is a principle-based and supported philosophy, whose focus is on decreasing hidden and visible losses so that value creation is guaranteed at every step of the process from the point of view of the customer. Thus, lean is a corporate governance philosophy, which aims at reducing waste at the organisational level, encompassing specific functions with the active participation of employees in order to create value for the customer, and, by doing so to increase corporate (owner) value as well. "Lean is more than a sum of tools, since its appropriate application requires that the philosophy runs through the entire organisation; and these tools are not limited to a certain principle or introductory step. A single tool may have an effect on the whole system" (Gyenge et al., 2015; Slack et.al,2004).

Lean management aims at the elimination of losses and waste, which may help processes become faster, more reliable, higher quality and lower-cost. (Pankotay – Koloszár, 2019) To this effect, the approach must be incorporated into everyday practice and become part of the corporate organisational structure with a view to making every member in the organisation committed to it. Leaders can contribute by top management fully identifying with the lean philosophy and representing their commitment towards employees. This way a company can seek efficient operation

with creating an increasing customer value (Vojnisek, 2008).

Certain research projects also draw attention to organisational subcultures, that is, certain subcultures can have a closer connection to different lean tools. Therefore, when introducing and applying lean management, it has to be taken account which corporate subculture prefers or feels hostile towards which tool (Jenei et al., 2015).

Womack and Jones (2003) collected the 5 strategic principles that summarise the essence of corporate value-creation:

1. Identifying value according to customer needs.
2. Understanding value flow necessary for production.
3. Continuous value flow.
4. Creating a pull system focusing on producing only products and services that meet customer demands.
5. Seeking perfection and avoiding losses (Womack-Jones, 2003).

Which factors did help create the lean philosophy?

By now customer demands have greatly changed and differentiated, to which the mass production approach fails to flexibly adapt. According to the lean approach, methods aiming at enhancing corporate performance design products and services, and their necessary functions and inherent costs, based on customer expectations. Thus, lean operation – let it be a business in the production or the service sector – was born to eliminate the weak points of mass production, and to counterbalance it.

Table 1

Comparison of mass production and lean production

MASS PRODUCTION	LEAN PRODUCTION
• Focused on products	• Focused on customers
• Production optimised for high volume	• Low-volume production
• Production in advance based on forecasts	• Production to order
• Long production time (from purchasing materials to delivery)	• Short production times (from customer order to delivery)
• Vast stocks	• Low stock level
• High level of division of labour	• Minimal handover points in production
• Single expertise	• Versatile, highly skilled workforce
• Acceptable defect rate	• Zero defect approach
• Organisation into functions	• Organisation into value processes

Source: own compilation

The basic definition includes that lean corporate operations require the application of strictly regulated principles. The relationship between the principles is depicted in the figure below.

The process focuses on customers, more precisely customer needs, based on which the objective, also expressed as value, must be determined.

A customer is someone who – either for meeting their own or another customer's demands – uses a product or service, either inside the business or externally (Németh, 2009).

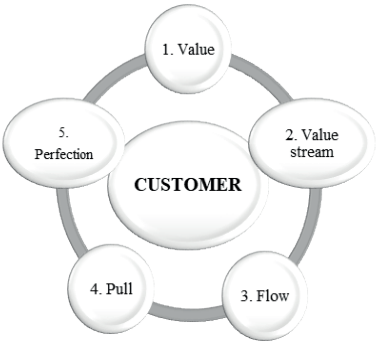

Fig. 1. Lean basic principles
Source: own compilation

Short description of lean principles.

Value and value stream. The sum of those characteristics of a product or service create value that ensure meeting customer needs at the highest possible level. Basic customer needs (values) regarding a product or a service are made up of, and also influenced by the sum of its function, quality and production time. Lean value-centeredness is also manifest in management accounting. The connection between lean and management accounting is created by product or activity production cost calculations and measures taken to reduce company costs. It is proven that the application of the lean philosophy helps realise cost reduction, which in the end leads to increased outturn, since by reducing losses, costs caused by unjustified use of resources (unjustified costs) can be identified and eliminated, thus decreasing the production cost of products or services. However, waste may only be reduced if the company can identify its sources in time. Everything that hinders meeting customer demands at a high level is considered a waste source or factor. Identified waste sources are waiting, defect amounts, overproduction, unnecessary motion and unused knowledge. The major aim of lean management is optimising output by minimising waste. Defect or low quality products or services produce losses for the business. The smaller the waste, the better the quality of a product or service is (Oláh, 2014; Oláh – Popp, 2016; Oláh et al., 2017;Oláh et al.,2018).

There are two ways of lean value creation.

1. eliminating internal waste, thereby reducing costs and improving customers' relative cost value perception.

2. a product or service is designed according to customer appraisals, that is, value is created, by way of, for example, shorter delivery cycle, smaller delivery batches, etc., that is, without additional costs. This Figure shows that products and services can be grouped on the basis of customer evaluation of their relative cost/value ratio. The Cost-Value Equilibrium shows those situations when product/

service value matches customer's willingness to pay (Hines et al., 2004).

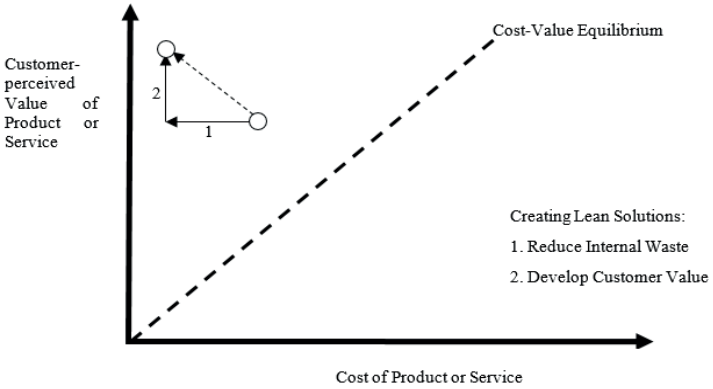

Fig. 2. Relation of Value, Cost and Waste
Source: Hines et al., 2004 p. 4.

In the knowledge of value, mapping of every operation and part of operation has to be carried out, that is, the creation of a value stream map is recommended. A value stream entails all those steps that are necessary for the creation of a certain product or service, in other words, to satisfy customer requirements. After having explored and identified value streams and elaborated their relation systems, the so called value stream map can be created. Value Stream Mapping visually displays the stream, showing both material and information flow (Demeter et al., 2011).

Value stream analysis identifies three types of operations (Monden, 1983):

• Value-adding (VA) operations: these operations directly contribute to those product/service characteristics that customers value.

• Necessary but non-value adding (NNVA) operations: those operations that do not create value in the above sense but are necessary for some reason. For example, certain support activities or compliance with rules and regulations.

• Non-value adding (NVA) operations, wasting. Literature mentions several types of waste (1. overproduction, 2. waiting for information, material, delivery, 3. unnecessary or excessive transport, 4. excessive, unnecessary or inappropriate activities, 5. excess stock, 6. unnecessary movement at the workplace or in between workplaces, 7. faulty/defective product, 8. poor communication, 9. unused knowledge).

Flow Principle. The flow principle means the close sequencing of value-adding steps in space and time. This makes it possible to minimise stock levels between the stages, reduces waiting time, delivery time and energy and enables early identification of defects. Its aim is to establish small- batch, if possible, one-piece flow.

Pull Principle. Based on the pull principle, at the upper stage of the process

nothing is done until there is a demand at the lower stage (customer). This reduces the amount of material and finished product stocks, and stocks between stages. Furthermore, lead time is also reduced making production planning and management more simple.

Perfection Principle. Perfect value streaming does not exist. There is always room for improvement and the application of new technologies. Continuous changes in customer demand also contribute to this. Its tools are PDCA (Plan - Do – Check - Act), standardisation, Kaizen (continuous improvement) and Kaikaku (radical improvement).

Lean approach in corporate governance. As already mentioned above, lean thinking has to appear in the work of every employee and leader for the company to become lean. In developing a lean corporate culture the role of the management is indisputable; especially, the role of the leaders, since they are responsible for their subordinates, for motivating employees to carry out efficient, effective and responsible work, and they have to take the lead and set a good example in the case of innovative initiatives (Losonci, 2011). In the present case setting an example is understood as the actual application of lean thinking.

The basic requirements from leaders are as follows:

1. Leader commitment to process development is necessary.

– Set an example in process development.

– Recognise efforts made.

– Spend time/devote energy to understand employee and process problems.

2. Become a learning organisation.

– Make improvement an ongoing task until it becomes a routine.

– Apply lean principles for all value streams and background processes.

3. Engage employees in improvement.

– They know processes and inherent problems best and have surprisingly good ideas for problem-solving.

– Increase employee satisfaction and loyalty to the company.

4. Improvement must be based on the long-term philosophy – even at the expense of short-term financial goals.

– Process development should not mean job cuts.

– Changing the corporate culture is a long-term investment.

5. Stop to remedy problems. Instead of (/Besides) quick fixes permanent solutions must be found.

– There are always problems, even if they are not overt. Encourage employees not to cover problems but to reveal them and try to find solutions as soon as possible. Leaders should reward problem-solving, if possible.

General benefits of applying the lean method. The application of the lean method gives a competitive advantage to those companies which apply this way of thinking in the production of their product/service, by way of more precise and/or cheaper satisfaction of customer needs (Womack-Jones, 2009).

More specifically:

• It reduces production times and energy used (productivity).

• It reduces investments in stocks, freeing up working capital.

• It helps identify and eliminate defects and faults thereby reducing unjustifiable costs, as well as cost of poor quality.

In summary, the focal points of the lean concept are shown in the figure below.

Fig. 3. Focuses of the lean concept
Source: own compilation

According to literature lean management greatly improves productivity; however, its corporate application is a difficult task. Although lean methods are common in production, albeit not a routine yet, they are completely unusual and full of challenges in the service sector. Lean practice has appeared not only in service provider companies, but also in the office environment, known as lean administration.

Kovács and Rendesi (2015) point out in their survey research that lean methods help crisis management as well.

Demeter and Losonci (2011) studied the relation of lean production and business and financial performance. They found that on the operative level investment in lean production practices brings returns, however, when introducing a lean system, internal operations in themselves do not bring financial results. As they explain, financial performance is subject to other factors that production management cannot influence, for example, market dynamics, the intensity of competition, or the number of new entrants. Thus, lean production in itself does not guarantee business success: it is a necessary but not sufficient condition; the continuously improving operative performance may become the basis for balanced and stable business performance.

On the other hand, there are also research results showing a relation between the lean system and business performance. Consequently, it is difficult to take a clear position when it comes to the relation of lean management and business

performance (Losonci - Borsos, 2015).

The relation of lean and accounting. The lean method and lean principles have a long way to go for economic operators until a completely lean company is born with lean management, value streams and related cost calculations. From the appearance of the lean concept to the birth of a lean company the organisation goes through several developmental stages, and with it the information need – primarily regarding the content of the required information – of decision-makers at the management levels and areas, as well as divisions, also continuously changes. Moving towards the corporate application of the lean philosophy means a shift in focus from the traditional product towards value streams. Accounting may be considered as one of the main players in the process of information provision as accounting is a practical activity which has to provide reliable and true information about the operations and the profitability and financial situation of the operator. Accounting due to its primary – in accordance with the Act on Accounting – legal force fulfils its compulsory information provision obligation in the form of an annual report system. The annual report can be interpreted as a form of financial accounting report whose form is highly standardised and is based on the application of evaluation models and methods proposed by the accounting act, to ensure same-principles-based information provision primarily for external market actors. The standardised annual report also ensures transparency. Deeper detailing of accounting information – on product, product group, project or division, etc. levels – responds to owner and leader information needs. Its form is the management report which is less standardised and not compulsory by rule of law. According to classical understanding, an organisation's obligation to prepare management reports is realised in the framework of management accounting functions. Management reports may prove to be a useful tool for providing well-structured analyses and reports related to value streams. Accounting activities and processes operate in a synchronised system thus creating the corporate accounting information system. Regarding the focus, structure and content of the information system, the accounting information system is flexible. The flexibility requirement for accounting information systems has become significant in today's rapidly changing environment, in the world of digitisation and robotisation. The spread of lean in accounting systems also requires changes. These changes call for the development of newer cost calculation methods and systems, and, at the same time, bring about changes in the content of the planning system and management reports. The focus of the lean decision-making process has shifted to, for example, profitability calculations for customer order, "make-or-buy" decisions, product rationalisation, inter-company transfer pricing, etc. areas (Sisa - Szijártó, 2018).

Lean accounting versus accounting in lean organisations. Practising experts make a distinction between lean accounting and accounting in lean organisations. Lean accounting is defined in international literature (McFay et al., 2013). Lean accounting is the application of lean tools in the area of accounting

(operations). Reducing wasting transactions and operational procedures helps avoid unjustified costs (for example, production costs of defective products, general costs of unnecessary processes), while there is more time for value-added work. The elimination of unnecessary procedures is a general objective in all areas of operation. Therefore, it is also necessary to review and rationalise accounting operational procedures in order to reduce working time taken up by carrying out administrative, repetitive and routine tasks. One way to achieve this is digitising or robotising routine-like and simple tasks, or implementing the 5S method, standardising accounting procedures (for example, in areas of registering and processing customer invoices). Accounting experts can use the freed up working time for satisfying customer demands (value-adding), thereby contributing to the fulfilment of lean principles. The starting point for developing lean accounting can be a leader decision to involve accounting employees in the application of the kaizen method, primarily to improve accounting operational procedures. By applying kaizen, accounting professionals will also have a better understanding of the essence and role of lean culture and principles so they become more motivated to apply this concept in their own – everyday – work for continuous improvement.

According to Maskell-Baggaley-Grasso financial and accounting professionals play a particularly important role in the life of lean companies. They are the active members of lean teams who must assume primary responsibility for controlling corporate performance and value streams and processes, and planning in an organisation (Maskell et al., 2011).

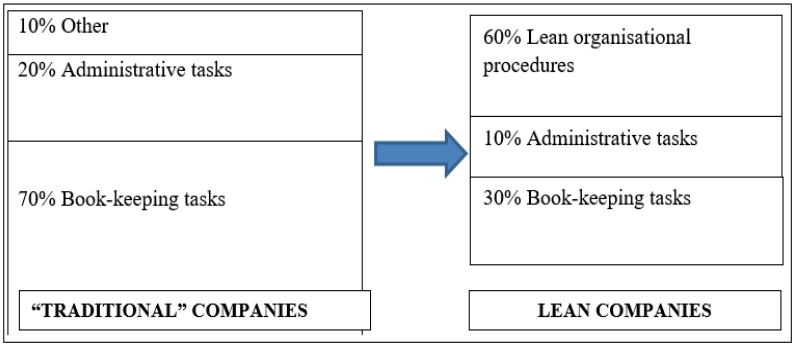

Fig. 4. Financial-accounting tasks in "traditional" and lean companies
Source: based on figure by Maskell et al. (2011, p. 105)

During the course of optimising financial-accounting procedures the following questions regularly call for an answer:

• Why is it necessary, what is the aim of the management report, accounting part of process or authorisation procedure?

• Does the report support actual decision-making processes with useful and

relevant information?

• Are established requirements and full compliance to them really necessary during the course of a transaction, or is it possible to choose a more simple way of compliance – taking the cost-benefit principle into account?

• If an authorisation process, an approval process or process step is removed or simplified, how big is the risk of an error during a transaction – does it require any preliminary risk assessment?

Why is lean accounting important? The rapidly changing economic environment, the need for communicating with the client made it necessary to develop strategies that help make key corporate processes value-adding.

Baggaley noted that traditional cost calculations do not motivate lean corporate behaviour. According to him, in the case of traditional cost management the actual production costs can only be obtained after completing complex, wasteful and confusing operations. This type of data collection system is contrary to lean thinking. Traditional cost calculations do not provide the information needed to support and motivate lean production.

According to the lean concept general costs apply to the entire value stream. Maximal profitability stems from maximal product flow through the value stream with prioritising customer needs. There is no differentiation made between direct and indirect costs; all costs of the value stream are considered direct. The cost of a certain product mainly depends on how fast it flows through the value stream. The cost calculation method of the lean approach is called Value Stream Costing (Baggaley, 2003).

The method has the ability to identify and calculate the costs of all streams adding value for the client. It is vital to determine the amount of value-adding for each process; that is mapping the value stream.

Maskell and Baggaley summarised the aims of lean accounting as follows:

• Provision of reliable and understandable information in appropriate time according to the lean concept.

• Simplification of accounting (controlling) processes using lean tools.

• Harmonisation of external and internal reports.

• Supporting the lean culture (Maskell - Baggaley, 2004).

The need for optimising accounting processes primarily appears in the case of lean company management, however, recently we have witnessed it appear among other, not lean companies as well, in process reviews and process development in several areas of operation, including administrative (finances, accounting) work. This is mostly characteristic of medium-size or large companies having a complex operational, organisational and ownership structure, in which accounting tasks (accounting of economic events, closing and reporting) are carried out by an independent organisational unit in the company.

The need for transforming the accounting system of lean companies can be justified by the reasons below:

• The transformed accounting system can support the entire lean decision-

making process with more explicit information.

• The lean focused information and statistical data from the "new" system help develop long-term lean ideas for further development, and identify strategic objectives and plans that can be continuously measured.

• Using focused information helps make the financial results of lean development and the extent of strategic expectation implementation measurable and therefore identifiable.

• It becomes possible to identify and measure customer value factors and to maximise customer value.

By implementing lean accounting, professionals have more time so they can become active participants in strategic planning and corporate brainstorming, taking up a direct role in strategic management and cost management activities, that is, value-adding. An additional advantage of their participation is employee satisfaction, loyalty and positive attitude, all of which result in the long-term maximisation of value-adding.

An outline of lean accounting processes. As the first step of the process, every accounting work element must be identified and inspected so that visible and hidden opportunities for further development can be established. In this phase a list is compiled of 'necessary and value-adding' and 'not necessary and therefore not value-adding' activities. The investigation of operations and information must be carried out with extreme caution. Analysis is needed on the type of information the accounting information must provide, to whom the information is provided, and how, with what content and structure this information is used in decision-making.

A detailed list must be drawn up about every accounting process and implemented activity.

After this, a resource needs assessment must be carried out to measure the amount and type of resources needed for accounting operations, as well as how long these resources are used during the implementation of the activity. This is followed by customer value assessment regarding every operation, including the assessment of customer value added by the operation. The customer in the present case is an actor using intra-company information. It is also inevitable to analyse the cost-effect of change, which is virtually a cost-benefit analysis. It is a reasonable expectation of development that its costs are proportional to the benefits it yields. The process ends with an action plan which details the implementation of the change.

The international literature suggests 6 successive steps for the implementation of lean accounting, as follows (Maskell et al., 2011):

Step 1 Gathering main processes and activities.

Arising questions:

• Which are the main accounting work processes?

• Which actual tasks make up a main process?

Step 2 Quantifying resource and time requirements.

Arising questions:

• Which employees perform certain activities?

• Which employees take part parallelly in the work of another department, division, or organisational unit?

• How much time (workhour) do employees spend on a certain activity?

• How frequent are certain activities?

• Besides labour, what other forms or resources are required for the implementation of activities?

• Ranking the resource demand of activities

Step 3 Customer value assessment.

Arising questions:

• Which intra-corporate actors use the information?

• Which decisions require these pieces of information?

• How is information used?

• Is information available in lean operational areas?

• Which activities do not have a lean alternative? What kind of opportunities are there for updating an activity?

Step 4 Cost-effect analysis.

Arising questions:

• Does the activity require simple changes?

• How fast can changes be implemented? At what cost?

• How many workhours do the change, development and corporate implementation of the activity require?

• Are there any additional costs related to the change? (the total cost must be calculated, including additional purchasing of equipment and software)

• What are the expected effects of the change? How does the change affect the customer (person ordering information, user)?

• How does the change affect the quality of information?

Step 5 Selection.

Arising questions:

• Which activity/activities should come first in the continuous improvement activity?

o the cheapest or the one with the fastest implementation?

o does change mean resource-saving?

o does the change affect the operations in other divisions (parallel effect)?

Step 6 Making an action plan.

Arising questions:

• Regarding the activity marked for change:

o What is the current “state” of the activity?

o What is the desired (ideal) state like?

o How can the gap between the current and the desired, ideal state be filled?

o Which professionals in the company must be involved in the change process?

o How should the change be scheduled (description of 3-6-9-12-month planned

targets)

o development of the next steps of implementation.

Conclusions and suggestions. The present study aimed at investigating a fairly new area of study. Parallel to the spread of lean management and lean philosophy, financial and accounting professionals also came across the business concept of lean companies and the essence of its corporate culture. Awareness and understanding finally gave way to the need related to accounting operations from professionals to optimise their processes. Given that accounting tasks are diverse – despite the fact that a part of the tasks can be standardised easily and simply – and resource-intensive, the question has arisen: "How to carry out tasks more efficiently without the process development reducing quality and reliability of the finished work?" The answer lies in the application of lean tools and methods in accounting operational processes, which is called lean accounting in literature. Lean tools can aid reasonable and resource-optimal operations, which ultimately leads to a more appropriate use of the capacity that was freed up, strengthening employee satisfaction, keeping employees motivated, and, after all, creating a successful working environment. The study raises further research questions concerning the application of such an efficient system in the current economic environment.

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ECONOMIC SECURITY OF ENTERPRISE'S DEVELOPMENT

Hanna Kozachenko,
Doctor of Sciences (Economics), Professor,
National Academy of Internal Affairs, Kyiv, Ukraine,
Yuriy Pogorelov,
Doctor of Sciences (Economics), Professor,
Accounting Chamber of Ukraine, Kyiv, Ukraine,
Anastasiya Bilousova,
Ph.D. in Economics,
Poltava National Polytechnic University of Yuriy Kondratyuk,
Poltava, Ukraine

Development is one of the key notions in contemporary management as it is directly related to enterprise's capacity to transit to a qualitatively new state due to certain changes in its activities. In this newer state, an enterprise gets new properties, new qualities and features which are revealing themselves through implementation of new opportunities, thus leading to the capacity to perform new functions, solve brand new tasks and in a such a way strengthen enterprise positioning in its external environment.

Enterprise development is the process, the key result of which is a certain achievement shaped as a qualitatively new state of an enterprise, while enterprise development as such is the process of objectivizing enterprise's capacity to develop. This objectivization is performed through managed changes in enterprise activities and its adaptation to unmanageable changes of various nature [1, p. 35]. For this very reason, enterprise development should be primarily studied as the process the course of which, under certain conditions, is capable to deliver an expected result - a qualitatively new state of an enterprise. In other words, the process of enterprise development is always delivery-oriented, therefore, this process must be well managed and controlled.

The very notion «result of the enterprise development process» is derivative from the notion «enterprise development process 2, thus, further we would like to investigate the contents of the latter.

Development process is seen here as a combination of changes in both external and internal environments of an enterprise, including changes happening between these environments, improving its state, its activities and the results of these activities. All these changes can be managed (performed by the enterprise itself) or unmanageable (taking place without direct participation of the enterprise itself). Managed changes are always under enterprise control, their occurrence depends on the quality of change management [3, p. 98]. In its turn, change management is predetermined by the quality of development management and some other factors.

Unmanageable changes are not controlled by the enterprise (and cannot be initiated by it), thus, the enterprise can only adapt to these changes by means of enforcing changes in its own activities, already controlled by the enterprise itself.

Result of the enterprise development process means that the enterprise, by means of imposing manageable changes and adapting to unmanageable ones, achieves its development goals. In other words, the enterprise is moving in the direction to a qualitatively new state, the complex criteria of which is restrengthened positioning of an enterprise in the external environment predetermined by its capacity to perform new functions, solve new tasks and detect new opportunities.

The result of this development process depends upon the availability of several preconditions, including: quality of the development management; economic security in the course of development; resources' provision for development; availability and efficiency of the organizational-economic mechanism of development, the latter being one of the key instruments in development management.

Among all the mentioned preconditions of the enterprise development process result, economic security is a relatively new and understudied topic.

Economic security as a precondition for resultant development of the enterprise from the standpoint of the contextual approach [4] (according to Peter Unger, it allows formulating answer to a question depending on a combination of the available conditions and circumstances [5]) is expedient to be studied from the viewpoint of defensive approach.

Defensive approach today is among the key ones in economic security studies. The imperative notions under this approach are «threat», «protection» and «security». Their joint application allows explaining the contents of the notion «economic security of enterprise development» in the following way: current absence and low probability of near- future emergence of various hindering factors to manageable changes in enterprise activities and/or of the unmanageable changes with negative consequences which are the results from threats' materialization.

Threats to enterprise development are suggested to be considered as processes, phenomena, events and situations which are taking place in external and/or internal environments of enterprise activity (which includes the behavior of external environment subjects). Such threats, under certain conditions and circumstances, are able to cause serious damages to implementation of changes in enterprise activity. As it has been noted in [6], most frequently the very notion of «threat» is interpreted using such wording as «phenomena», «event» or «act».

In relation to enterprise development most of the processes and phenomena in its internal and external environments are indifferent (neutral), or in other words – they are not directly aimed at hindering enterprise development. Such processes and phenomena emerge due to the reasons that often have absolutely no relation to the activities of not only this specific enterprise but enterprises as such. In other words, not all processes and phenomena taking place in external and internal environments of the enterprise become threats to its activity and its development, but only those

that emerge under certain, highly specific conditions.

For example, rises in hryvnya's exchange rates to USD that was observed in the 4th quarter of 2019 became an immediate threat to the activities of many exporting enterprises, however, it had hardly any influence on the activities of those enterprises that are supplying products and services to the national market only, not using imported materials, equipment or its components.

Same applies to the actions of many subjects of the external environments in relation to the enterprise: but for a few exceptions, their actions do not cause any serious damage to the activities and/or development of the enterprise. Generally speaking, actions of the external environment subjects are usually directed on satisfaction of own interests.

Conditions under which certain processes or phenomena, usually indifferent to enterprises' activities or development, may negatively influence on them should be understood as a combination of the factors of both subjective and objective nature which can:

- be formed as a logical regularity (as a result of objective processes, impacts of objective economic laws or as totally predictable consequences from the intentional actions against the enterprise);
- be of artificial nature (be formed under the influence of the regulatory policy of the state or of the interstate organizations; be formed due to the attempts to maintain ecological and/or economic balance, socialization and humanization of management; or when employees are following the visions appropriate today (homo economicus, homo socialis etc.); or when interests of the participants of various markets should be protected [7, p. 66].

When all these factors of subjective and objective nature are combined, the influence of one of them can be hindering and strengthening the influence of other factors.

Consequences from implementation of threats to enterprise development can be significantly negative: they may damage many planned changes (distorting them, making them incomplete or belated, deviating from the plan overall). This would most probably require the attraction of additional resources needed for enterprise development (noteworthy, these additional resources would be not always able to reproduce the initially planned process of development).

Threats to enterprise development (just as threats to enterprise functioning, actually) never emerge suddenly and unexpectedly (this has been explained and proved with great deal of detail in [8]). From the standpoint of the process approach, a threat is always a process which has its beginning and end, and it also had certain stages (again, this has been explained in [8]).

Enterprise development can be also considered from the standpoint of the process approach since changes in enterprise activities that are supposed to cause its transition to a qualitatively new state do not happen in one moment - they are also processes, of different scale and dynamics. Continuity of changes in enterprise

activity shape the contents of its development, and with the course of time they determine the expediency of using project approach in development management. Projects of enterprise development may be different in terms of their scale and expected results, thus, changes in the course of these projects may be combined according to various features: achieving the expected result through changes (complex projects); localization of changes (spatial projects); timing of changes' implementation (time projects); nature of changes (large-scale projects).

Therefore, the toolkit of enterprise development consists of its development strategy and the related projects of changes, while project network becomes the key instrument in its implementation.

Both enterprise development strategy and the projects of changes must be strictly personalized. In other words, the enterprise must assign the managers responsible for implementation of its development strategy and also managers responsible for the separate projects of changes. Competences of all these managers must be determined very thoroughly. At this, it is considered to be a bad practice to have the same person serving as the manager of a structural unit and as the manager in a project of changes, since their competences are very different.

In this context, we can also confirm that realization of threats to enterprise development may have the following consequences:

- full or partial non-performance of the separate projects of changes (namely, due to the so-called «chain reaction», when non-performance of one project leads to full or partial non-performance of other projects);

- serious violation of deadlines in implementation of separate projects of changes due to which project results may lose their initial value and importance.

Threats to enterprise development may be divided into general ones (those that, under certain conditions, may threaten any enterprise, regardless of its size or sector) and also specific ones (those that become probable only for the enterprises with specific types of economic activity and/or with some specific features of functioning or development).

The list of general threats to enterprise development is presented in table 1.

Threats to enterprise development need to be determined not only overall but for each project of changes. Threats of general nature should be considered together with specific threats, applicable to each of the projects of changes.

At this, managers of these projects should be fully aware of:

all potential threats to their projects' implementation;

the preconditions under which potential threats are turning into real ones;

early signs of real threats' actualization;

consequences from real threats to project implementation;

means which can be used to hinder the actualization of real threats in the course of projects' implementation along with the means to remove both causes and consequences of these threats.

Table 1

General threats to enterprise development

Threats to development	Sources of threats	Consequences from threats' realization
Loss of interest and attention on the side of top management to the already developed strategy of enterprise development	Changed ownership or top management of the enterprise. Reorganization of the enterprise form (for example, due to merger or acquisition). Changes in personal priorities of owners or top managers of the enterprise. Changed attitude to perceiving risks on the side of enterprise owners or top managers	Turning down the realization of the separate projects of changes which would eventually lead to lack of systemity in the development. Emergence of serious changes in the overall strategy of development due to changes or turndown of the separate projects of changes or due to approval of radically new projects of changes
Significant changes in the enterprise development strategy (changes in project contents, in duration and/or deadlines etc.)		
Turning down the realization of the separate projects of changes which would eventually lead to lack of systemity in the development. Emergence of serious changes in the overall strategy of development due to changes or turndown of the separate projects of changes or due to approval of radically new projects of changes	Low motivation among enterprise employees. Lack of attention and interest to enterprise employees, ignoring their interests	Underperformance of changes (not achieving the goals set for the projects of changes). Erosion of projects' contents. Violation of timing and deadlines
Loss of business partners which were expected to participate directly in the projects of changes	Disregarding the interests of business partners. Business partners' closedown for the reason not related to the enterprise itself (bankruptcy, for example). Changed priorities and vectors in the activities of business partners, due to which the latter lose interest in cooperation	Emergence of difficulties in the course of projects' implementation, which is leading to violation of timing conditions, changes in projects' contents etc. up to complete inability of their implementation. The necessity to develop new projects of changes and their implementation within the system of already available projects of changes
Significant changes in relations with business partners		
Employees' competence being insufficient for the complex projects of changes	Low quality of project management at the enterprise overall	Violation of projects; timing; their full or partial non-performance; underperformance; low efficiency in the course of projects' implementation

Low level of organizational management in the projects of changes	Lack of personalization in the course of projects' implementation; Weak communication between managers and performers of the separate projects of changes; "information noise"; incoherence of actions in the course of projects' implementation	Violation of timing terms of the projects of changes; doubling functions and operations in the course of projects' implementation; weak control over projects' settling, performance and in-process corrections; overall underperformance of the projects of changes
Changes in the external environment that are downgrading the priority of the already available development strategy of the enterprise	International conflicts, including military ones (for example, as the current ones in Crimea and Donbas); Environmental and natural catastrophes; Changes in the acting legislation, that are significantly limiting enterprise activities and force the enterprise to reconsider its development strategy overall	Abandoning the idea of implementing projects of changes (all or some of them) due to the impossibility to perform the needed actions and operations included into the project of changes; loss of expediency to perform projects of changes
Serious lack of resources to perform and finish the projects of changes	Mistakes in planning of financial provision for the projects of changes; Reconsidered contents of the projects of changes which means extra spending on their implementation	Underperformance of the projects of changes (including those that have been corrected); insufficient results from the projects of changes.

Overall management of the security-providing activities in the context of enterprise development should belong to the competence of a manager responsible for implementation of the enterprise development strategy.

Therefore, economic security is an important precondition of enterprise development. Its provision assumes constant monitoring over the potential threats to enterprise development, their prevention or at least postponing of potential threats becoming real ones, that is, prevention of their actualization. There can't be absolutely secure development of an enterprise, however, provision of its economic security in the given context is one of the key tasks of the enterprise management, and the latter is quite fully capable of solving it.

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THE CONCEPTS OF THE MECHANISM FOR ENSURING ECONOMIC SECURITY OF INNOVATION-ACTIVE ENTERPRISES

Marta Kopytko,
Doctor of Sciences (Economics), Professor,
Lviv State University of Internal Affairs, Lviv, Ukraine,
Olha Podra,
Ph.D. in Economics,
Lviv State University of Internal Affairs, Lviv, Ukraine,
Yulia Ilkiv,
Ph.D. student,
Lviv State University of Internal Affairs, Lviv, Ukraine

The innovation process is always associated with uncertainty, even in a stable economy, but under conditions of economic instability, this uncertainty is growing. Therefore, it is of particular importance to organize a process that is able to minimize this uncertainty and counteract the destabilizing factors caused by its impact on the activity of economic entities.

Innovation-active enterprises, more than other enterprises suffer from the impact of destabilizing factors, are caused by the specificity of innovative activity and its high level of riskiness.

The effective functioning of innovation-active enterprises requires the creation of an economic security system. In explaining the essence of the organization's

security system, it is advisable to follow the position of such scientists as: Laptev, V. G. Alkema, V. S. Sidak, M. I. Kopytko [1], O. V. Lokotetska [2], according to their scientific views, the enterprise security system is a set of objects, subjects of security and the mechanism of security realization, united by the common purpose and tasks of counteracting threats and promoting organization in realization of interests in the market.

Professor Alkema V. G. points out that «The primary purpose of an entity's economic security system is to prevent damage caused by theft of material and technical assets, destruction of property, leakage, disclosure or unauthorized access and use of confidential information sources, disruption of production facilities and business processes management at the enterprise, bringing the enterprise to bankruptcy, preventing damage to the personnel of the enterprise» [3].

The economic security system is aimed at performing the following functions: forecasting, detection, prevention, mitigation of dangers and threats, ensuring the security of the enterprise and its personnel, preserving property, creating a favorable competitive environment, eliminating the consequences of damage caused, etc. [3, P. 116].

The purpose of the economic security system of an innovative enterprise is:

- protection of the legal rights of the enterprise, its structural subdivisions;
- protection of the idea, process or result of the project, which is the subject of its innovation activity;
- protection of intellectual assets and intellectual property of the enterprise;
- protection and preservation of information, which is a trade secret of the enterprise;
- preservation and efficient use of all types of resources;
- elimination of possibility of receiving losses;
- ensuring safe and effective innovative, production and economic activity of the enterprise;
- enhancing the company's image and increasing its profits.

The economic security system of an innovative enterprise must answer a number of challenges, such as:

- identify and eliminate threats to the enterprise and its personnel, financial and material resources in a timely manner;
- create a reliable security mode;
- to organize and carry out protection of innovative activity of the enterprise, process and result of its projects and programs;
- to organize and carry out protection of the intellectual property of the enterprise;
- to carry out work with the staff and its training, to form «firm» patriotism and to promote in the enterprise the ideology of innovations;
- to organize interaction with state and law enforcement agencies and commercial structures whose activity is focused on the problems of ensuring the economic security of enterprises;

- create a system that maximizes the compensation and localization of damage from malicious actions of intruders and competitors.

At the same time, scientists have identified the main directions of the economic security system of an innovative enterprise, which include:

- innovative security;
- information and analytical support;
- protection of scientific and technical information;
- protection of information on the project;
- protection of intellectual property;
- protection of innovative developments and inventions;
- protection of confidential information and trade secret of the enterprise;
- security of information technologies and software;
- security and protection of access to buildings and premises;
- physical security of the owners, managers and personnel of the enterprise;
- security of communication systems and information communications;
- security of economic and contractual activity;
- safety of cargo and persons transportation;
- legal security;
- security of advertising, mass events, business meetings and negotiations;
- fire safety;
- ecological safety;
- ideological, social and psychological, preventive work among staff and his training on economic security;
- expert inspection of the security system mechanism;
- technical and technological safety;
- personnel and intellectual security;
- financial security;
- informational security;
- investment security;
- market security;
- physical security.

The investigation of the essence of the economic security system of an innovative enterprise requires an analysis of existing scientific works regarding the mechanism of management of the economic security system of innovative enterprises.

At the same time, it is necessary to investigate the concept of the mechanism and the features of its usage in economic systems. Thus, A.Yu. Chalenko proposed to consider the mechanism in the economy as a set of resources of the economic process and ways of their connection. According to the scientist, «a mechanism cannot exist without a process, as it is an integral part of it and is configured to perform only process functions» [4]. The mechanism is a way of functioning of the economic system and reflects the moment of movement, functioning.

In the system of economic security of the enterprise, scientists distinguish at

least three main types of mechanisms:

- mechanism of economic security formation;
- economic security management mechanism;
- mechanism for ensuring economic security.

Under the mechanism of economic security formation of the enterprise scientists Beloshkurskaya N. V. and Mishchenko S. P. understand the combination of goals, goals, objectives, principles, methods, functions, tools that allows to diagnose, predict and control the state of economic security to make adaptive decisions about the development of the enterprise [5] or an interconnected set of structures, tools, methods and activities that form the security of business [6].

The economic security management. Mechanism investigated in the works of Donets L. I [7], Korobchynsky O. L. [8], Poida-Nosyk N. N. [9] and others. In particular, under the economic security management mechanism of the enterprise, scientists understand the set of methods, principles, forms, methods, levers, measures associated with the process of their interaction. It is interesting mention the definition of the author Alkema V. G. [3, p. 188], he defines the economic security system management mechanism of innovative enterprises through the structures of the enterprise and security service structures, project structures and individual contractors, using the means and methods apply measures to neutralize real and potential threats and threats in the system economic security of the enterprise.

In the domestic scientific literature on the system of economic security management of the enterprise considerable attention is paid to the study and definition of the concept of the mechanism for ensuring the economic security of the enterprise, which refers to the integrated set of elements of institutional and operational influences on improving the efficiency of economic activity through the creation of safe conditions for its implementation [10].

In our opinion, the most appropriate is to use the concept of the mechanism for ensuring the economic security of the enterprise, because the level of economic security should be sufficient, but not excessive. Because a high level of economic security allows to achieve results and achieve the goals of the enterprise, and an excessive level of economic security, in most cases, leads to additional costs and, consequently, to a decrease in profitability, financial stability and other indicators of economic activity, which in turn leads to a decrease in the level of economic security.

On the base of the theoretical and methodological research, we can conclude that the mechanism for ensuring economic security of an innovative active enterprise is an integral part of the economic security system, a set of goals, objectives, methods, measures, tools, the implementation of which allows to achieve the target level of economic security, minimize the level of uncertainty and the effect of destabilizing factors in the process of innovation activity of the enterprise.

Financial, legal, innovative, technological, informational, personnel, intellectual, power, as well as methods, means and instruments of influence should be included into the basic components of the mechanism for ensuring the economic security of

an innovation-active enterprise.

In addition, scientists add to the basic components of the mechanism factors of external and internal impact on economic security; subjects of the influence: executives, managers, economists, technologists, engineering engineers; methods of influence: regulatory, financial, economic, organizational, information; tools: orders, codes, standards, grants, innovations, information portals and more.

Based on the strategic goals of the innovation-active enterprise, as well as its financial and economic status, available resources, specific options for ensuring economic security can be selected. In this way, a unique combination of measures can be developed that is able to provide a high level of protection of the economic interests of the entity, taking into account the conditions and peculiarities of functioning, environmental factors and directions of development.

The mechanism for ensuring economic security of an innovation-active enterprise involves performing a number of functions, which include:

- analytical,
- prognostic;
- information;
- warning;
- protective;
- regulating;
- control;
- stimulating;
- practical;
- ensuring.

The mechanism for ensuring the economic security of an innovation-active enterprise is characterized by the following features:

1) the mechanism is multilevel, ie implemented at the strategic, tactical and operational levels;

2) the mechanism is aimed at achieving the strategic goals of innovation-active enterprises, as well as ensuring the needs of consumers;

3) management of economic security of innovative-active enterprises occurs through the means of management (regulations, standards, type of management, state of management, etc.);

4) the object of managerial influence is the process of ensuring the economic security of innovation-active enterprises;

5) economic security is managed through the development and implementation of programs for ensuring the economic security of innovation-active enterprises;

6) the mechanism is implemented through the development of the concept and implementation of the management policy.

In addition, it should be noted that, at all stages and directions of the functioning of the proposed mechanism, monitoring should be carried out to adjust management decisions as needed.

In modern conditions of digital economy development, there is a need to minimize the level of uncertainty in the implementation of business activities by innovation-active enterprises and ensure the implementation of strategic goals and directions of development. The available approaches and methods for ensuring economic security enable each economic entity to form its own unique system of economic security, taking into account available resources, environmental factors and strategic development priorities.

A key role in the economic security system of innovative enterprises has the economic security mechanism, which is understood as a set of goals, objectives, methods, measures, tools, the implementation of which allows to achieve the target level of economic security, minimize the level of uncertainty and the effect of destabilizing factors in the process of innovation activity of the enterprise, as well as ensuring the implementation of strategic, tactical and operational goals of economic activity.

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INNOVATIVE ACTIVITY OF UKRAINIAN ENTERPRISES AND POTENTIAL OF CROSS-BORDER COOPERATION IN THE DEVELOPMENTOF ECONOMIC SECURITY

Olga Hrynkevych,
Doctor of Sciences (Economics), Associate Professor,
Ivan Franko National University of L'viv, L'viv, Ukraine,
Oleg Sorochak,
Ph.D. in Engineering, Associate Professor,
National University 'L'viv Polytechnic', L'viv, Ukraine,
Svitlana Kvak,
Assistant,
Ivan Franko National University of L'viv, L'viv, Ukraine

The transition of Ukraine's economy to an innovative model of the development in the conditions of global competition involves active international cooperation in the area of science and technology transfer. Innovative activity and scientific research require considerable investment and leads to the diversification of funding sources and the expansion of international cooperation forms, including cross-border cooperation (CBC).

Despite the number of publications on the issues of innovative cooperation there are rare researches that take into account regional peculiarities of innovative project implementation, including cross-border cooperation possibility in improving their efficiency.

The aim of the study is to justify priority areas and forms of the promotion of industrial enterprises innovative activity from the perspectives of cross-border cooperation between Ukraine and Poland. Based on this objective, it is important to solve the following tasks:

• to characterize the existing institutional and legal support of innovative activity sustaining in cross-border areas;

• to justify priority areas and objects of the innovative activity support in cross-border areas;

• to identify the main components of projects on the innovative activity support in cross-border areas.

Institutional and legal support of innovative activity sustaining in cross-border areas.

A number of foreign and domestic scientific works and legal documents are dedicated to the issue of the mechanisms and forms of innovative activity support. The Laws of Ukraine «On Innovative Activity» [11, Article 266], «On Investment Activity» [10, 1991, Article 646], «On Priority Directions of Innovative Activity in Ukraine» [14, Article 41], «On Cross-Border Cooperation» [13, Article 499] provide an organizational and legal framework of the support and development of the

innovative activity in Ukraine's economy and international cooperation in this area.

The EU 2020 Development Strategy includes the Innovation Union Target Initiative, complemented by other innovation-related initiatives such as An Industrial Policy for the Globalization Era; Digital Agenda; An Agenda for New Skills and Jobs [3]. This requires the development of new long-term policy principles, such as clarifying the limits of application and securing the rights to intellectual property objects to reduce costs when forming a network of cooperating cluster organizations; creating and coordinating government support mechanisms that are consistent with the evolutionary nature of innovative projects; removing obstacles to knowledge diffusion and licensing of innovative offerings in EU Member States.

The enhancing of cross-border cooperation opens up new possibilities for the economic activity intensification in peripheral areas and improvement of their competitiveness through the mobilization of resources and technological development. In the concept of the Euro-region «Buh» development it is stated by 2020: «We should focus joint activity on certain economic specialization and on new technology implementation. The events in cross-border dimension should include: an integrated economic promo-campaign of the Euro-region, the support of enterprise mutual cooperation, especially in the field of raw materials supply for production, the use of modern tools for maintaining cooperation between enterprises, such as platforms B2B (Business to Business), the development of economic/ investment zones and creating further incentives for doing business, including foreign investment. The mutual cooperation of institutions of business environment infrastructure is quite important, in particular so as to serve the companies interested in cooperation in the cross-border territory and to use the available potential of scientific and technological parks in order to transfer technologies» [2, 105-112].

Priority areas and objects of the innovative activity support in cross-border areas.

Identifying priority industries for innovative activities is one of the main tasks of it support. The key indicators for evaluating innovation are the following: costs of innovation in terms of sources of funding; volume of innovative products sold; number of innovative enterprises; the number of innovations implemented, by type of novelty; number of innovative processes implemented.

Consider the share of enterprises engaged in innovation in the total number of enterprises by type of economic activity for Poland and Ukraine. Chemicals, mechanical engineering are leading in the processing industry, both in Poland and Ukraine (fig. 1).

Taking into account the priority directions of international cooperation indicated in the Concept of the Euro-region «Buh» development, a promising form of their realization may be joint production of vehicles, chemical and petrochemical industry products.

One of the indicators that shows the effectiveness of the economic mechanism of stimulating innovation activity of enterprises is the share of own funds in the cost

of innovation. In our opinion, this indicator should fluctuate within 60-70 %, when the share of own funds in the cost of innovation activity is less than 60 % – this may indicate insufficient financial capacity of enterprises, and conversely, when this indicator is greater than 70 %, then it can be said that the state mechanism for support of innovation activity is not effective enough.

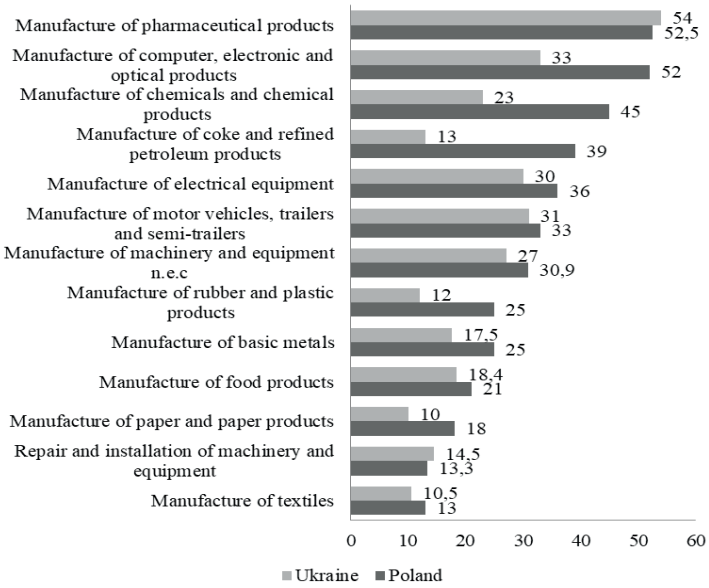

Fig. 1. Share of enterprises engaged in innovation in the total number of enterprises in terms of economic activities for Poland and Ukraine in 2018 (%)
Source: calculated by the authors using [8, 9]

As almost all financing of innovation activity in Ukraine comes from the own funds of enterprises, it can be said that the economic mechanism of support of innovation activity in Ukraine, compared to Poland, is at the stage of establishment and needs adjustment for its more effective action. In our opinion, one of the ways to solve the attraction of additional funds in innovation activities, in particular for foreign investors, is to build border clusters for promising areas of innovation (engineering and chemical industry).

The main components of projects on the innovative activity support in cross-border areas

In Subcarpathian Voivodeship (Poland) and in L'viv region, (Ukraine) there are big basic enterprises specializing in:

1) vehicle production: ATS Stahlschmidt & Maiworm SP z o.o. Stalowa Wola (production of safety belts, doors and bumpers for cars); Open Joint Stock

Company «Drohobych Chisel Plant» (production of machinery for quarrying industry and construction); Open Joint Stock Company «Drohobych Truck Crane Plant» (production of motor vehicles), rohobych, Closed Joint Stock Company «L'viv Automobile Plant» (production of motor vehicles), L'viv, TzOV [«Limited Liability Company»] «Leoni» (production of electrical equipment for engines and vehicles), Stryi, Ukraine;

2) production of chemical and petrochemical industry output: (Rafineria Jaslo SA. Jaslo (petroleum refining products), Rafineria Jedlicze S.A. Jedlicze (petroleum refining products), Stomil Sanok S.A., GK. Sanok (production of rubber items), Open Joint Stock Company «Oil Refinery Complex «Halychyna» (petroleum refining products) [4, 120].

Given the distance between the enterprises in cross-border regions specializing in vehicle production it is appropriate to form industrial parks of virtual type. The main functions of such an industrial park are the interaction and coordination of all the participants of the innovative process in the region. To support industrial parks of virtual type, state institutions and local governments should pay special attention to the main components of innovative infrastructure and professional innovative management.

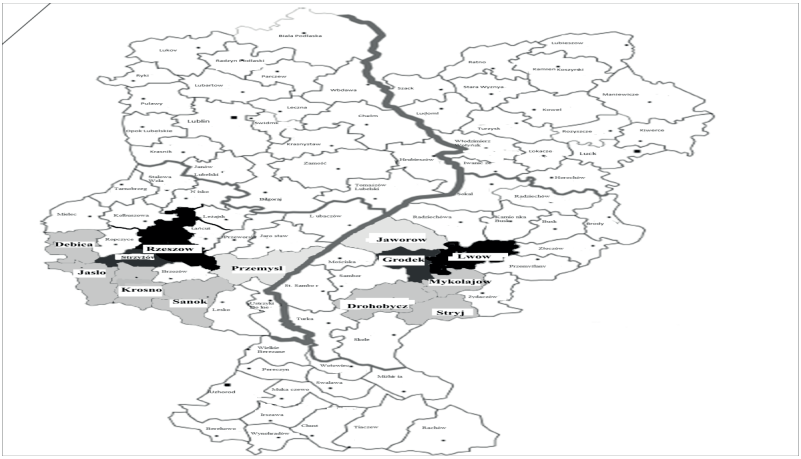

Fig. 2. Project scheme of the Ukrainian-Polish industrial park in the field of chemical and petrochemical industry
Source: developed by the authors

In view of the above described enterprise industrial specialization in

Subcarpathian Voivodeship and L'viv region and their geographical location in the cross-border area it is possible to realize an industrial park of investment type. Its territorial and organizational scheme is shown in fig. 2.

The scheme of the cross-border industrial park «Nadbuzhzhya» with project specialization in the field of chemical and petrochemical industry is shown in fig. 3.

The main components of the industrial park «Nadbuzhzhya» are: 1. Rsearch. 2. Productive and technological units. 3. Infrastructure units. Each of these units provides appropriate information, financial, organizational and legal support.

Fundamental and applied research in the field of chemical and petrochemical industry for the industrial park «Nadbuzhzhya» can be carried out by the scientists of the Faculty of Chemistry of Ivan Franko National University, L'viv Polytechnic, Rzeszow University, Rzeszow University of Technology and the Institute of Bioorganic Chemistry and Petrochemistry of the NAS of Ukraine. It is advisable to create design bureaus, research institutes and design organizations in these universities.

The main task of small and medium enterprises as part of the industrial park «Nadbuzhzhya» is to test and introduce innovation in production. The "Fund of Small Innovative Business Support" should be responsible for the financial support of such enterprises.

The basis of the industrial unit of «Nadbuzhzhya» park is big chemical and petrochemical industrial enterprises (oil refinery plants in Jaslo, Jedlicze, a plant for rubber production in Sanok, OJSC «Oil Refinery Complex «Halychyna» in Drohobych), which provide mass industrial production of innovative products. The realization of industrial park innovative production is carried out through the infrastructure unit. This unit includes insurance companies, marketing companies, exhibition centers and logistic companies. We offer to create exhibition centers in Truskavets since it is a resort town and is provided with hotel service as well as in Peremyshlyany and Yavoriv districts, logistic companies based in Horodok district and Stryzhovsk district (see fig. 2).

The infrastructure unit shall transfer data on customers' wishes to the unit of industrial park information support for making decisions on improving innovative products.

Consider the goals of the individuals interested in the creation of the industrial park «Nadbuzhzhya».

The objectives of the Universities (Ivan Franko National University, L'viv Polytechnic, Rzeszów University, Rzeszow University of Technology) are as follows:

- direct connection between science and production;
- the sharing of new technologies, accelerating the process of commercialization of research;
- increase in staff's knowledge and skills through training, retraining and skill development.

The objectives of the participation of small and medium enterprises-residents in the industrial park are as follows:

• ensuring stable business development with strategic business partners;

• availability of production facilities, technologies, infrastructure, intellectual property, «know-how»;

• creating favorable conditions for sustainable, long-term business relationships with industrial park members;

• reduction in production costs due to the territorial localization of the most of industrial park business entities;

• employment of qualified staff of large industrial park enterprises.

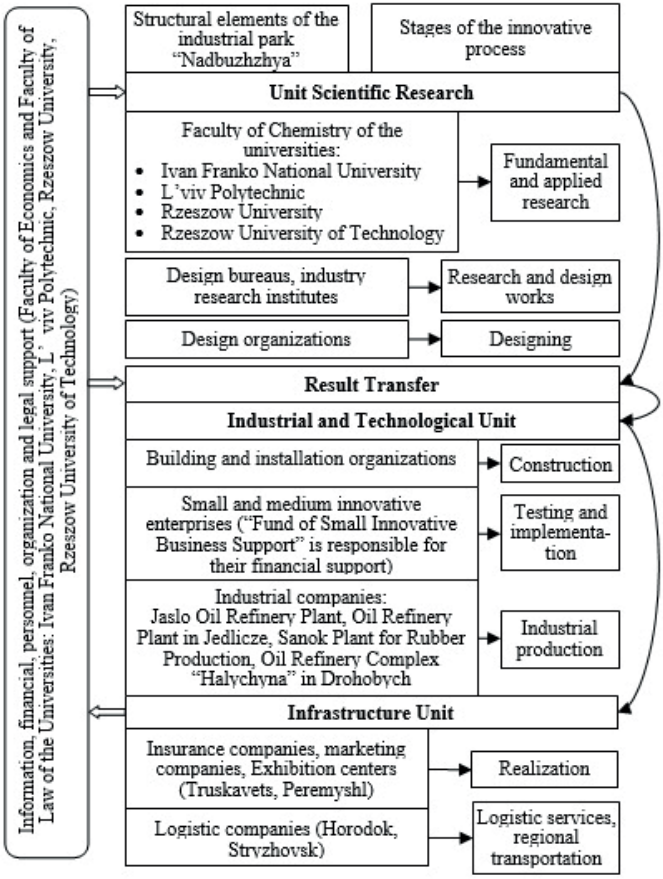

Fig. 3. Scheme of the cross-border industrial park «Nadbuzhzhya»
Source: developed by the authors

The objectives of basic (parent) enterprises (oil refinery plants in Jaslo, Jedlicze, a rubber production plant in Sanok, OJSC «Oil Refinery Complex «Halychyna» in

Drohobych) are as follows:

- focus on key areas of development for increasing added value;
- saving capital expenditures in connection with the release of non-core industries;
- reduction in current production costs;
- increase in production capacity and flexibility;
- simplifying a management system to speed up decisions.

The aim of the territorial community (regional authorities: L'viv and Subcarpathian ones) is as follows:

- increased employment by creating jobs for highly skilled professionals and graduates that affects the area's welfare;
- increase revenues to the budget;
- infrastructure development;
- influx of domestic and foreign investment.

The main advantages of the cross-border cooperation of L'viv region (Ukraine) and Subcarpathian Voivodeship (Poland) lie in the fact that within the association it is offered to build a range of modern infrastructural facilities − from a transport terminal and border industrial park organizations to an international airport. The project opens up a number of possibilities for Ukraine, for example, the membership in the Association of European regions and funding by EU funds for a number of joint with Subcarpathian and Lublin Voivodeship programs [6, 480].

In addition, the creation of similar industrial parks is important for L'viv region for the development of the depressed areas that directly border with Poland.

The main idea of the industrial park «Nadbuzhzhya» is to create specialized clusters: Cluster A (centered in Drohobych and Krosno) may specialize in the manufacture and export of innovative chemical and petrochemical industry products. Cluster B (with the center in the form of a fairground at the border) should focus on marketing, insurance services, as well as exhibitions and e-commerce; Cluster C (centered in Stryzhovsk and Horodok) − on logistic services and regional transportation.

In the international practice, there are many successful examples of industrial enterprise merging in so-called clusters. In Italy there is the most advanced cluster system. Over the past 50 years a powerful branched cluster model of the economy has been created there. The model of a network system, in which there is a support mechanism between clusters based on the study of innovative, cooperative and organizational links between enterprises, has been formed in the country. Austria, having examined first the possibilities of each region has built nearly a whole sector of the innovative economy on a cluster model. Developed cluster systems operate in Hungary, Poland and Romania. For example, in Gdansk (Poland) the cluster, which deals with biotechnology, computerization, electronics and telecommunications, involves about 60 companies [1, 504].

The clustering of an innovative system is the transition from supporting individual companies and organizations, leading scientific research to the support of the development of interconnected clusters simultaneously running the state science

and technological and innovative policy. Therefore, a state innovative policy should be based not on some «isolated» enterprises and institutions, but on involving them into clusters (networks). Thus, a cluster system is designed to interact with public research institutions, universities, industry and business.

The study gives reasons for the following conclusions.

1. The most promising sectors in Ukraine's innovative activity are engineering, chemical and petrochemical industries. The development of information infrastructure and professional innovative management is a key element of the innovative infrastructure, which needs public support.

2. On the basis of the enterprises in Subcarpathian Voivodeship and L'viv region, which specialize in the production of chemical and petrochemical industry items, it is reasonable to develop and implement a project of the industrial park of investment type. The main activity of the industrial park can be aimed at financing various stages of innovative projects, searching for sources of innovative funding and helping in developing investment projects.

3. The international experience demonstrates the increased efficiency of state innovative policy that is oriented to the support of a cluster model of the innovative economy.

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APPROACHES TO THE FINANCIAL COMPONENT MODELING OF BUSINESSES ECONOMIC SECURITY

Natalia Yakimenko-Tereschenko,
Doctor of Sciences (Economics), Professor,
Nataliia Poberezhna,
Ph.D. in Economics, Associate Professor,
National Technical University 'Kharkiv Polytechnic Institute',
Kharkiv, Ukraine
Kateryna Diachenko,
Senior Lecturer,
Kharkiv Institute of Trade and Economics of Kyiv National University of Trade and Economics, Kharkiv, Ukraine,
Viktoriia Aleksandrov,
Senior Lecturer,
National Technical University 'Kharkiv Polytechnic Institute',
Kharkiv, Ukraine

Today, the dynamic development of social life causes permanent changes in economic processes, which most often occur in conditions of increasing volatility and risk in the operation of different businesses, construction, in particular.

Contemporary threats can affect the level of construction efficiency, its competitiveness, the rational use of all types of resources, ensuring a high level of profitability, solvency and financial sustainability.

All this determines the urgent need for research and modeling of the financial component, as dominant in the economic security of construction businesses taking

into account their industry-specific character [1].

The economic content of finance in construction, as well as the functions and basic principles of their organization are similar to those existing in industry and other sectors of the economy.

However, there is a specificity in the finance management, due to the technical and economic features of the industry, namely:

1. Construction production is characterized by a longer production cycle, which affects the volume of work in progress, covered by working capital.

Therefore, work in progress has a large relative share in the structure of working capital.

2. The construction of the facilities is carried out in different climatic and territorial zones, which is telling on their individual cost and leads to uneven receipt of proceeds from the delivery of completed works to the customer.

3. Financing of construction is carried out within the estimated cost, which is established on the basis of construction contracts with customers, as well as contracts concluded with material and technical resources suppliers [2-5].

4. The nature of the construction works causes a different degree of materials consumption and complexity of the work performed in specific construction periods, which determines the uneven demand for working capital. For example, the beginning of construction requires large material costs, and finishing works reduce material consumption while increasing labor costs.

5. Due to the heterogeneity and different nature of the costs required for the objects under construction, the price is determined on individual basis. The estimated cost of construction includes direct, overhead costs and planned savings. This order of pricing determines the normative method of profit planning.

Normally, the construction process consists of several steps: exploration, development and approval of construction budget; implementation of construction and assembly works. All stages are performed by specialized organizations. Financing is carried out for the account of customers [6-7].

Construction funds include:

- the customer funds;
- construction companies funds;
- planning organizations funds;
- geological exploration organizations.

The construction of a specific object is carried out on a contractual basis to order of another organization (the investor) and for his account, and the presence of work in progress is covered by means of a construction organization.

The finances of the investor represent a set of funds intended to cover expenditures in the newly created, reconstructed, updated and modernized fixed assets and for the vesting of the newly created and expanding production with current assets.

The sources of their formation are: sinking fund; the portion of the profit from core activity; long-term bank loans; budgetary allocations; tax investment credit, etc.

Finance contractors are formed mainly, in the dame way as finances of industrial enterprises, however, their organization is carried out influenced by the specifics of construction industry production and commercial cycle.

The efficiency of contracting organizations financial management is affected by the duration of the production cycle, and in addition, the need to hand over a construction object to a customer in accordance with the established legislation. As a rule, the signing of acceptance certificate is preceded by the faults removal process, which, in turn, requires time and financial resources, whereas the facility construction is deemed completed. In addition, usually a fairly long warranty period is established during which the contractor is obliged to eliminate deficiencies identified in the process of the facility operation [8].

One of the most important features of contractors finance is unevenness in the flow of revenue, which is the main source of formation of own capital which is related to the duration of the production cycle and uneven requirements for working capital, which is characterized by different labor content and material consumption of works carried out at different stages of construction.

Considering the structure of the balance of the Ukrainian construction enterprises, the peculiarities of the structure of their assets is revealed, with assets high proportion in current assets (about 60 %).

Such ratio of current and non-current assets is also characteristic for the agricultural sector.

So the author of work [9] calls the reasons for such assets structure in construction businesses:

- high level of accounts receivable caused by prolonged period of the construction objects erection;
- high level of material resources;
- high level of fixed assets depreciation etc.

It should also be noted that settlements and monetary funds make a significant portion of contractors working capital. Working capital structure has no finished products, due to technical and economic characteristics of capital construction.The need for working capital is determined by valuation methods used in the industry, taking into account the specifics of construction companies.

Financial result (profit or loss) of construction organization includes financial result from objects handover to the customer, works and services stipulated by the agreements, selling fixed assets, other property of the organization, products and services of subsidiary and auxiliary productions that are the property of a construction company, and income from post-marketing operations, reduced by the sum of costs spent for them.

Working capital in construction companies are characterized by a long turnover. This feature is reflected in the fact that the funds turnover in contracting construction organizations ends in proportion to handover to the customer completed construction works. Depends on the form of payments for construction products.

In this regard, there is a large proportion of advance payments from customers and bank loans. Usually, construction contracts provide for advance payments to construction organizations. Loans are mainly issued upon the corresponding security, to a lesser extent – for a finished construction object.

This provision enables us to justify the importance and relevance of reporting the advance payments received by a construction business when modeling financial level of their economic security.

With the aim of clear understanding of the financial and economic mechanisms of the impact of advance payments received for the economic security, consider the principle they are recognized in the financial reporting of construction companies.

Methodological principles of data formation on revenues and costs in contractors accounting are associated with performance of construction contracts, and disclosure of this information in financial reporting determines the Provision (standard) of financial accounting 18 'Construction contracts'.

Advance payments under the construction contract – monetary funds or other assets received by contractor as payment for work performed under the construction contract [3].

Thus, upon receipt of an advance payment by the construction company from customer (investor), in accordance with the provisions of accounting, accounts payable occurs, which is recognized in the liability side of the balance-sheet, which, in accordance with accepted methods of financial analysis leads to an increase of borrowings in the capital structure of the business and, as a consequence, downfall of financial stability, liquidity, and solvency indicators. At the same time, according to the definition of advance payment under a construction contract, the amount of working assets of a business, including the most liquid assets – monetary funds, increases, which, in turn, has a positive impact on the financial indicators and, as a consequence, on the financial and economic security of a construction business.

Understanding this situation requires a study of the impact produced by the amount of advance payments received by the construction business, on the financial security indicators.

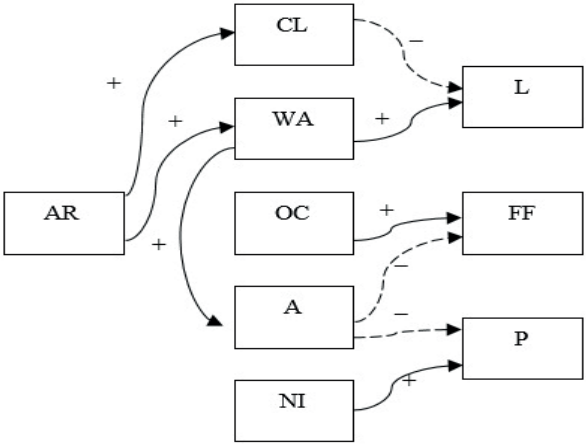
Table 1

Technique to calculate the components of Construction Businesses Economic Security (CBES) financial level

The level of construction business financial security	Indicator	Calculation formula
Short-term financial solvency	Current liquidity factor	(working assets)/ (current liabilities)
Long-term financial solvency	Equity-assets ratio	(own capital)/ assets
Cost effectiveness	Return on assets (ROA)	(net income)/ assets

For the study we selected the indicators used in the financial stability and economic security of enterprises analysis (table 1).

Here we provide a graphical representation of certain relationships of capital advanced by customers to construction companies and indicators of their economic security financial level (fig. 1).



Legend:
AR – advance payment received;
CL – current liabilities;
WA – working assets;
OC – own capital;
A – assets;
NI – net income;
L – liquidity level;
FF – financial firmness level;
P – level of profitability.
+ positive factor influence
– negative factor influence

Fig. 1. Here we provide a graphical representation of certain relationships of capital advanced by customers to construction companies and indicators of their economic security financial level

Compiled by authors [10]

We investigate the dependence of each of the considered components of the CBES financial level on the value of advance payments received by a company.

The output data for the study obtained from the annual reports of thirty-five construction companies are presented in table 2.

Table 2

Output data for the study of the dependence of the components of the CBES financial level on the value of advance payments received

No. seriatim	Advance payments received	Short-term financial solvency	Long-term financial solvency	Cost effectiveness
1	51,410	0.883042	0.15354	1.815808
2	181	1.281567	0.533434	3.740216
3	21,071	1.412243	0.35127	1.650019
4	970	1.699515	0.518646	4.9198
5	3,510	1.205607	0.392776	3.495908
6	593	1.45181	0.502633	6.914739
7	12,492	1.506633	0.452442	3.234227
8	37,144	0.823619	0.288706	3.159485
9	18,950	1.395784	0.294434	3.688979
10	1,726	1.21154	0.525643	6.171143
11	573	1.608773	0.414668	3.720853
12	573	1.601843	0.328459	5.492051
13	360	1.453396	0.443534	4.959194
14	32	1.819444	0.33912	8.333333
15	68,365	0.967382	0.055578	2.135914
16	39,553	0.670256	0.259393	2.3689
17	27,260	1.158335	0.371645	1.282256
18	1,274	1.444726	0.304389	5.144911
19	7,217	1.706894	0.425741	3.777218
20	1,191	2.157891	0.713613	2.6105
21	166	1.915775	0.33667	7.8886
22	62	1.572939	0.331996	5.57041
23	52,572	0.716061	0.228733	1.270392
24	17,006	0.9219	0.318514	2.102656
25	5,228	1.258177	0.377689	4.88763
26	1,031	2.372909	0.704612	5.0406
27	126	1.679754	0.321768	2.3635
28	6,297	1.244397	0.455877	4.60996
29	202	1.967734	0.407952	5.947938
30	20	1.470297	0.379668	3.331784
31	72,867	0.760144	0.198674	0.442986
32	28,017	0.818883	0.173562	2.630865

33	10,989	1.422679	0.351393	4.410493
34	1,282	2.034858	0.715544	7.9536
35	7,583	1.424534	0.381136	2.504938

**Compiled by authors based on SMIDA data*

On the basis of the output data of selected components of the financial level of construction businesses economic security (CBES), we construct the theoretical dependencies of each of them on the amount of advance payments received (fig. 2).

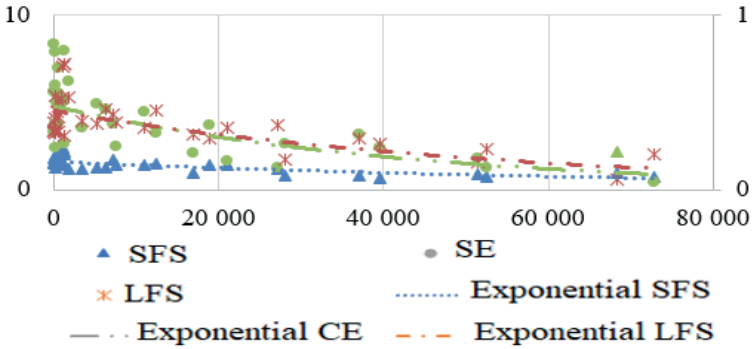


Fig. 2. Field of correlation of short-, long-term solvency, financial efficiency and advance payments received

The results of the theoretical representation of the dependence of indicators selected for research, on the advance payments received for construction businesses will be presented in the summary table. 3 [10].

Table 3

Theoretical dependencies of CBES financial level

Indices of CBES financial level	Determination factor, R^2	Theoretical dependence, f(r)
Short-term financial solvency (SFS)	0.6255	$x(r) = 1.5943e^{-1E-05r}$
Long-term financial solvency (LFS)	0.6123	$y(r) = 0.4516e^{-2E-05r}$
Cost effectiveness (CE)	0.605	$z(r) = 4.7719e^{-2E-05r}$

The results obtained allow to proceed directly to the modeling of the financial level of economic security of construction businesses, taking into account their inherent financing specifics.

For the study of the financial level of EBPS we apply methods of differential calculus, which study the theory and methods of solving equations containing the

desired function and its derivatives of different orders of one argument (ordinary differential) or several arguments (differential equations in private derivatives).

Thus the equation contains not only an unknown function, but also its various derivatives. In solving this problem we will use the differential equation in partial derivatives.

We will consider the financial level of the CBES as a complex function f = f (x, y, z) defined in the open domain Ω, with each of the variables x, y, z being a function of the variable r. In accordance with the indicators of the CBES financial level, presented systemic interaction, we introduce the notation:

x – short-term solvency of a construction business;

y – long-term solvency of a construction business;

z – financial efficiency of a construction business;

r – advances received by the construction company from the customer.

In this case: x = x (r); y = y (r); z = z (r), that is, the function f is a function of the variable r, so f is a complex function of the argument r.

Thus, the proposed approach allows to present a model of the CBES financial level, allows to make a differential equation using the formula of a complex function full derivative:

$$\frac{df}{dr} = \frac{\partial f}{\partial x} \cdot \frac{dx}{dr} + \frac{\partial f}{\partial y} \cdot \frac{dy}{dr} + \frac{\partial f}{\partial z} \cdot \frac{dz}{dr}$$

In the presented expression (1):

$\frac{\partial f}{\partial x}, \frac{\partial f}{\partial y}, \frac{\partial f}{\partial z}$ – partial derivatives of the function f = f (x, y, z);

$\frac{dx}{dr}, \frac{dy}{dr}, \frac{dz}{dr}$ – derivatives of the theoretical dependencies of the financial level components of the CBES on advance payments received (table. 3) [10].

Substituting the data into expression 1 and making the calculations, we obtain a differential equation, the solution of which will allow to determine a function that describes the impact of the advance payments received by the construction business on the CBES financial level.

Thus, a private solution of equation 2 is obtained:

$$f = 0{,}41659 \cdot e^{-10^{-5}r} + 0.117597 \cdot e^{-2 \cdot 10^{-5}r} + 2.37116 \cdot e^{-2 \cdot 10^{-5}r} - 1{,}90535$$

In fig.3 a graph of the EBPS financial level dependence on the advance payments value received by a business.

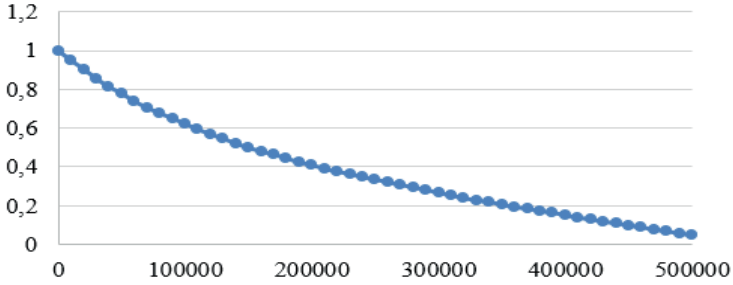


Fig. 3. Functional dependence of the EBPS financial level on the amount of advance payments received

The study results of construction businesses finance peculiarities, presented in this section, sufficiently reveal the financial specifics of the construction industry.

Thus, the obtained functional dependence allows to conclude that the growth of capital advanced to a construction business, leads to a decrease in its financial stability from the point of view of financial analysis, and as a consequence, reduces the overall level of EBPS while adversely affecting its financial component.

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CURRENT THINKING ON NEW APPROACHES TO THE ESSENCE OF ECONOMIC SECURITY OF THE COMPANY

Ludmila Berezina,
Doctor of Sciences (Economics), Professor,
Nelia Volkova,
Ph.D. in Economics, Senior lecturer,
Bohdan Bratanov,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

The usefulness of ensuring the economic security of any company dictates the objective necessity to fulfill the tasks of ensuring the stability of functioning and achievement the basic goals of activity for each economic entity. The economic crisis has increased the impact of dangers and threats on the activity of all companies in these difficult conditions that have developed in the Ukrainian economy. The issue of ensuring the economic security of the company is acute because the ability of any enterprise to develop steadily and carry out effective economic activity is determined by the stability of its financial condition, the efficiency of economic activity, as well as the ability to stand up to internal and external negative factors. Ensuring these basic principles of enterprise activity will allow the Ukrainian economy to get out of the systemic crisis and fallow the road of social and economic development.

The notion of «economic security» as an independent entity is quite new. It is integrally and thoroughly researched by modern scientists at the macro level, mainly in the system of general categories. It is about national security or economic security of the country. A comprehensive study of the essence of the notion «economic security» as an independent object of management at the level of business entities in modern literature has not been sufficiently investigated. It is identified only as one of the elements of enterprise security.

The necessity for a comprehensive approach to the formation of economic security of the enterprise determines its allocation to an independent management unit in the overall system of financial management. This approach protects economic interests of the enterprise in the development process. In this regard, there is a need to study carefully the essence of the notion «economic security of

the enterprise». There is a need for identifying its most characteristic features as an object of management.

Modern scientists interpret the notion of «economic security» as the condition of the most efficient usage of resources of the company, also as a measure of harmonization of its interests in time and space or as a condition of protection against external and internal threats [1]. So, we may say about the absence of a clear and precise definition of the term «economic security of the enterprise». Scientists study various factors that affect the economic security of the enterprise depending on the explanation of this category.

It is characterized by both qualitative and quantitative indicators, which are directly dependent on the ability of top management and profile specialists of the company to respond adequately and effectively to possible threats and quickly eliminate the harmful effects of negative components of the external and internal environment of the company.

Economic security and its criteria are quite versatile in researches concerning economic security. Therefore a generally accepted definition of this notion is not available yet.

So, O. A. Grunin understands the economic security of the company as a condition of an entity that uses corporate resources most effectively and can mitigate, prevent or protect itself against the existing dangers or threats or unforeseen circumstances and is capable to achieve business goals at a moment of competition and economic risk [2].

According to E. A. Oleynikov, economic security of the enterprise is a condition of the most efficient usage of available resources in order to overcome threats and ensure the stable functioning of the enterprise at present and in the future [3].

There are many other variants of definitions of «economic security». They are characterized by their diversification and a wide range of usage which have a relation to international relationships, sociology, jurisprudence, etc. At the same time, almost all domestic researchers use such categories as «threat», «priorities», «economic security criteria» and their «limit values».

Given an in-depth analysis of the proposed definitions of the economic security of the enterprise, it can be underlined that the scientific literature still lacks a common and consolidated view on the notion of the economic security of the enterprise. However, it is possible to distinguish some specifics and approaches to the definition of «economic security of the enterprise». According to these peculiarities the purpose of creation and basic methods of operation of the system of economic security of the enterprise may change (table 1).

Modern security theory interprets the essence of economic security in terms of several approaches, such as: protective, financial, sustainable, informative, resourcing and functional, competitive and harmonizing. Some approaches are still at the stage of formation, others have their own positions in the enterprise security system (protective, resourcing and functional, harmonizing).

At the same time, approaches to the understanding of the category «economic

security of the enterprise» do not contradict or compete with each other.

Table 1

The aim of creation and functioning of the system of economic security of the company in accordance with the approaches of its understanding

The name of the approach	The essence of the approach	The purpose of creating and functioning of the economic security system
Resourcing and Functional approach	Enterprise development that is achieved through the efficient usage of corporate resources by functional components	Ensuring stable functioning and development of the enterprise, preventing internal and external negative threats
Protective approach	Preventing the negative impact of the environment and protecting the economic interests of the enterprise	Counteracting the negative impact of the environment Protection of the enterprise from threats of the internal environment
A sustainable approach	The ability of an enterprise to have a balance and sustainability as an economic system	Ensuring stability, independence, ability to progress in the conditions of destabilizing factors
Competitive approach	The competitive advantages as the main condition for ensuring the economic security of the company	Advantages that guarantee the possibility of existence and development in a competitive environment
Harmonizing approach	Harmonization of the interests of the company with the interests of the environment	The economic interests and their protection in interaction with the external environment
Financial approach	The ability of the company to provide the realization of financial interests	Increasing financial stability of the company, protecting its commercial interests from the impact of negative market processes
Informative approach	Keeping business secrets	Data protection

Based on [4, 14]

They do not substitute each other and are not analogues of other ones. Each of them is a synthesis of the point of views of a certain area of economic security and has a number of special advantages and disadvantages [5].

Kozachenko V.G. and Adamenko T.M. understand the lack of rivalry in approaches to understanding the definition of «economic security» because of the fact that each approach uses the interpretation of the essence due to the concept which is based on the categorical and conceptual apparatus, the so-called «imperative concept» [4].

The imperative notion of the approach to understanding the essence of the economic security of the enterprise is a starting point for other concepts of a specific

approach that complements it, reveals its content more fully and clarifies its purpose.

Among other things, the concept of «threat» is compulsory in the defensive approach, «resource efficiency» is the basis principle of the resourcing and functional concept, «business interest» is important in the harmonizing one and 'competitiveness' is basis in the competitive concept.

The protective approach most fully reflects the main essence of the economic security of the enterprise, that means protection against the negative impacts that may occur in all areas of its activity, at the same time, supporters of the protective approach do not take into account the following characteristics in this interpretation: efficiency of the activity, as the main goal of creation and existence of the enterprise ; prospect – the condition of the object at the present time is under study; the influence of the environment takes into account indirectly.

L.E. Shulzhenko underlines that the key position belongs to the concept of «ability» in the interpretation of the concept of «security», which needs more consideration in the economic security of the enterprise [5]. D.P. Pilova defined the economic security of an enterprise as its ability to resist the combined impact of threats to the macro- and microenvironment in order to achieve its strategic goal in all activities [6].

The economic security of the enterprise in accordance with this approach can be considered as:

- the condition of protection of the main interests of the enterprise from the available and possible dangers or economic threats;
- the protection of its productive potential from direct or indirect threats;
- the protection of its activities from the negative impact of the environment, as well as the ability to respond in a proper way to a variety of threats or adapt to existing conditions;
- the protection from the negative impact of internal and external factors: social, economic, environmental, legal and force [7, 8, 9, 10].

The main principle of harmonizing approach is the dependence of the interests of the enterprise on the interests of the environment. A group of economists led by V. Gusev define «economic security» as the current state of efficient usage of resources and the existing market advantages of the enterprise, which contribute to the prevention of internal and external threats, ensure long-term survival and sustainable development in the market in accordance with a chosen mission [13]. That is why, the economic security of an enterprise is understood as a measure of harmonization of the economic interests of the enterprise in time and space with the interests of environmental stakeholders [15].

A common disadvantage of a harmonizing approach is that orientation towards the external environment significantly negates the impact of the internal condition of the enterprise on its economic security. Moreover, it should be emphasized that the focus on the external environment is a determining factor for the functioning of business in a market economy.

Resourcing and functional approach to the study of economic security can be considered as a quite popular one in the scientific literature. The following functional components of the enterprise are traditionally considered: technical, technological, financial, legal, environmental, personnel, informative, power. However, there is often a combination of resourcing and functional approach with active one, where the economic security of an enterprise is shown as:

- a state where external and internal threats can be prevented with the most rational usage of resources and existing market opportunities; ensure the viability and sustainable development of the enterprise in the market in accordance with the chosen mission;
- a state when the avoidance, mitigation or localization of threats and dangers are possible with the most efficient using of resources, and, as a result, the entire enterprise realizes own goals in competitive conditions;
- a state of corporative and productive resources (financial, personnel, informative, technological, technical) and entrepreneurial opportunities, where they will be most rationally used for the effective functioning, dynamic, scientific, technological and social development, confronting and preventing internal and external threats [1, 10, 12].

The main disadvantage of these approaches is the complexity of their usage in the activities of domestic enterprises at the present stage of their development.

In addition to all approaches above that characterize the level of economic security, some experts recommend the use systematic, integrated, strategic, sustainable approaches that have not got theoretical substantiation and wide practical application yet.

All approaches above are closely intertwined. None of them can be called inclusive and perfect. Each next scientist adds own refinements to the existing characteristics, but the common idea from all definitions is the following: maintaining the enterprise in the condition of economic security is the main prerequisite for sustainable business development.

The final choice about the usage of this or that approach or its individual components rests with each enterprise and depends on such factors as the size of the enterprise, its activities, owner's ambitions and many more.

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ORGANIZATION OF BUDGETARY MANAGEMENT IN CONDITIONS OF PROVIDING FINANCIAL DECENTRALIZATION IN UKRAINE

Oleksii Tomilin,
Doctor of Sciences (Economics), Associate Professor,
Juliia Glushchenko,
Ph.D. in Economics, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine

Decentralization in decision-making promotes territorial development, and fiscal decentralization promotes revenue mobilization and public service delivery. Therefore, it is important to take into account the experience of functioning of foreign countries when constructing a decentralized budget model in Ukraine. The

main principles of which are responsibility, efficiency and openness, which contributes to the improvement of the division of powers, optimization of revenue mobilization and regulation of the state credit system [1].The development of financial decentralization implemented in Ukraine requires the provision of a full and effective mechanism for managing budget resources at all stages of the budget process, and especially in the context of regulating the system of intergovernmental budgetary relations and financial equalization. Scientists believe that: «… Being closely connected with the organization of the government system, decentralization is a factor in building fruitful relations between the central government and local governments» [2, p. 158]. In the context of financial decentralization, the issue of financial autonomy on the ground, that is, the right to free ownership and disposition of financial resources to perform functions and powers, is sharply raised. In particular, the approximation of financial resources directly to the consumers of services, ensuring the efficiency of management through the selection of the most needed with the optimal price under the direct control of the community. Experts dealing with decentralization state that: «… today there are contradictions and conflicts of interest between the interest of local development actors and the actual competence of the executive and local self-government bodies, the satisfaction of the territorial community in their management services and quality ...» [3]. An effective step along this path will be to expand the functions of local governments, delegate authority and increase responsibility for the use of budgetary resources. The organization of the budget process should be carried out on the basis of the provisions on the functioning of public finances: «… it is necessary to spend no more quantitatively, but more effectively and closer to taxpayers and consumers of financed public services...» [4, p. 5]. Such an approach, in our opinion, will contribute to solving key issues of economic development of the territories, completeness and ensuring the financing of budgets, social standards, quality of service delivery. Undoubtedly, the priority at the same time is measures to activate the development of the economy and its shadowing, reduce the tax burden, introduce mechanisms of interaction between government, community and business. In the context of this study, considering different scientific approaches to the essence of the category «budget management» we managed to form his own interpretation, which is interpreted as: «a complex of means, procedures, methods, techniques for managing budget funds in the budget process of the state». Based on the formulated essence, the main task in the implementation of budget management, we see the achievement of efficiency, radically and efficiency of managing budget funds. Its implementation is directly entrusted to the budgetary management bodies-legislative and executive authorities, operational budgetary management and non-financial bodies. Therefore, the executive consciousness of the participants in the process must consist in the ability to make promising, optimal and competent decisions at every stage of budget management: planning, execution, accounting and control over budget execution. While researching the structure of budgetary management,

it is worth noting the importance of each, but we believe that priority should still be given to budgetary planning, as the main component of financial planning, which actively participates in the distribution and redistribution of gross domestic product between budgets of different levels and aims at ensuring complexity, priority, rationality, unity, realistic and validity of budget estimates. Practice shows that the inconsistency and imperfection of certain legal acts and methodology of providing medium-term and program-targeted budgeting reduces the rationality and efficiency of the functioning of the state budget system. The increase in commitments and financing, mainly through intergovernmental transfers, has transformed them from a regulatory instrument into a source of financing. This situation forces to find out the causes and take measures on the fundamental changes in the choice of vectors for the development of the budget system. Conclusions of the Strategy for the Reform of the Public Financial Management System for 2017-2020 revealed that inefficient management of public finances is mainly due to the low level of satisfaction of the needs of the population and a considerable amount of public expenditures (about 43,2 % of GDP in 2015) [5]. An uncoordinated medium-term state policy adversely affects the level of effectiveness of the program-target method and investment processes in the country. The gaps in the targeting method are the unpredictable risks of using budget funds, the ramifications, duplication and underfunding of budget programs [6]. Considering these problematic aspects, the main directions of the budgetary policy for 2019–2021 are: «… improving budget planning tools, strengthening the financial capacity of local budgets, improving the efficiency and effectiveness of using budget resources, and creating a two-tier system of intergovernmental budgetary relations…» [7]. The implementation of these provisions will be implemented through the introduction of program-targeted budgeting at the level of local budgets, expanding the tax base of revenues of local budgets, equalizing their tax capacity, expanding the geography of direct relationships of local budgets with the state (continued creation of OGT), decentralization of budgetary powers. Currently, in mid-2019 and fully into 2020, the process of introducing mid-term planning at the local level begins, leading to an increase in the number of stages [8]. The forecast of local budgets is planned to be made on the whole, by basic indicators, income, development priorities, investment programs, debt and budget liquidity, intergovernmental relations (paragraph 3, subparagraph 2, point 49 of section VI «Final and transitional provisions») [9]. When implementing medium-term planning, it is important to take into account the particular circumstances of the impact of inflationary processes and the elements of destabilization, which may adversely affect the implementation of the strategy plan. In addition, there are risks of deterioration of budgetary discipline, low levels of competence and responsibility of participants in the budget process. A distinction should be made between the budgetary authority over the medium term. This process should be accompanied by the consolidation of national taxes and the reformation of the principles of a development management system that will allow

the formation of financially able communities capable of self-realization and active position. The basics of strategic planning are defined by the Budget Declaration, in particular, the limits of the budget deficit, strategic directions of development and the amount of budget expenditures by the main spending units. The peculiarity of strategic planning is the refinement of budget programs for the next period without significant changes, promulgation of the results of their evaluation, which characterizes transparency, anti-corruption of the budget (use of systems: «E-Data», «Openbudget»). These are changes recommended by the European Commission under the new fiscal conditions, accounting procedure, security system and sanctions [9]. The next steps will be: ensuring long-term planning; security and limitation of public expenditures; detailed forecast and analysis of income; introduction of fiscal and corrective instruments; effective monitoring. Along with the introduction of medium-term planning, the development of a democratic state requires the development of a proper budgetary strategy, namely a model budgeting based on program-based budgeting, taking into account foreign experience towards the use of an investment loan instrument (UK), three-tier independent planning in Sweden, reserves), five-year planning in Germany (economic equilibrium of power, legislative support for loan instruments, debt, expenditure regulation) [10]. Budget forecasting combined with the programmatic targeting method reveals budgetary opportunities and actual financing [11]. The purpose of the program-target method is to: open the budget; achievement of task performance efficiency; strengthening the responsibility of program implementers; development of budgetary policy. The components of programmatic budgeting include: «… the manager's purpose; purpose of activity; purpose and objectives of the program, performance indicators» [12]. The volume of programs, the purpose, the task, determines the passport of the budget program. It is formed on the basis of budget requests and budget appointments, is developed by the main spending units, approved by the Ministry of Finance. As the practice shows, the budget process in the past years was carried out on the principle of retention, but current requirements require effective financing. Thus, our opinion is in line with the opinion of some experts, regarding the need to determine the mechanism of priority of selection and sources of financing of budget programs. In particular, programs with defined performance indicators, namely the number of service users, process description and performance results. This, in turn, will facilitate effective management decisions and quality development policies. Budgeting is the process of planning and designing its results in the form of a budget system. As a financial planning tool characterizes its purpose, the definition of specific financial and operational tasks for certain periods [13, p. 159-160]. Budgeting goals are to: ensure current planning; coordination and communication between units; cost justification; control of plans [14, p.198]. According to the research of foreign scientists, budgeting occurs in the systematic measures, in particular, reforming the public administration system, and is focused on the effect of spending budget funds. In view of this, it is worthwhile in national practice to

adhere to strategic budgetary goals, first and foremost in the field of social security, which has global implications for the development of society, improvement of quality of life, demographic situation and, finally, human potential. Exploring the peculiarities of budgetary interrelationships in terms of budgetary decentralization, it should be noted that there are such types of budgetary relationships as the distribution of expenditures according to delegated powers, the provision of revenue sources to exercise their own and delegated powers, the redistribution of funds between donor budgets, and the formulation of recipients' alignment [15, p. 119]. Their implementation is carried out by means of financial instruments: «… regulatory and own taxes; tax delimitation; general-purpose grants; targeted transfers…» [16, p. 823]. However, practice shows that the share of local budget revenues in the consolidated budget is insignificant (more than 20 % without transfers) the provision of local budgets is mainly due to intergovernmental transfers, which accordingly impedes the development of the institution of local self-government [17, p. 59]. The unsustainable fiscal equalization policy in the current system of intergovernmental budgetary relations in Ukraine restrains local authorities from pursuing sound local policies in shaping the proper investment climate. The effectiveness of budgetary management is seen in the creation of an effective distribution mechanism, taking into account the level of self-sufficiency, growth of tax potential, territorial image. And the budgetary allocation should take into account the natural and climatic conditions of the regions, tax and resource potentials, ecological status, etc. In addition, scientists see stimulating factors for regional development in improving the local tax system. In the USA, local tax financing is 88,6 % of local budget revenues [18, p. 223]. The advantage of tax over transfers improves tax discipline, promotes the efficient mobilization of levies, and stimulates the authorities and business structures. Expenditure management requires clear rules and procedures, appropriate analytical systems and methods, informing participants in the budget process, increasing the effectiveness of expenditures under decentralized expenditure management methods, setting goals, quality standards and controls. In the process of budget execution, the main task is to control the budget funds provided in order to use them properly. Continuous deviations from planned funding from actual funding require modifications, and therefore expenditure monitoring, which will allow us to adjust funding plans according to realities and current needs. Periodic reports should include information on the level of program performance and service delivery. The key to successful operation of the budget process is adherence to the principle of publicity and transparency (Article 7 of the Code), which is to inform the public of the progress of all its stages. It provides credibility and enhances the effectiveness of all controls over public finances. Its compliance ensures public confidence in budgetary policies, promotes budgetary inputs at various levels, and enhances the effectiveness of public and public control over public finances. An important area of socio-political development in Ukraine is the introduction of a qualitatively new type of relations

between citizens and authorities. In particular, the Law of Ukraine «On Local Self-Government in Ukraine» recognizes the importance of involving the public, stating: «Ukrainian citizens exercise their right to participate in local self-government by belonging to the respective territorial communities». This right is also envisaged by the Code, but in practice the role of the public in decision-making is extremely limited. Transparency of the budget process is important because it allows citizens as taxpayers to control services, influence the distribution of expenditures, and monitor the quality of budget decisions. Methods for improving budget transparency include: involving the media in the budget process; preparation of information in the form of projects or budget collections; holding public hearings on budgetary issues; holding meetings for comment, as well as critical remarks, facts and opinions on a particular issue; compilation of voter list; setting up advisory committees representing the interests of the local public. In addition, an effective method currently practiced in Ukraine is the use of a «participatory budgeting» mechanism. It is a form of direct democracy – an open process of consideration and decision-making. Creating a budget with the participation of citizens allows their maximum involvement in discussing and solving problems of the territorial community by its residents. Budget implementation in Ukraine began in 2015 in Cherkasy, Chernihiv, Sumy, Poltava and Lutsk. The formation is supported by the Polish-American-Ukrainian Cooperation Initiative Foundation in the framework of the Project «Particulate Budget – Opportunities for Increasing Public Engagement and Establishing a Good Partnership with Authorities». The project has some achievements but: «… there is a need to increase the real participation of citizens in the budget process. It is necessary to increase the level of technological support for the openness and transparency of the budget of participants in the budget process. We need technologies for finding consensus of the multilevel participants of this process» [19, p. 105]. Our research shows that the formation and development of budgeting, subject to the introduction of new technologies of financial management, should strengthen the link between all participants in the budget process and ensure the rational accumulation and efficient use of budget funds in the current conditions of financial and economic development of the state.

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ECONOMIC SECURITY DIAGNOSTICS OF INDUSTRIAL ENTERPRISES BASED ON APPLICATION OF CONSULTING

Maryana Bortnikova,
Ph.D. in Economics, Associate Professor,
National University «Lviv Polytechnic», Lviv, Ukraine,
Nataliia Petryshyn,
Ph.D. in Economics, Associate Professor,
National University «Lviv Polytechnic», Lviv, Ukraine
Olha Podra,
Ph.D. in Economics, Associate Professor,
National University «Lviv Polytechnic», Lviv, Ukraine

Economic security management of an industrial enterprise involves a set of interrelated elements that are aimed at the stable functioning of the enterprise, achievement of the set goals, overcoming various threats and rapid adaptation to changing environmental conditions. The scientific works of many scientists are devoted to the study of theoretical aspects of ensuring the economic security of enterprises, as well as some of its components [1-12]. However, issues of economic security diagnostics remain relevant.

In order to ensure economic security, it is advisable to diagnose the major threats, opportunities and environment of the enterprise in order to make appropriate management decisions. This should take into account legislative and regulatory acts, as well as methods and means that ensure the achievement of the declared goals and objectives of economic security of the enterprise.

Diagnosis of economic security of enterprises is associated with the need to seek and involve consultants to solve specific management problems of the enterprise and reduce (eliminate) threats to its security.

Consulting is a type of professional activity which ensures the providing of independent advice, guidance and assistance of qualified consultants to enterprises

and organizations with the purpose to investigate management problems find optimal solutions and implement recommendations, that's why consulting is of great importance of the economic security management. One of the newest areas of consulting is security of an organization.

The implementation of consulting services in the field of economic security involves the development of a set of measures aimed at improving the quality and efficiency of both the enterprise as a whole system and its separate components. Problems of diagnostics of the enterprises economic security in modern conditions have become especially relevant, because the efficiency of the enterprises functioning depends on the degree of their economic security. The economic security of an enterprise should be understood as a state of protection of economic relations that allows to avoid external dangers and threats, as well as to ensure the stable development of the economic potential and functioning of the enterprise in the current and future period. The most important factor for successful consulting is to identify the real needs of the clients of the organization and its management that they seek to satisfy in the consultation process.

The growing role of consulting in the global economy is caused by the complexity of management decision-making due to the increased of the business environment uncertainty. The range of problems solved by consulting firms is quite broad; in addition, the specialization of consulting services companies may be different: from narrow, limited one-way consulting services (eg, strategy, economic security, ecology, IT, taxes investment, personnel, finance, etc.) to the fullest one that provides a full range of services in some branch.

The main components of the economic security system of the company should include:

1. Intellectual and human resources component covers the development of intellectual potential, effective coaching creation, formulation of proposals for improving the corporate strategy and corporate culture of the organization. Intellectual and personnel security is based on modern professional knowledge, skills and competences that impede the negative impact on intellectual potential and corporate relations.

2. Information and communication component provides assistance in the selection, implementation and maintenance of software products to build an effective information and communication support of the enterprise. The modern process of informatization is an important tool for organizing and regulating social relations, since information affects all spheres of economy: it contributes to the growth of labor productivity, to the improvement of the economy management, to the development of high technology industries and high technologies. Nevertheless, information has become a factor that may cause the occurrence of technological accidents, military and political conflicts, miscalculations in the financial system, and so on.

3. Technical and technological component is based on the analysis and evaluation of the technology market, technological processes, as well as internal reserves for improving existing technologies in accordance with world standards. The technical

and technological component directly influences the increase of the technical level of the economic entities and ensures the competitiveness of the enterprise's products.

4. Financial component, it main task is to analyze and evaluate the systems and methods of financial planning and calculate the parameters of the future state of the enterprise. Financial security is formed on the basis of a set of financial instruments and technologies that ensure the realization of financial goals and objectives for achieving sustainable development of the financial system.

5. Marketing component studies the marketing environment of the enterprise, develops a marketing strategy, creates advertising and positive image, and forms a marketing network. The marketing component of economic security is formed on the basis of the managerial, economic and legal interests of the enterprise with the interests of counterparties, which give the opportunity to intervene target market share, increase the competitiveness of products.

6. Investment component involves the valuation of tangible and intangible assets, which affect the attractiveness of the investment climate and increase its efficiency, forecasting investment and current expenses, income and financial flows. The investment attractiveness of the domestic market somewhat hinders the process of attracting foreign investment.

7. Innovative component involves the choice of perspective ideas and mechanisms for the implementation of innovation processes in order to create high innovation potential. The basis of the modern stage of ensuring innovative security is the development of knowledge-intensive industries that produce scientific and technological developments and inventions in accordance with scientific and technological progress.

8. Foreign economic policy component is based on the definition and formation of priority areas for an effective system of cooperation with foreign counterparties. The integration processes strengthening intensifies the issue of foreign economic security, since participation in world economic relations and international division of labor characterizes the ability of the state to withstand the impact of negative external economic factors and minimize the negative effects they cause in order to create favorable conditions for economic development and to ensure foreign economic activity compliance with national economic interests.

9. Political and legal component ensures the effective legal support of the activity of enterprises, as well as observance of the legal rules of the current legislation. The political and legal component takes into account those threats that may have both internal and external origin. Negative internal threats may be a low level of legal service qualification, insufficient funding for legal support. Political conflicts and, as a consequence, political crisis, can be a negative external threat.

Ensuring the economic security of enterprises involves diagnostics of existing threats to each of the functional components and development of a system of measures to prevent and eliminate identified problems on this basis. The main tasks of economic security diagnostics are:

- forecasting of potential threats to the economic security of the enterprise;
- organization of activities for prevention of possible threats;
- identifying, analyzing and evaluating real threats to economic security;
- identification of causes, sources, nature, intensity of influence of threatening factors;
- organization of activities to respond to emerging threats;
- prediction of the main tendencies for ensuring stable functioning of the enterprise.

The main purpose of economic security diagnostics is to analyze and evaluate the state of economic security of enterprises, identify threats and opportunities, weaknesses and strengths in the process of development and implementation of various management decisions (table 1).

Table 1

Elements of economic security diagnostics of industrial enterprises based on the use of consulting

Economic security components	Threats	Opportunities
Intellectual and human resources component	-low wages, lack of motivation to work; -breach of business relations with partners; -corporate ethics reduction.	- formation of corporate thinking; -use of knowledge and professional experience of employees of the enterprise.
Information and communication component	- unauthorized access to information; - development and distribution of computer viruses; - computer information changing and electronic signatures falsifying.	- integration into the world economic space; - introduction of the latest information technologies.
Technical and technological component	- high level of deterioration of material and technical base; - inefficient organization of the production process.	- introduction of technological innovations; - increase of a number of mechanized and automated technological operations.
Financial component	- inefficient financial planning; - high level of external debt; - high unemployment rate.	- introduction of an adequate system of accounting for financial flows; - balance of financial flows.
Marketing component	- loss of traditional markets; - ineffectiveness of marketing strategies.	- expansion of target market segments; - establishment of strategic relationships with vendors
Investment component	- low level of investment income; - insufficient investment support for the activity.	- increase of investment potential; - transformation of investment resources.

Innovative component	- low level of scientific and technical potential; -lack of own developments and innovations.	- improvement of the efficiency of the innovation subsystem; - development of innovative infrastructure.
Foreign economic policy component	- a significant share of commodity exports; - dependence on imports of food products.	- improvement of access to external markets; - participation in international cooperatives.
Political and legal component	- imperfection of legislation in the sphere of economic relations and mechanisms of economic policy-making.	- planning a set of measures to improve the level of political and legal security; - observance of legal norms of the current legislation.

The technology of the economic security diagnostics of industrial enterprises based on the use of consulting is shown in fig. 1.

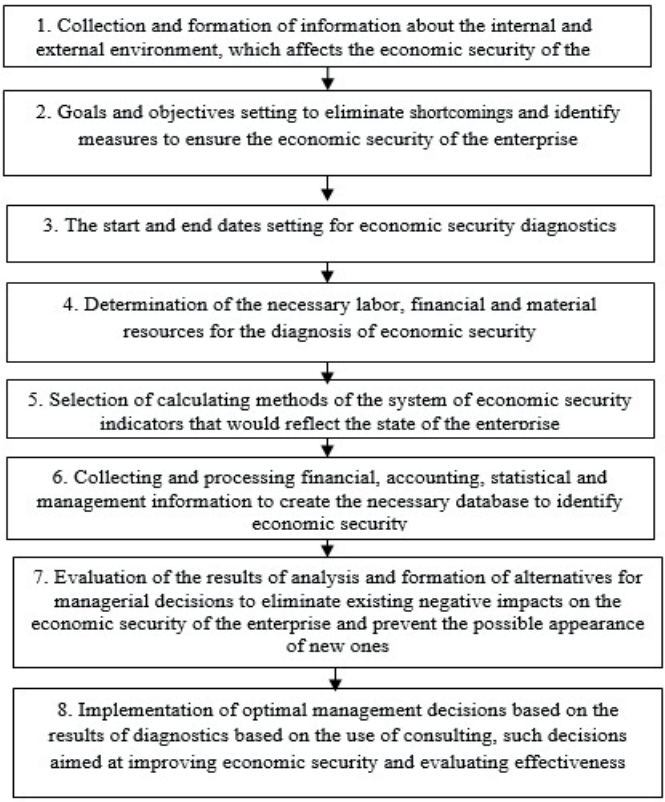

Fig. 1. The technology of the economic security diagnostics of industrial enterprises based on the use of consulting

It is advisable to carry out economic security diagnostics of industrial enterprises with the help of professional support of leading consulting companies, which gives the opportunity to get the qualified help and professional recommendations for the development and making management decisions aimed at ensuring industrial enterprises' sustainable development and economic security.

On the basis of the conducted research the opportunities and threats of the main components of economic security (intellectual-personnel, information-communication, technical-technological, financial, marketing, investment, innovation, foreign economic and political-legal) are characterized.

On the basis of the conducted research the elements of the economic security diagnostics of industrial enterprises on the basis of the use of consulting have been determined.

The stages of technology implementation of realization of the economic security diagnostics of the enterprises are offered, on the basis of application of consulting, which will help to increase the efficiency of evaluation procedures, to ensure a high level of completeness and reliability of the obtained results.

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THE ECONOMIC SECURITY OF ARBOREALITY AS A NEW DIRECTION OF ECONOMIC BASECOLOR

Yulia Romanovska,
Ph.D. in Economics, Associate Professor,
Vinnytsia Institute of Trade and Economics Kyiv National University of Trade and Economics, Vinnytsia, Ukraine

The hierarchy of large-scale socio-economic systems necessitates the consideration of architectonics of socio-economic security. However, the construction of such architectonic in the economic security general and in economical meso-levels, in particular, is not completed yet. So the main object of socio-economic security is mainly a region which is considered in the context of the administrative structure of the country, that is, the default region is the region of Ukraine. But the region as an administrative unit of the country is a socio-economic system with a complex hierarchical structure, each element of which may be the subject of socio-economic security. It is the concretization of socio-economic security large-scale socio-economic systems is today one of the development directions of economic security.

One of the objects of architectonic in the economic security meso-level is the city. The city is an important, but relatively a new object of socio-economic security. Because more than 70 % of the world economy concentrated in cities. They have the main economic events and form the best opportunities for realization of human and business ideas. Contemporary cities compete for resources and capital, the presence in its territory innovation companies, small and medium businesses, large corporations, financial intermediaries, starts, etc.

In Ukraine the level of urbanization is high: according to the state statistics Committee of Ukraine, the level of urbanization in our time is nearly 70 %, although the dynamics of the rate of urbanization is negative (0.33 percent per year according to estimates by 2015-2020) [1, 2].

In the economic security of the meso-level is already noticeable is the attention of scientists to the socio-economic security in the city:

– in generally the relevance of the study of socio-economic security of the city are acknowledged;

– there are some attempts of the notion's interpretation of socio-economic security of the city;

– shows the relationship of the concept of socio-economic security of the city with the concepts of socio-economic development (state, region, city) and the effectiveness of the socio-economic system.

However, the published results of a study of socio-economic security of the city not yet allow to generate relevant provisions of the economic security on the meso-level, but rather create a reason for questions the answers which will help to improve and clarify existing results.

Modern cities are so complex and varied formation with pronounced features that the consideration of them only as a human settlement with a clearly defined territories where the objects of various infrastructures, functioning of which is aimed at meeting the diverse needs of the population, economic entities of the region and the state as a whole to a certain extent narrows the object of study. Therefore, in recent years the city is considered from the standpoint of system approach that is recognized as a socio-economic system or urban ecosystem. The recognition of the modern city socio-economic system gives grounds for use in his study of the methodology of system analysis.

Urban ecosystem should be considered as a systemic education with a particular territory, that is at a certain point in geographical space, where objects of different infrastructures (production, transport, energy, social, educational, health, cultural and recreation), the functioning of which is aimed at meeting the diverse needs of the population, economic entities of the region and the state as a whole, which is accompanied by violations of natural ecosystems.

They are different in scale, dynamics of development and peculiarities of functioning.

Urban ecosystem is a complex open system whose operation is aimed at achieving a number of goals. Its complexity is primarily manifested in:

– The plurality of heterogeneous elements (citizens, economic agents operating in the city, regional agencies and public authorities) that is very diverse;

– the presence of each of the elements of self-interest, which are often contradictory and their balance is almost never to implement;

– different powers the capabilities of each of the elements in defending and protecting their own interests.

The main subsystems of urban ecosystem which ensure its functioning and vitality, is the nature (ecology), the city's economy and its society. Each of these subsystems has a different origin and peculiarities of functioning. But what is indisputable that is their interaction. For example, the environmental subsystem in its origin is natural, but on her condition significantly affects the functioning of the economic subsystem is that its origin is artificial, fully controlled by man. However, it is the social component provides their functioning and active performance of its functions.

The functioning of urban system must meet certain requirements, one of which is its effectiveness (the measure of achievement of goals of the operation or the stage of completion of assignments). In turn, the performance is determined by a number of conditions, among which, first of all, it should be noted the socio-economic security.

Socio-economic security is an important condition and functioning, and development of urban ecosystem because:

– creates a favorable conditions for sustainable development of the economic and social spheres of the city;

– is the result of not only meeting the economic and social interests of citizens, economic entities, bodies of power with the interests of external and internal environment, but approval of such interests.

An acceptable level of socio-economic security of urban ecosystem promotes a positive decision of the investors regarding the investment in its industrial and social infrastructure, strengthening of business activity of business entities and innovation of their activities and, consequently, the creation of new jobs and ultimately strengthen the economy of the city, which should have a positive impact on the social subsystem and, unfortunately, often negatively on the ecological subsystem.

In the explanation of the notion socio-economic security of urban ecosystem it is advisable to use the concepts of several approaches which has found application in economic security.

Approach to the explanation of the study object (the phenomena, processes, etc.) is a set of concepts which provide together an opportunity to explain that it's meaning and nature in the form of the corresponding concept, which reflects the set of most general and important basic known characteristics of the object of study. Concept approach reflects the vision, knowledge, and associations related to the object of study. That is, the differentiation of the concept from the concept of clearly defined. It is the concepts of the approach together represent his idea about getting the result data for the formation of evaluative judgments about the object of study (in our case, the socio-economic security of urban ecosystem).

Protective approaches, the main concepts are the «threat», «protection», «safe state» [3]), and in harmondale «interest», «interaction», «balance» [3,4]).

In the context of protective approach the socio-economic security of urban ecosystem represents a set of various conditions for the positivity of the characteristics of the population living in the city and activities of economic agents, their needs, interests and rights as a result of the balance of interest. The effective use of its capacity that is the result of city management and effective communications between government, city government, population and business entities.

The use of protective approach involve the study of threats, their development (stages of actualization, activation and implementation [5, 6]), the prediction of the impacts of threats, development of preventive measures for the prevention or delay in the implementation of the threats and the organization of their performance,

which, in fact, is the content of basic authentication activities in urban management.

The concepts of protective approach to the study of socio-economic security of the interconnected urban ecosystem: recognizing threats ecosystem provides for the protection of their implementation to prevent or mitigate its negative impacts, which should ensure it safe condition (understandable to the relative safety of her condition, it is absolutely safe condition of any system does not exist).

Safe should recognize this state of urban ecosystem, which at the present time and in the short term it lacks in scale and intensity of change is negative, which is due to the implementation of threats.

The threat urban ecosystem considered in the context of the definition of this concept in [5] as the processes and phenomena occurring in the external and internal environments. In the presence of a particular combination of conditions and circumstances in its functioning can cause the changes of negative character, of different localization and scale, the consequences of which more are significant significantly worsen the condition of ecosystem and effectiveness of its functioning. That is the safe condition is a consequence of ensuring its socio-economic security.

From the above it turns out that one of the urgent tasks of providing socio-economic security of urban ecosystem is the formation of methodological bases identification of potential threats and their sources, determination of the conditions turning potential threats into real, continued research of the process of development threats, the fundamental principles of which are given in [5, 6, 7], the search of ways of influence on the development of the threats, the rationale for the characteristics of the safe state and indicators to describe them.

Modern urban ecosystem operates in an environment that is a source of numerous threats, but it is extremely sensitive on several points to the effects of the environment.

However, the functioning of urban ecosystem generates a number of threats, chief among which is the formation of artificial ecosystems natural anthropogenic complexes in urbanized areas. A serious threat, which creates internal environment of ecosystem are not only objective, but artificial, that is, caused by erroneous management decisions, their lack of coordination and the conscious actions of individuals or groups of people or X-inefficiency of the state regional policy. The growth of the scale of urban ecosystem implies an increase in the number of its functions, decrease of stability, which poses a threat to the fundamental functions – maintained, that is, to prevent the danger of collapse of the system.

In addition, you should pay attention to the threat of systemic nature, as the conflict between the subsystems: active development of the economy of the city leads, as a rule, positive impact on the social subsystem, but also affects the ecological subsystem and the social subsystem. This circle of influence subsystems to its socio-economic security also requires research.

If the application of a protective approach allows identifying the nature of socio-economic security of urban ecosystem, the reasons for its degradation, forming the

methodological basis of the study, the use of harmonization approach creates a fundamental basis for ensuring socio-economic security of ecosystem.

The harmonization approach provides for the prevention of infringement balance interests in items urban ecosystem by eliminating or mitigating the contradictions of their interests. The foresight of such contradictions and forms of their manifestation, the establishment sign of such manifestation and development of system measures on overcoming the consequences of actual interest conflict on ecosystem in the case of its occurrence (the real conflict has certain signs).

After all, interaction is the integrating factor that brings together the elements of urban ecosystem in a certain kind of integrity – the city determines the behavior of each of them to protect their own interests and their balance with other elements of system, reflects the processes of exposure to the elements of ecosystem each other, their interdependence due to the close interconnectedness.

Harmonization approach to economic security involves to study the interaction elements of urban ecosystem to meet the interests each of them. Therefore, the study socio-economic security of ecosystem in the context of interaction its elements is advantageously carried out in the plane of the behavioral theory the organization that demanded the connection and the sociological theories. After all, the interests of the elements of urban ecosystem is personified, that is, there are always entities (officials) who makes decision on behalf and in the interests of certain structures (state and County government, organization, etc.) whose behavior cannot be considered rational and aimed at achieving stability and balance in the functioning of this structure: the interests of the structure always adds to its own interests and vision of the interests of a certain structure is always subjective.

In explaining the fundamental basis of the socio-economic security urban ecosystem within harmonization approach seems appropriate using the position of such sociological theories as a theory of exchange at the macro level (or the theory of P. Blau [8]) and the theory of the interaction of results D. Thibaut and Harold Kelley (point of view or frame of reference), the Foundation of which is behaviorism [9]. Using the theses of these theories are able to explain the causes and changes of interests items urban ecosystem, because changing interests in inhomogeneous composition of its elements is the source of serious threats to the functioning and effectiveness of ecosystem.

Therefore, one of the important directions of further development economic security of meso-level is the research of socio-economic security of ecosystems, which together constitute a system of higher order – social-economic system of region.

Socio-economic security of urban ecosystem is an important prerequisite for its effective functioning and development that reflects the interdependence, interdependence, complementarity of economic and social security of this system. The economic security of the object is important not only for socio-economic development of the city, but at the same time lays the foundations of his social security and further disruption of the natural ecosystem of the area where the city

is located.

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EVALUATION AS THE SUBJECT DOMAIN IN ECONOMIC SECURITY STUDIES OF THE MICROLEVEL

Viktoriya Vakhlakova,
Ph.D. in Economics,
East Ukranian National University, Sievierodonetsk, Ukraine

Economic security studies is a complex of interrelated ideas, which is differentiated and hierarchical, though still united as a system of knowledge. In this system, some elements are dependent on the others, while the very basis consists of a combination of statements, notions and categories predetermined following

certain methodological principles and rules [1].

By its nature, economic security studies are «weak» gnoseologically (following the terminology used in [2, p. 57]), and this is manifested through the complexity of the related objects, weak predictability of the processes that are strengthening or weakening economic security (of a state, a region or an enterprise), unpredictability of influence of various combinations of factors and of the results of this influence, and also of the results of security-providing activities.

The subject domain of economic security studies is made up of the combination of the most relevant, for the current stage of its development, issues, and the scope of such issues is really very wide. Proper and correct definition of these issues directly predetermines the priority order of their research, and the latter, in its turn, predetermines academic and applied orientation of the economic security studies overall.

As it has been noted above, economic security studies are hierarchical, thus, in them, the objects of economic security are allocated by levels: the state (national economy) – region – the subject of economic activity (enterprise). Therefore, we can state that economic security studies can be of macro-, meso- and microlevels. The subject domain of economic security studies at each of these levels is different, though general principles of construction are equally followed at all levels.

Since combinations of cognitive objects in economic security studies are somewhat detached, there are several generally acknowledged subject domains, the available knowledge on which are constantly updated and enriched.

The subject domain of economic security studies at any of these levels is a unity of the interrelated similar elementary objects which takes into account their properties, relations and functions that are considered within a separate direction of economic security studies [1].

According to H.V. Kozachenko, subject domains within economic security studies by now have been studied to a different degree – from the availability of quite clear and logical explanations of the nature and behavior of the protected subjects, determination of their properties, key specific features and interrelations between them up to the level when new questions are being put forward, thus, new objects and subject matters are being revealed and actualized [1]. One of the subject domains in economic security studies of all levels is evaluation of the economic security objects.

Evaluation as a general scientific and cross-disciplinary category has rather general contents (formulation of judgements about the objects under evaluation using certain reference points) and is equally applicable to all knowledge fields. Evaluation results that are used while studying the surrounding reality may become the ground for further decision-making concerning actions to be taken in relation to the evaluated objects in management, political science, psychology, sociology, economics and so on.

Evaluation as an important subject domain in any science rests on:

- general theoretical basis which is made up of Lebesgue measure theory and evaluation theory;

- universal metrological evaluation theory (as summed up in the theory of measurement by Karel Berka [3]);

- specialized metrological basis for evaluation in each specific field of knowledge: natural sciences (physics, biology, chemistry etc.), social sciences and humanities (sociology, psychology, economics, management etc.);

- singling out the objects of general evaluation (process, phenomenon, system).

Despite the seemingly serious basis behind the evaluation of various objects (processes, systems, phenomena etc.) in various fields of different sciences, the evaluation domain still has quite many unsolved or partially solved issues. One of them is understudied issues related to the epistemology of evaluation (as the science of evaluation, its nature, essence and the related knowledge development).

Evaluation and its objects are largely predetermined by the contents of the knowledge field within which this evaluation is to be carried out. Accordingly, in economic security studies overall and at each of its levels evaluation has its specific features. The specific features of evaluation in economic security studies of the microlevel are presented in table 1.

Evaluation at the microlevel of economic security studies is never the end goal (in the praxeological sense) and/or the end value (in the axiological sense), it actually does not have a separate value of its own. In other words, evaluation of various objects in economic security studies of the microlevel for the sake of their evaluation alone does not make sense. In fact, evaluation is always a precondition for further decision-making which may concern all aspects of enterprise activity and/or development, decisions' choice (in the presence of alternatives), selection of means for construction of action algorithms to be performed in the course of the selected decision implementation.

Table 1

Specific features of evaluation in economic security studies of the microlevel

Specific features	Manifestations
The nature of evaluation in time	Discrete or periodical
The number of objects under evaluation	The totality which consists of several objects
Subject of evaluation	Variable
Field for further use of evaluation results	Wide
Influence of evaluation results on the evaluated object	Decisive in security-oriented management; strong, in the absence of the latter
Circulation of evaluation results	Rather limited due to targeted nature of evaluation results (the latter are delivered exclusively to those top managers and/or stakeholders who have the authority to use evaluation results further)

Functional role of evaluation in its general scientific understanding is always predetermined by the aim of getting evaluation results. Following this criteria, we can distinguish between the following functional types of evaluation in economic security studies of the microlevel (table 2).

Table 2

Functional types of evaluation economic security studies of the microlevel

Functional types of evaluation	Description of the functional type
Choice-grounding	Formulation of an opinion on each variant among the available alternatives for further final choice
Problem-oriented	Description or identification of the problem, the symptoms of its emergence, the indicators of state etc.
Description-oriented	Description of an object, process or phenomena, aimed at determination of its state and full investigation of its influence on other objects and/or processes, with forecasting of its course in the future
Diagnostics-oriented	Diagnostics of an object, process or system aimed at determination of its state; determination of the key problems along with the possible means of their solution
Entropy-reducing evaluation	Obtaining more information concerning a specific system, object or process aimed at reducing the uncertainty about its state and/or behavior
Hypothesis-proving evaluation	Confirming or rejecting a hypothesis through getting evaluation results which are supposed to serve as evidence for hypothesis confirmation/rejection

The mentioned in this table functional types of evaluation in economic security studies of the microlevel may overlap. That is, in a specific case, evaluation may be of two or more functional types at the same time. For example:

- problem-oriented evaluation can be also diagnostical (as problem-oriented analysis from the standpoint of enterprise economic security would always help with diagnostics through clarifying the nature of the problem, its key features, scale and depth);

- description-oriented evaluation can be combined with entropy-reducing evaluation (as object evaluation through information collection about it would anyways lead to reduced uncertainty in understanding its state and behavior).

Criterial description of each functional type of evaluation used in economic security studies of the microlevel is presented in table 3.

Criteria behind the functional types of evaluation in economic security studies of the microlevel differ primarily in their goal (or in their answer to the question «Why is this evaluation needed?»), in the key object under evaluation, and also in applicability of evaluation results as well as in qualifications of the evaluating subjects.

One of the key features of evaluation in economic security studies of the microlevel is multiplicity of objects under evaluation: economic security of an enterprise, the system of economic security at an enterprise, security-providing activity of an enterprise, activities carried out by a structural unit responsible for economic security of this enterprise. Evaluation of all these objects of economic security at its microlevel has been researched to a very different extent.

Majority of contemporary research studies cover the evaluation of enterprises' economic security.

In economic security of the microlevel, evaluation has two distinct directions with two different degrees of exploitation:

- formal one: evaluation of enterprise economic security on the basis of measurable empirical data within the framework of the functional approach and also with application of such methods as analytical function, weak signal detection, fuzzy logic models, boundary indicators etc.;

- analytical one: it covers the axiological attitude of the evaluating subject to various manifestations of economic security along with the opportunities to use them cognitively and practically, applying such methods as dynamic evaluation (using the signature criterion as applied to dynamic values of the selected indicators), the checklist method, scenario forecasting of threats' development in enterprise activity.

As applied to economic security of enterprises, evaluation methods can be very different, primarily, in their degree of complexity in application (the volume of initial information needed; the number of operations to be performed; requirements to qualification of the involved experts; complexity of interpretation of the obtained results etc.). Thus, the following requirement should be taken into account: the larger and the more complex structurally is the enterprise - the more applicable become complex instruments of evaluation.

Table 3

Criterial description of the functional types of evaluation in economic security studies of the microlevel

Functional type of evaluation	The key function of evaluation results	The key objects of evaluation or of the quantitative description	Applicability scope of evaluation results	Qualification level of the evaluation subject
Choice-grounding	Grounding the choice	Alternatives	Average	Average
Problem-oriented	All-encompassing description of the problem	The problem itself	Narrow	Higher than average
Description-oriented	Maximum full description of the object under evaluation	Evaluated object	Wide	Low

Diagnostics-oriented	Decided on a "diagnosis", confirming or rejecting it	Key signs of the problem, deviations from the reference state	Narrow or average	High
Entropy-reducing	Reducing the uncertainty through information collection	The object under evaluation and other objects related to it	Wide	Average
Hypothesis-confirming	Confirming or rejecting the hypothesis	The state of the object, process or phenomenon concerning which the initial hypothesis has been put forward. Also, the facts that are confirming or rejecting this hypothesis	Narrow	Higher than average

However, the already available studies on evaluation of enterprise economic security tend to be controversial and not always comprehensive; there is also a certain tendency observed in the direction to overgeneralization due to the lack of obvious epistemological contextualism in economic security studies. Epistemological contextualism is usually manifested through the presence of several approaches to interpretation of the contents of the notion «economic security of an enterprise» (e.g., protective approach, harmonic one, resource- or activity-oriented approaches). Thus, evaluation of enterprise economic security should stem from the very contents of this notion, and evaluation toolkit should be selected accordingly as well.

The situation which takes places in the course of enterprise economic security evaluation is explained by:

- weakness and complementarity of theoretical and practical bases in evaluation;
- stereotypes that are already deeply rooted in evaluation. Such stereotypes have been formed due to various reasons (in particular, due to incorrect/simplified absolute scientific expansion, in the course of which evaluation procedures from other sciences have been introduced in economic security studies as native ones). These stereotypes are rather persistent and new knowledge (which is the result of economic security studies' development) usually have very little influence on them.

There are still no systemic studies concerning the evaluation of other objects in economic security of the microlevel (the system of enterprise economic security; security-providing activity of the enterprise; activity of the enterprise structural unit responsible for economic security). Moreover, some of the related studies turned out to be rather mixed (for example, evaluation of the enterprise economic security system is seen as evaluation of enterprise economic security overall). Thus, we have reasons to state that the subject domain of economic security studies still has quite a

lot of unsolved issues, one of which is toolkit development for such an evaluation.

Therefore, evaluation in its general scientific sense and in the context of economic security studies of the microlevel has very different functional meaning. In each particular case it would be appropriate to specify this functional meaning in detail. Specifying the functional meaning of evaluation would allow maintaining its well-targeted character and would also increase the value of the obtained evaluation results in relation to the preset in advance target.

Evaluation as such should be understood as one of the key subject domains in economic security studies of all levels. At this, the toolkit of this subject domain can be very different. Methodological and instrumental principles of evaluation may turn out to be providing quite positive results at one level of economic security evaluation but be ineffective at other levels.

Development of the conceptual grounds for the system of enterprise economic security as well as for the security-providing activities of enterprises and also for the activities of the enterprise structural units responsible for economic security are topical tasks within the subject domain of economic security studies of the microlevel.

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DIAGNOSTICS AND ASSESSMENT OF FINANCIAL SECURITY OF THE CONFECTIONERY INDUSTRY ENTERPRISE

Kostiantyn Netudyhata,
Ph.D. in Economics, Associate Professor,
Petro Mohyla Black Sea National University, Mykolaiv, Ukraine,
Vadym Diachenko,
Master of Finance,
Petro Mohyla Black Sea National University, Mykolaiv, Ukraine

Ensuring the dynamic growth of the market value of an enterprise today is one of the most important tasks and criteria for assessing the effectiveness of its development in the current rather unstable economic situation in Ukraine after the events of socio-economic and political crisis 2014-2015.

In order to help maintain the market position and sustainability of an enterprise

development at the present stage, the formation of a system of financial security management of an enterprise should become a priority task for its management, which expresses the purpose and summarizes the results of its business activities. That is why the question of the study of the essence, diagnostics and assessment of the level of financial security, as a basis for ensuring the effective activity and "survival" of an enterprise in the conditions of unstable economic situation in Ukraine, today can be considered relevant.

Many domestic scientists have devoted their activities to the study of issues, related to the diagnostics and assessment of financial security of enterprises. Among the scientists, who have paid considerable attention to this issue, we should mention such as O. V. Arefyeva, A. O. Epifanov, T. B. Kuzenko, I. S. Kernitsky, U. V. Lavrova, V. L. Ortynsky, R. S. Papekhin, T. S. Shabatura, etc. In spite of the considerable amount of work of scientists in the field of diagnostics and assessment of financial security of enterprises, the questions concerning the development of the ways of the most effective improvement of their financial state and diagnostics still remain insufficiently studied.

The goals are to disclose the nature and methods of diagnostics and assessment of financial security of enterprises on the example of Ukrainian PrJSC «Kyiv Confectionary Factory «Roshen» and to outline the main recommendations for improving its financial condition and financial security.

One of the most important areas of studying the enterprise's financial condition and the effectiveness of its business activities – is the diagnostics and assessment of its financial security. Many domestic scientists have devoted their work to the study of financial security and provided their own definitions of its essence. The most interesting and prudential definitions are presented in table 1.

Table 1

Definition of theoretical principles of the essence of «financial security» concept in the writings of domestic scientists

Source	Interpretation of theoretical principles of the essence of «Financial security» concept
Papekhin R. S. [8]	Financial security – is the ability of an enterprise to independently develop and execute a financial strategy in accordance with the objectives of the overall corporate strategy in an uncertain competitive environment.
Arefyeva O.V., Kuzenko T. B. [1]	Financial security – is the state of the most efficient use of corporate resources, expressed in the best values of information and financial indicators: liquidity, solvency, business activity, return on capital of an enterprise and its structure, etc.
Epifanov A. O., Plastun O. L. [2]	Financial security of an enterprise – is the ability of business entity to carry out its business activities efficiently and consistently, by using a set of interrelated diagnostic and instrumental measures of a financial nature that should optimize the use of financial resources and counterbalance the impact of internal and external environment risks

Ortynsky V. L., Kernitsky I. S. [7]	Financial security of an enterprise – is an activity of risk management and protection of interests of an enterprise in order to ensure the protection of its potential (production, organizational, technical, financial-economic, social) from the negative effects of external and internal factors, direct or indirect economic threats in the current and long-term perspectives.
Lavrova U. V. [3]	Financial security – is an integral part of the economic security of an enterprise, characterized by the existence of such financial state of an enterprise, the main features of which are the following: the balance of financial instruments, technologies and services; resistance to threats; the ability of an enterprise to provide the realization of financial interests, missions and tasks with sufficient amounts of financial resources; focus on sustainable development.
Shabatura T. S. [9]	Financial security of an enterprise –is a set of quantitative and qualitative characteristics of the level of financial condition of an enterprise, which ensures the balance and protection of its priority financial interests against threats of different nature, as well as financial support for the sustainable development of an enterprise in the current and future periods.

Thus, according to the variety of interpretations of the essence of «financial security» concept, it is possible to identify two key approaches of domestic authors to determine its essence:

– financial security is considered as a certain financial state of an enterprise, which is determined by its ability to effectively implement its business activities and to effectively use its own corporate resources;

– financial security is considered as an activity and part of the economic security of an enterprise, aimed at achieving such financial state of an enterprise, which ensures its sustainable development (provided that its priority financial interests and financial potential are balanced) and ensures protection from negative effects of external and internal factors, direct or indirect economic threats in the current and long-term perspectives.

PrJSC «Kyiv Confectionary Factory «Roshen» is a leading enterprise representative of the confectionery industry of Kyiv region in Ukraine. The main activity of the enterprise includes: production of breadcrumbs and dried biscuits; production of flour confectionery, cakes, pastries, pies and biscuits of long-term and short-term storage; production of cocoa, chocolate and sugar confectionery: caramel, nougat, sweets, white chocolate; wholesale of sugar, chocolate and sugar confectionery. The ultimate beneficial owner of PrJSC «Kyiv Confectionary Factory «Roshen» is Alexey Poroshenko, son of P. Poroshenko, the fifth President of Ukraine from 2014 to 2019. The main indicators of financial state of the enterprise are given in table 2.

Table 2

The indicators of financial state of the PrJSC «Kyiv Confectionary Factory «Roshen»

Indicator	Value					
	2013	2014	2015	2016	2017	2018
Depreciation ratio of fixed Assets	0,273	0,317	0,343	0,361	0,328	0,347
Liquidity indicators						
Overall liquidity	0,220	0,371	0,778	0,950	1,78	0,224
Quick liquidity	0,193	0,330	0,714	0,848	1,62	0,200
Solvency indicators						
Net working capital, mil. UAH	-214	-133	-29	-4	40	-319
Autonomy Ratio	0,592	0,662	0,752	0,812	0,677	0,553
Business activity indicators						
Accounts receivable turnover ratio	6,06	4,76	3,06	2,78	3,42	4,72
Term of accounts receivable turnover, days	59,35	75,63	117,6	129,5	105,2	76,27
Accounts payable turnover ratio	1,82	1,24	1,50	2,24	4,28	4,71
Term of accounts payable turnover, days	197,8	290,3	240,0	160,7	84,1	76,4
Profitability indicators, %						
Return on assets ratio	0,48	4,43	1,56	0,59	0,34	1,12
Return on equity ratio	0,80	6,70	2,08	0,73	0,51	2,02
Profitability ratio	0,78	11,82	4,41	1,68	1,06	2,98
Profitability ratio of products	0,86	13,56	5,12	1,91	1,21	3,49

Source: compiled and calculated by the authors on the basis of financial statements of PrJSC «Kyiv Confectionary Factory «Roshen» according to [6]

The data analysis of the table 2 allows to make up an idea about financial state of PrJSC «Kyiv Confectionary Factory «Roshen». In general, for the period 2013-2018, the overall financial state of the Confectionery Factory «Roshen» is leaves much to be desired. Among the main problems are the following:

– deterioration of the technical condition of the fixed capital of the enterprise (due to the increase in the wear factor);

– significant reduction in «Roshen's» assets and capabilities to repay its short-term liabilities due to its current assets in 2018 compared to 2017 (as evidenced by a very significant decrease in liquidity ratios);

– decrease in the degree of financial independence of «Roshen» from external sources of financing its activities and decrease in the degree of availability of the enterprise with its own funds (as evidenced by the decrease in the values of solvency

indicators of "Roshen" in 2018 compared to 2017);

– «Roshen» receivables term of turnover increase by 17 days, which indicates that the debt repayment process of «Roshen» debtors is slowing down.

However, there are also positive aspects (evidences) that indicate an improvement in the financial performance of «Roshen» Confectionery in the 2013-2018 period, namely:

– reduction of accounts payable and, accordingly, its maturity by more than 121 days. For suppliers and creditors, this means that «Roshen» can be called a bona fide debtor and the confectionary factory is making sufficient efforts to repay its existing debt;

– improving the overall profitability of «Roshen», as evidenced by the increase in the values of all indicators of profitability of the enterprise. It can be concluded that «Roshen» is carrying out a sufficiently effective financial policy in the context of increasing its net income and reducing costs.

Table 3

Actual values of the given coefficients of the Bankruptcy Probability Analysis models of PrJSC «Kyiv Confectionary Factory «Roshen»

Model	Coefficients						
Altman's	x1	x2	x3	x4	x5	–	Z
	-0,322	0,011	0,013	1,24	0,376	–	0,79
Tereshchenko's	x1	x2	x3	x4	x5	x6	Z
	0,90	2,40	0,011	0,029	0,026	0,376	1,84
Springate's	a	B	c	d	–	–	Z
	0,093	0,013	0,031	0,376	–	–	0,30
Taffler's	x1	x2	x3	x4	–	–	Z
	0,031	0,224	0,415	0,376	–	–	0,18
Lise's	x1	x2	x3	x4	–	–	Z
	0,093	0,013	0,011	1,24	–	–	0,009

Source: compiled by the authors based on [6], [10]

Therefore, the financial security management system should be aimed at achieving and maintaining the desired financial indicators of an enterprise performance, which ensure its viability and good financial state.

The financial security of an enterprise, in addition to being very closely related to the key financial indicators that characterize the financial state of an enterprise, is also related to the bankruptcy probability models. Determining the level of bankruptcy allows you to determine the level of financial security of an enterprise. The actual values of the given coefficients of the Altman, Tereshchenko, Springate, Lise and Taffler models for the PrJSC «Kyiv Confectionary Factory «Roshen»are given in table 3.

Bankruptcy standard values by the models of Altman, Tereshchenko, Springate, Lise and Taffler are given in table 4.

Table 4

Probability of bankruptcy by the models of Altman, Tereshenko, Springate, Lise and Taffler

Z-score	Probability of bankruptcy
Altman's Model	
Z < 1,81	80-100%
1,81 ≤ Z < 2,77	35-50%
2,77 < Z < 2,99	15-20%
Z ≥ 3	0
Tereshchenko's Model	
Z < 0	Very High
0 < Z < 1	High
1 < Z < 2	Medium
Z > 2	Low
Springate's Model	
<0,862	High
>0,862	Low
Taffler's Model	
Z>0,3	Low
0,3 <Z<0,2	Medium
Z <0,2	High
Lise's Model	
Z < 0,037	High
Z > 0,037	Low

Source: compiled by the authors based on [10]

PrJSC «Kyiv Confectionery Factory «Roshen» has a high probability of bankruptcy by all models except Tereshchenko's bankruptcy model (average probability). The analysis of bankruptcy models of the Table 3 and Table 4 shows, that today «Kyiv Confectionery Factory «Roshen» has an unsatisfactory stock of financial stability and, consequently, a low level of financial security. That is why, in order to improve the financial security of this confectionery factory, «Roshen» can be advised to properly develop and implement an effective financial sustainable development strategy, that is both adequate in terms of goals and priorities.

Thus, the diagnostics and assessment of financial security is one of the most important areas of studying the enterprise's financial condition and the effectiveness of its business activities. The main task of financial security is to ensure the financial stability and financial efficiency of an enterprise, therefore: the financial security management system should be aimed at achieving and maintaining the desired

financial indicators of an enterprise performance, which ensure its viability and good financial state. The data analysis of financial state of PrJSC «Kyiv Confectionary Factory «Roshen» shows, that the overall financial state of the Confectionery Factory «Roshen» is leaves much to be desired. Severally, the analysis of probability of bankruptcy by the models of Altman, Tereshenko, Springate, Lise and Taffler shows, that today "Kyiv Confectionery Factory «Roshen» has an unsatisfactory stock of financial stability and, consequently, a low level of financial security. In order to improve the financial security of this confectionery factory, «Roshen» can be advised to properly develop and implement an effective financial strategy, that will be resolved to improve the technical condition of the fixed capital of the enterprise; increase in the degree of financial independence of "Roshen" from external sources of financing its activities and increase in the degree of availability of the enterprise with its own funds.

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INTERCONNECTION OF SOCIAL AND ECONOMIC COMPONENTS OF SUSTAINABLE DEVELOPMENT OF THE AGRARIAN SPHERE

Tatiana Voronko-Nevidnycha,
Ph.D. in Economics, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine
Olena Sirenko,
Ph.D. in Economics,
Poltava State Agrarian Academy, Poltava, Ukraine

In the present conditions of humanity's existence, issues of environmental protection and social issues of life support for the population are dominant. One of the significant components of the sustainable development of society is the complex, balanced development of the agrarian sphere, which, in turn, promotes progressive transformations in the industrial, social and environmental spheres.

Let's consider the social determinant that together with economic and ecological ones forms the system of sustainable development. Thus, Decree of the President of Ukraine No. 722/2019 «On Goals of Sustainable Development of Ukraine for the Period until 2030» [7] declared support for global goals of sustainable development until 2030 and the results of their adaptation proclaimed by the United Nations General Assembly Resolution No. 70/1 of 25 September 2015, taking into account the specifics of Ukraine's development, outlined in the «Sustainable Development Goals: Ukraine» national report, in particular, among others, the Sustainable Development Goals include overcoming hunger, achieving food security, improving nutrition and promoting sustainable development of agriculture [8].

In addition, as stated in the Strategy for the Development of Agricultural Sector of the Economy for the Period until 2020: «The agricultural sector of Ukraine, the basic component of which is agriculture, is system-forming in the national economy, forms the principles of preserving the sovereignty of the state - food and within certain limits economic, ecological and energy security, provides the development of technologically connected sectors of the national economy and forms the social and economic foundations of rural development».

In turn, the principles of the agricultural sector development in the field of agricultural production organization are a balance of its development according to economic, social and environmental criteria. With the aim of the Strategy is to create organizational and economic conditions for the purpose of effective agricultural sector development by providing the unity of economic, social and ecological interests of society for the stable providing the population with quality, safe, affordable domestic agricultural products and industries with agricultural raw materials. One of the strategic goals of the agricultural sector development, defined in the Strategy, is to promote the development of rural settlements and to form the

middle class in the countryside by providing employment of the rural population and raising the income level [5; 6]. This points to the importance of the social component of the development of agricultural sector of Ukrainian economy. At the same time, the first principle of the agricultural sector development in the field of agricultural production organization is proclaimed as the balance of its development by economic, social and ecological criteria, which confirms the focus exactly on sustainable development.

One of the indicators of social component is the employment of population (table 1).

Table 1

Dynamics of the number of employed population of Ukraine by type of economic activity, 2012-2018, thousand people [1]

Indicators	Years							2018 to 2012, %
	2012	2013	2014	2015	2016	2017	2018	
Employed population, total	19261,4	19314,2	18073,3	16443,2	16276,9	16156,4	16360,9	84,9
Agriculture, forestry and fisheries	3308,5	3389,0	3091,4	2870,6	2866,5	2860,7	2937,6	88,8
Industry	3236,7	3170,0	2898,2	2573,9	2494,8	2440,6	2426,0	75,0
Construction	836,4	841,1	746,4	642,1	644,5	644,3	665,3	79,5
Wholesale and retail trade; repair of motor vehicles and motorcycles	4160,2	4269,5	3965,7	3510,7	3516,2	3525,8	3654,7	87,8
Transportation, warehousing, postal and courier activities	1150,9	1163,6	1113,4	998,0	997,2	991,6	995,1	86,5
Temporary placement and catering	326,7	328,9	309,1	277,3	276,7	276,3	283,0	86,6
Information and Telecommunications	297,9	299,9	284,8	272,9	275,2	274,1	280,3	94,1
Financial and insurance activities	315,8	306,2	286,8	243,6	225,6	215,9	214,0	67,8
Real estate transactions	322,2	314,3	286,1	268,3	255,5	252,3	259,4	80,5
Professional, scientific and technical activities	504,1	493,6	456,0	422,9	428,1	415,8	437,9	86,9
Administrative and support service activities	343,9	343,3	334,3	298,6	304,3	297,9	304,3	88,5
Public administration and defense; compulsory social security	1003,6 2	962,3	959,5 2	974,5 2	973,1	979,7	939,3	93,6
Education	1633,2	1611,2	1587,7	1496,5	1441,4	1423,4	1416,5	86,7

Health care and social assistance	1181,4	1171,8	1150,5	1040,7	1030,4	1013,6	995,4	84,3
Arts, sports, entertainment and recreation	225,6	226,5	221,2	207,9	201,6	199,8	196,9	87,3
Other economic activities	414,3	423,0	382,2	344,7	345,8	344,6	355,2	85,7

1 Data for 2012-2018 are given without taking into account the temporarily occupied territories of the Autonomous Republic of Crimea and the city of Sevastopol, since 2015 - also without part of the temporarily occupied territories of Donetsk and Lugansk regions.

2 The number of temporary workers involved in the preparation and holding of elections in: 2012; 2014; 2015 is taken into account.

After analyzing the data in Table 1, it was found that the number of employed population in Ukraine decreased by 2900.5 thousand people or 15.1 % during the study period, which can be explained by demographic, migration factors and lack of data from the occupied territories.

It was estimated that the most of the population is employed in trade, namely 22.3 % for 2012-2018. Agriculture occupies the second place – 18.0 % or 3046.33 thousand people in the average for the study period, that is the agricultural sector of the economy accounts for a significant share of the employed population in Ukraine, which determines the impact of the sector on the sustainable development of the country as a whole.

Accordingly, let's also examine the employment of the population of Poltava region (table 2).

Table 2

Dynamics of the number of employed population of Poltava region by type of economic activity, 2012-2018, thousand people [1]

Indicators	Years							2018 to 2012, %
	2012	2013	2014	2015	2016	2017	2018	
Employed population, total	652,7	648,3	602,9	583,6	570,4	575,0	580,6	89,0
Agriculture, forestry and fisheries	126,6	128,5	120,6	119,8	120,6	125,9	125,6	99,2
Industry	126,3	122,4	115,8	105,7	99,4	98,8	97,8	77,4
Construction	21,8	22,1	19,0	16,7	16,7	16,6	16,6	76,1
Wholesale and retail trade; repair of motor vehicles and motorcycles	136,6	138,4	119,1	113,2	117,2	119,9	124,7	91,3
Transportation, warehousing, postal and courier activities	40,0	39,5	39,3	42,2	38,5	37,0	35,8	89,5

Temporary placement and catering	10,5	10,5	9,9	9,2	8,8	9,0	9,1	86,7
Information and Telecommunications	6,3	6,2	5,4	5,3	4,9	5,0	5,1	81,0
Financial and insurance activities	7,1	7,0	6,5	5,6	5,0	4,7	4,6	64,8
Real estate transactions	7,7	7,5	7,0	6,8	6,4	6,0	7,3	94,8
Professional, scientific and technical activities	11,0	10,8	9,5	8,7	8,6	8,5	10,3	93,6
Administrative and support service activities	10,2	10,1	8,7	7,9	7,6	8,0	7,9	77,5
Public administration and defense; compulsory social security	35,1	32,9	32,8	34,9	34,0	32,3	33,1	94,3
Education	53,9	53,0	51,8	50,6	47,1	47,5	47,0	87,2
Health care and social assistance	42,2	42,2	41,8	40,6	39,9	40,2	39,6	93,8
Arts, sports, entertainment and recreation	6,8	6,7	6,2	7,0	6,3	6,3	6,3	92,6
Other economic activities	10,6	10,5	9,5	9,4	9,4	9,3	9,8	92,5

So, after considering the data in Table 2, it should be noted that there is a tendency to increase in number of employed in agriculture in the region until 2014. Since 2016, the number of employees in the sector continued to grow gradually, but it was not significant. At the same time, the share of persons employed in agriculture in the region during the study period takes second place (on average 123,94 thousand people), while trade is the highest among all types of economic activity (on average, 124,16 thousand people).

Let's determine the share of population employed in agriculture in Poltava region among the total number of employed and present these calculations using fig. 1.

It should be noted that during 2012-2018 the largest share among the main types of economic activity in the Poltava region is occupied by trade, agriculture – 20.6 % on average and industry 18.1 % in accordance. The largest share of the population of oltava region employed in agriculture was recorded in 2017, for the study period the level of this indicator ranged from 19.4 % to 21.9 %.

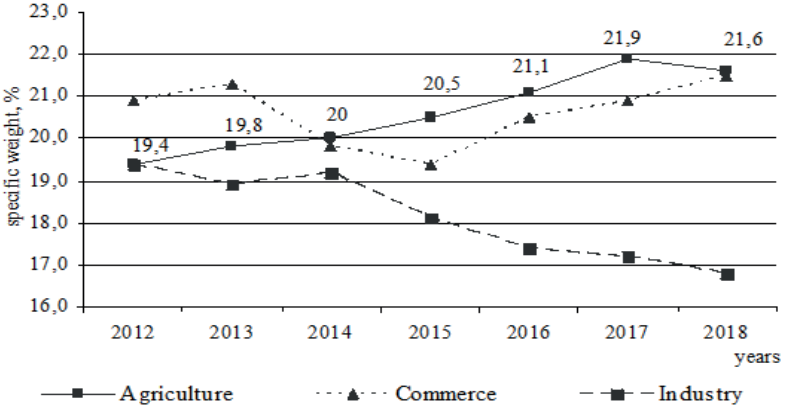

Fig.1. The share of population employed by the main types of economic activity of Poltava region, by the total number of employed, 2012-2018, %

Data of fig. 1 show that the share of employed in agriculture remains one of the highest, which has a positive impact on the social determinant of sustainable development in rural areas of Poltava region, but negatively characterizes the productivity of agricultural production.

As was mentioned, one of the strategic goals of the agricultural sector development, defined in the Strategy for the Development of Agricultural Sector of the Economy for the Period until 2020 [5] and subsequently signed Decree of the President of Ukraine No. 722/2019 «On Goals of Sustainable Development of Ukraine for the Period until 2030» [7], is an increase in the level of incomes of the employed in the agricultural sector of Ukraine. One of the targets for the realization of these tasks is to increase the average monthly wage of agricultural workers to the national average. Therefore, let's examine the dynamics of wages of agricultural workers and in Ukraine as a whole (table 3).

Table 3

Dynamics of the average monthly wage of workers in Ukraine per employee, 2012-2018, UAH [2, 3]

Indicators	Years							2018 to 2012, %
	2012	2013	2014	2015	2016	2017	2018	
Total	3041,0	3282,0	3480,0	4195,0	5183,0	7104,0	8865,0	291,5
Agriculture, forestry and fisheries	2094,0	2344,0	2556,0	3309,0	4195,0	6057,0	7557,0	360,9
Agriculture separately	2024,0	2269	2476,0	3140,0	3916,0	5761,0	7166,0	354,1

After analyzing the data in table 3, it should be noted that the positive tendency

for the increase of the level of wages of agricultural workers and the narrowing of the gap between the wages in agriculture and the average across Ukraine (by all sectors of the national economy). But despite the increase in the average wage in agriculture, its value in 2018 remains below the average wage in Ukraine as a whole by 19.2 % (fig. 2).

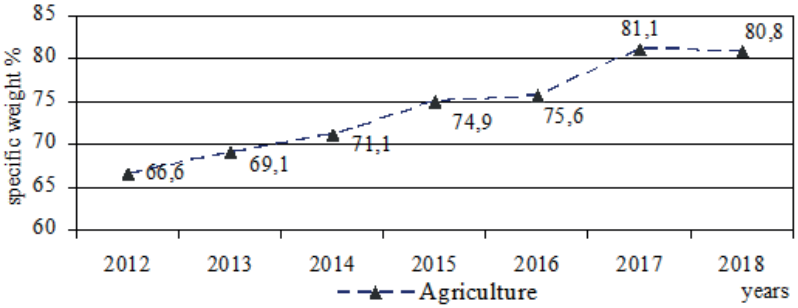

Fig. 2. Percentage ratio of wages in agriculture to average wages in all sectors of the economy of Ukraine, 2012-2018, %

The consequences of this are the departure of labor from the countryside (both internal migration and departure of able-bodied people abroad are observed); rural depopulation; outflow of skilled personnel from the agricultural sector, etc. Whereas, low employment in agricultural holdings is caused not by the level of payment, but by the mechanization and automation of agrarian production processes. Therefore, increasing the level of rural wages remains an unresolved task.

That is why, in order to achieve sustainable agrarian development, it is necessary to consider the interconnection of social and economic components. Accordingly, the increase in wages has to be confirmed by the growth of outperforming labor productivity in the sector.

Therefore, it is necessary to emphasize the importance of understanding the essence of development of the agrarian sphere on the basis of sustainability, which is related to the type of its development, in which strategically coordinated quantitative and qualitative changes are carried out and the living standards of agricultural producers, rural population and the whole nation are increased, and they achieved due to the harmonization of the production sphere, human resources and the environment, etc.

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DIVERSIFICATION OF ACTIVITIES IN THE SYSTEM OF ECONOMIC SECURITY OF ENTERPRISES IN THE AGRI-FOOD SECTOR

Oleksandr Halych,
Ph.D. in Economics, Professor,
Olena Ovcharuk,
Ph.D. in Economics, Lecturer,
Poltava State Agrarian Academy, Poltava, Ukraine,
Tetiana Vlasenko,
Ph.D. in Economics, Associate Professor,
Kharkiv Petro Vasylenko National Technical University of Agriculture

The formation of a modern competitive environment in the agri-food industry is determined by the presence of trends associated with increased risks and threats to the activities of agro-industrial structures, increased competition, the current trend is to improve the level of capital concentration as a method of building up technical and technological potential in order to solve the problems of ensuring sustainable development of rural areas. Under such conditions, the strategic priority for the functioning of agro-industrial groups is the diversification of production activities

as one of the most effective methods for achieving competitive advantages in the market and the strategic goals of the enterprise.

Diversification is one of the types of management practices focused on ensuring economic sustainability in a dynamically changing market environment. Its essence is to ensure sufficient product diversity in the adopted production plan. The risk of adverse changes in the market conditions creates situations of loss of profit due to unrealized offers for certain types of products. The combination of a grocery basket leads to the distribution of risk, reduces the overall riskiness of the business.

In the case of manufacturing products with a high proportion of specific resources, situations of underutilization of production assets may arise, form a low level of use of attracted capital and, accordingly, reduce the cost of the business. These processes are manifested in the context of integrating the activities of enterprises in the environment.

On the other hand, the internal tasks of the enterprise are associated with the tasks of forming the conditions for the efficient use of the most "capacious resources" of production. The most capacious condition for the formation of economic activity in the processing sector of the agri-food sector is production facilities. Their cost gradually affects the cost of production, so the stability of the capacity of production assets depends on the effectiveness of each of the many production cycles. That is, the key task of the internal environment is to ensure the planned return on the involved production capacities.

Since the anti-crisis management of enterprises in the agri-food sector provides for the adoption of measures of diversification and technical renovation, it is natural to raise the question of what is more important for enterprises in the agri-food sector: ensuring the efficiency of product sales or ensuring the efficient use of investments in fixed assets. Obviously, such questions arise when a solution is difficult or impossible to evaluate by a single criterion. Since we are talking about commodity production, including end-use products, it is natural to plan the production of an assortment of products in such a way that to make a profit from sales and, consequently, maximum profit with various options for the state of the market. However, such planning negatively affects the efficiency of the use of fixed capital. Thus, the agri-food enterprise is a multi-product enterprise with its inherent advantages and disadvantages, which include:

1. The concept of saving from diversity: the joint production of two or more goods, which can significantly reduce production costs compared to separate production.

2. The creation of various goods in the enterprise is associated with imperfect competition, which leads to the current excessive capacity of the company.

3. Excessive capacity is the main reason for the emergence of a multi-product company, since it is trying to use this excess capacity to produce other products as well.

Due to the increase in the degree of differentiation of goods, both an increase in the degree of imperfection of competition and a deviation of the used capacities,

production volumes and prices from the most effective ones occur simultaneously. For the variety of manufactured goods, business executives have to «pay» with an excess of unused capacity, the construction and maintenance of which create significant costs. Limitations on efficiency at each production cycle also do not solve the problem.

So, the criterion for maximizing the stability of the grocery basket and the criterion for maximizing the efficiency of capital use belong to the Pareto region, and it is almost impossible to build such a region, since both of these criteria are connected by technical and technological processes.

Thus, the construction of value functions of decisions is impossible due to the fact that the process of production and sale of products and the formation of the cost of capital is a single process. Moreover, it is not limited to one step. This means that at some stage of production it is possible to maximize the stability of the grocery basket, worsening the efficiency of using fixed capital, and at some step, on the contrary, it is advisable to increase the efficiency of using production assets due to the deterioration of economic indicators of product sales. In other words, this process should take a sufficiently long time interval, including at least the duration of the equipment operation period. So, the optimal composition of diversification measures and ensuring the planned economic return on production assets determines the conditions for the development of a type of activity that would be universal on the basis of an existing legal entity. It is proposed to consider this type as a multibusiness enterprise in the agri-food sector.

We define the essence of a multibusiness enterprise in the agri-food sector as a way of organizing economic activity focused on providing maneuvering opportunities for the specialization of the enterprise in a wide range in order to maintain economic stability in an unstable market of agricultural processed products.

A distinctive feature of this approach to business organization is the dynamic management of not only the grocery basket inherent in a traditional organization, but also the reorganization of technical and technological chains. That is, under certain conditions, a complete change in the specialization of economic activity is possible, accompanied by technical and technological re-equipment, while taking into account the regional resource potential and regional market conditions.

The results of the study of the current state and development of enterprises in the agri-food sector led to the conclusion about its crisis state. During the theoretical analysis, external and internal factors of crisis situations were identified; they indicate the need to develop effective management decisions to overcome and prevent them.

One of the basic elements of this process should be considered the diversification of activities of enterprises in the agri-food sector, which may ultimately lead to the formation of a new type of enterprises adaptive to environmental challenges – multibusiness enterprises in the agri-food sector. This predetermines the subject of further scientific research in this direction.

The results of experimental testing of the proposed anti-crisis mechanism using the advantages of a multi-business model as part of the investment initiative of Kremenchuhmiaso JSC prove that strategic planning for sustainable effective development must be carried out on the basis of long-term programming of optimal dynamic changes. This allows you to take into account forecast changes in the capital of the enterprise and to form timely measures to prevent crisis phenomena associated with the loss of profitability of business models that make up the economic activity of the enterprise.

It should be noted that with this approach, technological and technical capabilities are considered more widely. According to the traditional scheme, interest in technological capabilities is limited by the parameters of production lines necessary for obtaining the planned product (or product range), which are formed on the basis of the results of the scientific and technological progress. The connection point in this case is the product with its technical parameters. When using a multibusiness model, in addition to communicating with product parameters, the resource potential (both general and specific resources) and the potential of the market environment (capacity of the main and alternative types of products) are of exceptional importance. The potential of meat processing enterprises also includes the available opportunities for raw materials of agricultural origin (imports can be assessed as a backup option), including crop production.

The restructuring of economic activity (changing specialization) is not limited to technological restructuring, but should not change the economic sphere. Under this condition, the corresponding constancy of the agro-industrial sphere is ensured.

It should be pointed out that the process of forming a multibusiness meat processing enterprise has significant commonality with such a phenomenon as unrelated (non-native) diversification and is its continuation.

Unrelated diversification is a penetration into directions that do not have a direct connection with the main production and economic activities of enterprises. Unrelated diversification to a greater extent can be carried out by large enterprises. An example of this is the activity of industrial processing enterprises in the structure of JSC “Mariupol Ilich Iron and Steel Plant”. This plant for the production of metallurgical products (the main ones) also organized the production of sanitary products, furniture, ancillary agricultural production of sausages, bread, and other food products. Such diversification is characterized by the absence of common markets, resources, technology, and the effect is faster and to a greater extent due to the mutual exchange or separation of assets of fields of activity. Specialists note that this is more diversification of capital than production. It is also called «conglomerate diversification (conglomerate mergers)».

Many Ukrainian enterprises choose strategies for unrelated diversification, demonstrating their willingness to diversify into any industry with good prospects for profit. The heads of enterprises deliberately do not look for such types of business that have strategic alignment with other types of business enterprises.

The strategy of unrelated diversification of enterprises provides for penetration into any sectors and businesses, promising monetary benefits. The implementation of strategic correspondence relationships in this case is secondary.

Unrelated diversification companies traditionally enter new markets by acquiring enterprises already operating on them, rather than forming a new branch of the enterprise by the parent company. They are guided by the fact that such growth by the method of purchase is converted mainly to an increase in the market value of shares.

Unrelated diversification is a principled monetary approach, which is aimed at creating the market value of shares, while cognate diversification is a principled strategic approach to creating a market value of shares, as it involves the introduction of links between the structures of various businesses in order to reduce costs, share knowledge, technological experience, and other significant strategic benefits. The main goal is to transform the strategic correspondences that are included in the corporation of businesses into an additional competitive advantage that exceeds the amount of income that could be achieved when the business worked independently of each other.

Enterprises that produce non-core (unrelated) diversification are usually quite interested in finding areas of the activity (or enterprises that carry it out) that have the potential to receive fairly quick financial returns due to their special situation. A. Thompson and A. Strickland distinguish the following three types of enterprises:

a) companies value of which is underestimated, with the opportunity for their purchase at prices lower than market ones, although subsequently it will be possible to sell such a company at a higher price;

b) companies that have financial difficulties, can be purchased at negotiated prices (while their activities are being reorganized using the financial resources of the parent company, managerial know-how).

Typically, such companies are considered as long-term investments in the parent company's investment portfolio (due to high returns and / or potential cash inflows) or they can be sold quickly enough with profit;

c) companies that have the potential for growth, but are deprived of the actual opportunity to invest in them. Such attractive companies with low financial capabilities usually become candidates for diversification in financially powerful, but devoid of attractiveness companies (in terms of growth prospects).

At the same time, unrelated diversification (conglomerate mergers) has positive and negative aspects. The distribution of financial risks in many areas should be attributed to positive ones, when an enterprise can theoretically invest in any enterprise that could potentially provide financial benefits in the future, as well as stabilize its income by participating in areas and industries with different development cycles.

The negative aspects include the following three main disadvantages:

- the difficulty of managing a widely diversified company;

- the inability to use strategic compliance (i.e., matching the accumulated potential with potential opportunities) as an additional source of creating an appropriate competitive advantage;

- the presence of significant risks for the company, which seeks to penetrate the fast-growing areas of activity.

Such risks are mainly caused by the following reasons:

- excess of the allowable number of competitors in the relevant industry market, which ensures its effective functioning;

- current inability of sales channels to sell products of all enterprises;

- changes in forms and methods of marketing due to changes in technologies to which not every company can be adapted in a timely manner;

- deceptive market growth.

There are objective and subjective reasons for unrelated diversification, for example, they that are due to personal ambitions of the executive staff or just a case, which should be taken into account as well.

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

THEORETICAL PROVISIONS OF ENTERPRISE LOGISTICS AS AN ELEMENT OF THE SYSTEM OF FOOD SAFETY

Leonid Taraniuk,
Doctor of Sciences (Economics), Professor,
Sumy State University, Sumy, Ukraine,
Qiu Hongzhou,
Ph.D Student,
Sumy National Agrarian University, Sumy, Ukraine,
Karina Taraniuk,
Ph.D. in Economics, Senior Lecturer,
Sumy State University, Sumy, Ukraine

The accuracy of concept is the premise of theoretical research. According to the development of modern logistics concept, combining the theory of the agricultural economy, we believe that modern agricultural logistics refers to meet customer demand as the goal, supported by information technology, the use of modern means of logistics, the means of agricultural production and agricultural products, services and related information, from the source to consumption source of organization, control and management, and other economic activities, is an important part of logistics in the whole society. It is by the agricultural production means purchase and the agricultural product production, the harvest, the storage, the transportation, the packing, the circulation processing, the loading and unloading handling, the distribution, the distribution and the information processing and so on a series of operation link composition, and has realized the agricultural production means and the agricultural product preservation, the increment and the organization goal in the entire process.

Differences between modern agricultural logistics and agricultural products circulation:

1. Modern agricultural logistics is not the same as the circulation of agricultural products. Different properties. From the perspective of industry, agricultural logistics is the name of a service industry, and the core activity of modern agricultural logistics is to complete the time and space transfer of agricultural materials and agricultural products. The circulation of agricultural products is a field in which money is used as a medium to exchange agricultural products. It links production and consumption, and is an important link in the process of commercialization of agricultural products. Its core activity is Commodity Exchange.

2. Different coverage. Economic activities usually include production, circulation and consumption activities, while the circulation process of agricultural products also includes commercial flow and logistics of agricultural products. Commercial flow is a kind of transaction with currency as the medium, whose ultimate purpose is to realize the value of products. The circulation of agricultural products starts from the commercial flow, and the value utility is realized through the transfer of the ownership of agricultural products between producers and consumers. Then the use value of agricultural products is realized through the transfer of agricultural products from the supply side to the demand side. And agricultural logistics including agricultural means of production logistics and the logistics of agricultural products, is a kind of additional production process, it overcome the barrier of time and space, provide efficient and rapid means of agricultural production and agricultural products delivery and warehousing services to create the utility of means of agricultural production, agricultural products, including physical flow and information flow. Modern agricultural logistics covers the production, circulation, processing and consumption fields related to agricultural means of production and agricultural products. It can be seen that the circulation of agricultural products is not the whole of modern agricultural logistics. Compared with the circulation of agricultural products, the scope of modern agricultural logistics is broader.

3. Different profit sources. The profit of circulation of agricultural products comes from the price difference of agricultural products, while the profit source of modern agricultural logistics is diversified, including the price difference of agricultural production materials and agricultural products, as well as the value-added generated by the packaging and processing of logistics links [1].

From the perspective of reality, modern agricultural logistics has four specific functions to realize the function of using value.

1. Realize functions. Realize the use value of agricultural means of production and agricultural products through agricultural logistics activities in the operation of agricultural economy.

2 Value-added functions. In the process of agricultural logistics, value-added services such as agricultural production materials and agricultural product classification and packaging, distribution, transportation, storage and management, agricultural product processing, agricultural product demand forecasting, information services, cost control, logistics facilities network and logistics program design are provided to increase the added value of agricultural products.

3. Functions to enhance competitiveness. Modern agricultural logistics can gain competitive advantages by reducing production and circulation costs of agricultural products, providing differentiated logistics services, improving market response speed and customer satisfaction, reducing inventory, shortening production cycle, and increasing the added value of agricultural and sideline products, so as to improve the competitiveness of agricultural logistics enterprises and agricultural products.

4. Regulating function. Due to the imbalance in natural conditions, resource

allocation and technological development, each country and region has absolute or comparative advantages in the production of certain means of agricultural production and agricultural products. Through modern agricultural logistics, agricultural means of production and agricultural products can be exchanged among different regions and countries to meet agricultural production demand and people's demand for diversified consumption of agricultural products, expand the market scope of agricultural products, promote the optimal allocation of agricultural resources, and improve the overall efficiency of agriculture [2].

Developing modern agriculture logistics, strong force mouth of agricultural logistics management is to increase agricultural production, agricultural production, market reaction speed, saving transaction costs, reduce inventory, shorten the production cycle, improve the service level, improve product quality, increase product sales profit, the maximum to meet customer requirements and the need of society.

Modern agricultural logistics management is the scientific management of the logistics activities in the three stages of agricultural pre-production, production and post-production, namely the upstream, the middle and the downstream, so as to achieve the satisfactory service level with the lowest agricultural logistics cost.

The main contents of modern agricultural logistics management are: logistics operation management, logistics cost management, logistics service management, logistics quality management, logistics information management [3].

Modern agricultural supply chain is based on the analysis, research the meaning and characteristics of modern agriculture, characteristic and the law of development is put forward on the basis of a comprehensive concept, it is through the control of information flow, logistics and cash flow, from the production of agricultural production materials to the raw material and processing of agricultural products agricultural production, finally put the products sent to the hands of consumers by the sales network, formed by the agricultural materials suppliers, farmers, agricultural production, agricultural products processing enterprises, wholesalers, retailers, final consumers become an organic whole repeatedly function nets chain structure. It can be seen that modern agricultural supply chain is a network chain composed of various entities and information. These entities include farmers, agricultural companies, subsidiaries, farms, processing plants, manufacturing plants, warehouses, external suppliers, transportation companies, distribution centers, retailers and consumers. Agricultural logistics, capital flow and information flow on the network chain.

Modern agricultural supply chain management, as a kind of integrated management of «vertical and horizontal integration», can make up for the defects of traditional agricultural logistics management mode to the greatest extent and bring competitive cost advantage, space-time advantage and overall advantage [4].

First of all, in the modern agricultural supply chain management, is the strategic cooperation relationship between individual nodes, has the characteristics of consistent interests, and information sharing, each member will adopt advanced technology and equipment, scientific method, play to their respective core ability,

reduce duplication of work and the waste of resources, reduce the uncertainty of demand forecast deviation and inventory, increase inventory turns, thus effectively reduce agricultural logistics cost, create competitive cost advantages.

Second, through the selection of agricultural supply chain members, form an alliance to each member enterprises, give full play to its own core competence to achieve mutual complementary advantages, optimize the agricultural logistics and information flow of circulation channels, to maximize the shorten the response time and changing market demand, improve the delivery reliability and customer service, create the competitive advantage of space and time.

Third, the establishment of the strategic collaboration relationship of the supply chain reflects the integration and optimization of internal and external resources of the enterprise. It emphasizes that the enterprise should focus on the key business to achieve the optimization of the overall efficiency of the supply chain, and ultimately achieve the goal of win-win for all the members of the supply chain and create the overall competitive advantage [5].

Green logistics refers to the process of logistics to curb the harm of logistics to the environment at the same time, to achieve the purification of logistics environment, logistics resources to get the most full use. Green logistics is a multi-level concept, which not only includes enterprises' green logistics activities, but also includes the social management, regulation and control of green logistics activities.

Generally speaking, modern agricultural green logistics includes the following contents: green storage and transportation, green packaging, green circulation processing, green handling, green information collection and management, establish recycling logistics, goal of agricultural green logistics [6].

Green modern agricultural logistics is to develop green logistics, green civilization as the direction, to environmental protection as the goal, directly or indirectly contribute to the environmental protection of agricultural logistics pollution abatement. First, we will guide farmers and agricultural enterprises to develop green production and produce pollution-free agricultural products. Second, through the scientific logistics design, management and implementation, improve the agricultural materials and agricultural products transportation, distribution rationalization, optimization (such as joint distribution), transport packaging reuse, sales packaging pollution-free, easy to handle, reduce the pollution of agricultural products and the environment [7].

Career, etc. Modern agricultural logistics industry is composed of some logistics economic entities in the national economy, mainly including the following levels:

1. Agricultural logistics industry. This industry is composed of various transportation lines, the intersection and node of transportation lines, and the system of tally terminals. It is the infrastructure provided for the operation of agricultural logistics system and a «platform» as the foundation. Its main industries include railway, highway, water transport, air transport, warehousing, etc. The main logistics facilities are stations, freight yards, ports, docks, airports, railways,

highways, warehouses, etc. Agricultural logistics foundation industry is the most important component of agricultural logistics industry, which not only directly reflects a country's economic development level, reflects a country's strength, but also other agricultural logistics industry and even other economic forms of the national economy rely on the existence of the important foundation.

2. Logistics system industry. This industry is an organic combination of computer system technology and communication technology in the field of agricultural logistics. Information network technology is the lifeline of modern agricultural logistics. Through information transmission, resources can be Shared among suppliers of agricultural production materials, farmers and agricultural production materials, wholesalers, retailers and final consumers of agricultural products, and all links of agricultural logistics can be tracked in real time, effectively controlled and managed in the whole process [8].

3. Proprietary logistics. This refers to the self-run logistics of agricultural materials production enterprises, agricultural products production enterprises, large production and marketing enterprises, agricultural products processing enterprises and commercial enterprises, which may also be some of the industries engaged in third-party agricultural logistics activities. Self-run logistics focuses on the establishment of internal logistics system, which includes independent logistics enterprises established by agricultural production enterprises and circulation enterprises for their own production or business activities, especially distribution centers, distribution systems and circulation and processing systems. The self-run logistics industry partly depends on the social logistics platform, and for large-scale giant enterprises, they often build their own logistics platform.

4. Third-party agricultural logistics. The third party agricultural logistics industry is an industry in which the agent shipper provides the agent service of agricultural logistics to the shipper. The third party agricultural logistics is the direction of socialized division of labor and modern agricultural logistics. The agency role of the third-party agricultural logistics is the systematic and whole-process agency of all agricultural logistics activities. Such agency activities need to operate on the logistics platform, so the level of agency activities largely depends on the logistics platform. Agricultural logistics consulting industry.

5. The agricultural logistics consultation industry. The agricultural logistics consultation industry is made for agricultural logistics service enterprises, agricultural materials production enterprises, farmers and agricultural production enterprises to provide logistics services enterprises and institutions, specific business including agricultural logistics business management diagnosis, agricultural logistics market research and analysis, the third party agricultural logistics operation mode, agricultural logistics park or agricultural logistics center location selection, planning and implementation, agricultural logistics equipment, agricultural logistics engineering supervision, the agricultural supply chain management process optimization, agricultural logistics operation, agricultural

logistics information technology, agricultural logistics enterprise financial management, logistics enterprise marketing management consulting, supply chain, customs affairs Consult, etc. Due to the characteristics of agricultural logistics, compared with general management consulting, agricultural logistics management consulting is more professional, more complex and involves a wider range [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].

Summary. Agricultural enterprise logistics generally refers to various activities of agricultural enterprises from material procurement to the formation of agricultural products, from the storage of agricultural products, the circulation and processing of agricultural products to the sales of agricultural products. The logistics management of agricultural enterprises studied in this paper mainly refers to a series of material movements taking the sales of agricultural products as the center and the management activities of elements and functions carried out by relevant departments in the process of various activities. It involves the transportation, storage, processing, packaging, handling, distribution and information processing of agricultural materials and agricultural products. Agricultural enterprise logistics is not isolated, because of the characteristics of agricultural production, it must be closely related to rural logistics and the circulation of agricultural products.

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THE ANALYSIS OF THE POSSIBLE EFFECTS OF THE FOURTH INDUSTRIAL REVOLUTION IN TERMS OF THE HUNGARIAN BUDGET EXPENSES

Balazs Cseh,
Doctor of Law, Ph.D. student,
National University of Public Service, Budapest, Hungary

The Western civilization lived in three industrial revolution so far. In the wake of steam engines and automatization now a brand new, fourth industrial revolution takes place. The essence of this new industrial revolution is that the physical machines and objects all connects to an informational system, while the real economy integrates into a huge and intelligent informational system. The Industry 4.0 is such a conception, which reacts to the challenges of the recent revolution, which is mainly conducted through full digitalization of the industrial processes. This is not just about the penetration of technology, but the paradigmatic change of business processes and change of the role of the state. Industry 4.0 is what Hungary and Europe need (Strange, Zucchella 2017).

It is important to highlight that among the cultural factors human attitude and mentality significantly impact digital development. This is the reason why the concept of digital revolution cannot be interpreted in itself in a Hungarian relation. For this, the stronger role of the state is needed and for this, it is important for the national budget to retain its stable position after the fourth industrial revolution. In Hungary, if we consider different sectors of industry, we can see that automatization can work in the way just like in the sector of the automotive industry. It is conducted via the presence of two-three big, foreigner, financially strong companies that raises the sector. An interior company will never be that successful to develop without a significant proportion of subsidy. The basic research and developments are lacking (Szóka 2015). In the pharmaceutical industry, the Richter, ÉGISZ, and Chinoin promote the development with a foreigner background and owner too. In the chemical industry, most of the competency and research work derive from Hungarians, therefore a big proportion of the GDP is created within the country but the stadium of manufacturing and commerce is the authority of foreigners. This is not the trend in the automotive industry but there is an endeavour to raise the rates of interior research work and competency, to keep a bigger amount of value-added within the country. In the course of recognizing this, Hungary created a separate item

of expenditure for the Industry 4.0 technologies and the support of 5-25 companies and research centres. This measure was conducted for a HUF 1.5 billion allocation.

The fourth industrial revolution in Hungary and its national budget effects. The phrase „Industry 4.0" indicates the fourth industrial revolution. This process will generate the total transformation of our economic life, the strengthening intertexture of informational technology and automatization, and as a result of this, the total revolution of manufacturing processes. With the help of M2M (Machine to Machine), machines will be able to carry out the control of more complex tasks, the basic of which is that they have the ability to communicate with each other with human assistance. The extent of productivity can significantly increase as a result. Automation will be able to cover almost the full spectrum of economic processes (Szóka 2019).

With the spread of automation, the proportion of live labour will be reduced to some extent that is difficult to predict. As a result, countries with high tax burdens on labour will have a large loss of tax and a loss of tax revenue as a result of the fall in the amount of labour. Therefore, when examining the impact of the Fourth Industrial Revolution on Hungarian public finances and the expenditure side, it is first necessary to review the structure of the tax system. (Kenyeres, 2016)

Automation reduces the amount of live work, but not the wage bill, of more skilled, better paid work comes to the fore. The Hungarian tax system has rightly shifted towards sales taxes, because it encourages individual work performance, and on the other hand, even if the labour input really is significantly lower, the state will still have enough revenue. In addition, by broadening the circle of taxpayers (burden sharing), advanced technology operators, who are now in the forefront of being taxed, will become revenue generators for the state (Lentner 2017).

Reform of the tax system in Hungary after the crisis of 2008 with a tendency to reduce the tax burden on labour. In the period of 2004-2015, there were two different cycles during the period: the first cycle is between 2004 and 2008, when the rate of labour taxes is increasing, and the rate of consumption taxes is decreasing (Kovács, Szóka, Varga 2019). At that time, however, the trend was reversed and it is clear from 2009 to 2015 that the proportion of sales-to-consumption taxes rose from around 36% in 2008 to 45-46%, while the proportion of labour taxes rose to 52% in 2008 from around 45-46% of total tax revenue by the end of the period (Varga 2017).

The transformation of governmental expenditures in the EU as a result of Industry 4.0. Significant transformations occurred in the structure of taxation in the European Union in recent years. In the point of labour taxes, an integrated tendency can be observed. In the case, which is the most important to us, the level of labour tax is high in Germany, although it shows a decreasing tendency (Takács, 2014). The sums that derive from the German personal income tax construct the core of the German government tax revenue, besides the incomes of the value-added tax. Being aware of this fact, the question arises as to how the income side of the German national budget can be maintained with the mass spread of the future automation. The charts below are to indicate the tendencies in the European Union. In the

territory of EU-28, the biggest proportion of the national budget was constituted by the social transfers that were in the forms of cash or in kind in 2017 (see 1. figure). The social transfers (the social benefits and the market production, purchased in kind social transfers) represented the 45.1% of the total expenditure in the EU-28, while 47.9% in the euro area. The allowance of the employees was 21.7% of the national budget in the case of EU-28, while 20.9% in the case of the euro area.

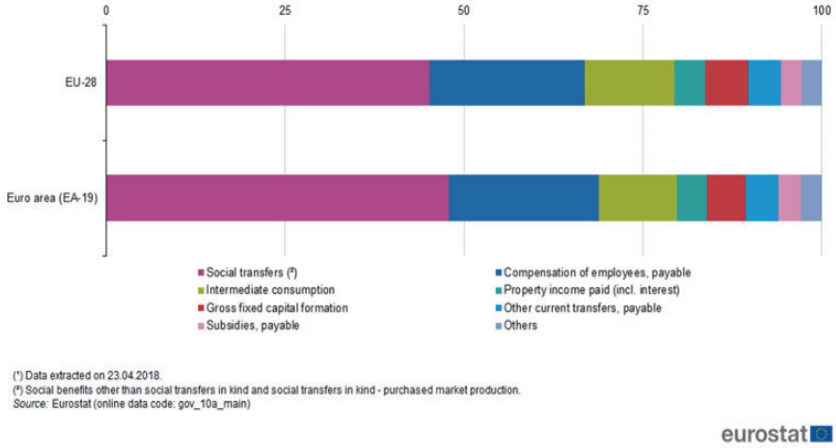


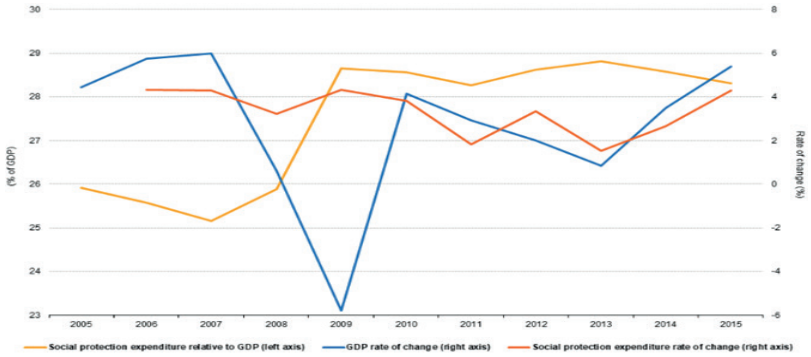
Fig. 1. The composition of the total amount of expenditures in the year 2017 (In the percentage of the total expenditure)
Source: https://ec.europa.eu/eurostat/statistics-explained/index.php/Government_finance_statistics/hu

Social costs related to human work and perceived as the impact of live work make a significant contribution to the structural transformation of the labour market. As a result, GDP in the EU-28 increased by 6.0% in 2007 (compared to the previous year), remained almost unchanged in 2008, and then drastically decreased in 2009, while social protection expenditure continued to increase at a relatively stable pace throughout the period 2006-2016. As such, the impact of the global financial and economic crisis was clearly evident as expenditure on social protection as a percentage of GDP in the EU-27 increased by 0.7 percentage points between 2007 and 2008 and by another 2.8 points between 2008 and 2009.

György Matolcsy, president of the Central Bank (Pesuth, 2014) also ascertained that the Hungarian taxation system was the most progressive in terms of labour taxes in the region. This type of taxation system (with the large-scale of unemployment benefit) led the Hungarian labour market activity rate to be one of the lowest ones in the European Union. Therefore, in our country the taxation is featured by the moderation of labour taxes in this respect, therefore, automation makes the

Hungarian tax system less vulnerable, so public finances are less exposed to the processes. (Varga et al., 2018, Lentner, 2018)

The rate increase in 2009 reflected a 4.3% increase in social protection expenditure, while GDP fell by 5.8%. In 2010 and 2011, the ratio of social protection expenditure to GDP declined by 0.1 and 0.3 percentage points, as social protection expenditure grew at a slower rate than GDP. In 2012, this trend reversed and social protection expenditure also grew faster than GDP in 2013, which may have been offset by slower social protection expenditure growth in the following year. In 2015, EU social protection expenditure grew by 4.3% (excluding Poland), offset by slightly faster economic growth (5.4%; also excluding Poland). The ratio of social protection expenditure to GDP decreased by 0.3 points to 28.



Fig, 2. Tax returns, EU-28, 2005-2015 (in the percentage of GDP%, in the change of social expenditures and GDP)

Source: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Social_protection_statistics

However, with the above-mentioned increase in government expenditure on labor, there is a decrease in social security revenues. Revenue from taxes and social contributions can be divided into three main categories or types: indirect taxes (such as value added tax - VAT), defined as taxes on production and imports, and direct taxes, which consist of current taxes on income and wealth; third, net social security contributions. The difference between direct and indirect taxes, such as VAT, is that in the case of direct taxes, the burden of payment cannot easily be passed on to other parties (Kenyeres et al. 2019).

The potential effect of of Industry 4.0 on the revenues of Hungarian national budget and its expenditures. According to the data of the CSO, the amount of social insurance revenue in Hungary in 2015 was HUF 4,489 billion. This amount can be treated as the basis for the burden of live labour. To this must be added the personal income tax amount of HUF 1,689 billion and the total wage tax and staff tax of HUF 200 billion. This is nearly 20% (18.5%) of GDP in 2015 (HUF 34,324

billion). To this amount, we can add the amount of holiday pay (the machines do not go on holiday), the amount of sick pay (the machines do not get sick even if they fail, repairs can typically be done quickly by proper techniques) and family support amounts. In particular, the amount of leave, the amount of the first 15 days of sickness benefit, one third of the amount of sickness benefit in the first 15 days and the amount of disability pensions (Varga et al. 2018).

Thus, it can be stated that based on the direct costs of the HUF 6,378 billion live workload in Hungary in 2015, almost one third of this, or HUF 2,105 billion, will be generated. This is a nearly 6% reduction in the workload of 2015 GDP. With respect to 2019, as outlined above, this new trend requires an appropriate new tax base, revenue source. In addition, automation reduces the unit cost of products. This entails a reduction in the amount of value added tax due if the sales price of the products is reduced. The burden of open or covert unemployment, which can be replaced by machine labour and is usually created by the release of mechanical human labour, can and should be offset by creating new types of tax revenue opportunities in the future. These new taxes will not impose a burden on live labour, but will either create a new tax burden on consumption or turnover or somehow tax the automation process (Varga et al. 2018).

In contrast, the central budget included HUF 125,747 million in income support and supplementary social benefits in 2015, which did not increase until 2019, as the same amount was planned, which meant an actual expenditure of HUF 428,620 million by August. As can be seen from the above, in Hungary, with the decline in tax revenues from labour and employment, the costs of the central budget are increasing due to the aging society. However, the labour force needed to increase production is not being replaced, for example by demographic decline. By way of example, according to population data, in December 2018, 7,184 children were born, 5.3% less than in the same month in 2017. At the same time, the number of deaths increased, 12,188, which is 5.7% more than in December 2017. The natural population decline due to the balance of births and deaths was 5,004, an increase of 27% compared to the same month of 2017 (CSO: Economy and Society, 2018/12).

The programme Industry 4.0. According to Pricewaterhouse Coopers (PwC) Global Industry 4.0 Survey 2018, Germany and Japan are currently the most advanced in the field of industrial digitalisation and IT for internal processes and horizontal value chain relationships. support. PwC estimates that $ 907 billion will be invested in industry by 2020, mainly in software applications including Manufacturing Execution Systems (MES), sensors and other digital, primarily networking and connectivity tools. This was confirmed by other surveys in 2018, such as Industry 4.0 - An international comparison commissioned by Huawei or Acatech's «Industry 4.0 in a Global Context» report.

For the first time in Hungary in 2019, Act XVII of Act L of 2018 on the Central Budget of Hungary 2019 The chapter of the Ministry of Innovation and Technology included a chapter-specific appropriation of the Industry 4.0 program, which had a

budget of HUF 1.5 billion. The program aims to provide the Government with a tool to implement Industry 4.0's Industrial Development Strategy, which, in line with real market needs and in line with international market trends, supports industry-driven digital transformation of smart devices, in line with the Irinyi Plan.

The program sought to support the digitization transformation of the manufacturing and ICT services sectors based on smart devices, in line with the objectives set out in the Irinyi Plan. The program aims to contribute to the innovative re-industrialization of Hungary, primarily through the qualitative renewal of small and medium-sized enterprises (hereinafter referred to as SMEs) and the improvement of their competitiveness by supporting about 5 to 25 Hungarian enterprises. This appropriation is intended to support development, cooperation and networks in the following areas in the framework of Industry 4.0:

a) Adaptation and widespread adoption of technologies to enhance the efficiency of business and social processes to support the design and implementation of Industry 4.0 systems, support for multidisciplinary collaboration in the technical, IT, economics and human sciences, professional and market researching current, relevant and forward-looking solutions to meet its challenges, building and exploiting industrial links, and providing ongoing information to academia and academia in the areas studied

b) Further development of cloud-based technologies, utilization of augmented reality in manufacturing and logistics processes for maintenance, remote assistance, (fault-cause analysis by machine learning methods, predictive maintenance), rapid prototype production, customer involvement in prototyping, simultaneous design, and production visualization MES - Manufacturing Execution System, supply chain collaboration (through production plans, inventory data sharing), optimization of supply chain, inventory and production planning, production of optimal inventory, procurement and production plans to meet market needs (real-time collection of production and resource data) and Show). Development and implementation of intelligent mechatronic systems (autonomous robots; autonomous vehicles (AGV) in manufacturing and logistics, robot assisted manufacturing, collaborative robots small series and custom manufacturing solutions)

Reflecting global change and the rise of machine work, Canada's Prime Minister Justin Trudeau, 23, has already included in the 2017 budget a line for innovation and skills, resulting in unemployment stemming from the development of the innovation economy, also concentrate. Based on this, he set aside $ 132,4 million in funding over a four-year period to maintain the employment insurance benefit system. (https://www.quora.com/What-should-governments-do-to-prepare-for-the-technological-automation-of-human-jobs.

Following the example of developed countries, it is encouraging that the Hungarian government has already recognized in 2018 that the fourth industrial revolution will also change the structure of Hungarian employment. It also has a strong influence on central government finances. Contrary to the international

examples mentioned above, the Hungarian government does not seek to remedy the employment problems that may arise during the expected transformation, which seems to be aimed not at drastically increasing social spending but at ensuring, with the help of employers, disadvantage the employee. In addition, it does not seek to cover rising social costs by increasing tax revenues on labor but by promoting value added tax revenues on consumption.

We can conclude that the named item expenditure is a sign of the fact that the Hungarian legislation recognized the significance of the fourth industrial revolution.

It seems to be proven that technological transformation, digitalization and automation exercise a significant effect on the national budget of a state, which requires the increase of the role of the state, state-governmental measures and reflections in my point of view.

The effect of the fourth industrial revolution on live labour and the structure of labour market is unquestionable. Its transformation has a direct effect on the sustainability of the Hungarian public finances and on the operation of the state. The trends on the source and release pages analyzed above require continuous further analysis. However, the Hungarian state closely follows the central measures of the EU and the developed western world.

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INTERDEPENDENCE OF FUNCTIONS AND METHODS OF INNOVATIVE MANAGEMENT IN THE PROCESS OF MANAGEMENT BY ACTIVITY BY INDUSTRIAL ENTERPRISE

Oleksandr Cherep,
Doctor of Sciences (Economics), Professor,
Natalya Seysebaeva,
Ph.D. in Economics, Associate Professor,
Oksana Gamova,
Ph.D. in Economics, Associate Professor,
Zaporizhzhia National University, Ukraine,
Meruert Kanabekova,
Ph.D. in Economics, Associate Professor,
Kazakh National University named after Abai, Almaty, Kazakhstan

On the today's stage of development industrial enterprises are characterized by worsening of results of activity, that it contingently the increase of number of the crisis phenomena, complication of socio-economic development of country. On such conditions the number of enterprises grows which use an out-of-date equipment, produce the products of not high quality. Therefore there is a requirement in forming of ways of adjusting of activity of industrial enterprises, id est activations of innovative activity. Complication of process of adjusting of innovative activity on enterprises is explained by absence of effective methods of management of industrial enterprises activity [1, p. 418-427]. The variety of activity from a management innovative processes can be presented as certain functions in a chain: idea → scientific researches → of development → of planning → production → realization of innovations. Every function is sent to the decision of specific, various and difficult problems of co-operation between separate subdivisions which require realization of large complex of concrete measures. Accordingly, it is expedient to investigate the place of functions and methods of innovative management in the process of management activity an industrial enterprise.

Over 20 public (basic, operating-rooms) functions, what productions related to the recurrence, are distinguished in most sources. General to the function name having regard to that they are inherent to any sphere of activity (, beginning from a production, completing production distribution. Will name operating-rooms of function got as they answer the certain stage of administrative activity.

A word «function» in translation from Latin means «realization, implementation». Shcheblykina I. O., Hrybova D. V. in the train aid of «management Basis» examine management functions as types of purposeful activity in relation to the guided object, predefined by co-operation and division of labor among a managerial staff [2].

Zakharchenko V. I., Korsikova N. M., Merkulov M. M. examined the functions of innovative management as relatively the separated direction of administrative

activity, that allows to carry out influence on an innovative process [3, p. 116].

The task of management of enterprises activity is influence on workers with the aim of providing of his efficiency and effectiveness through the functions of management and forming of methods and receptions, that is why scientist Aleinikova O. V. [4], Babiy I. V. [9], Bondar O. V. [5], Burdenyuk I. I. [6], Glebova A. O. [5], Zakonnova A. A. [7], Zakharchenko V. I. [3], Kapinos G. I. [9], Komarnitskaya N. M. [10], Korsikova N. M. [3], Marmaza O. I. [8], Merkulov M. M. [3], Pritula N. M. [4], Chernyak N. I. [6] investigated the methodical going is near determination of essence, classification and use of functions and methods in the process of management of enterprises activity. But the not decided is remained by questions in relation to their of them close intercommunication and influence on efficiency of activity of enterprises.

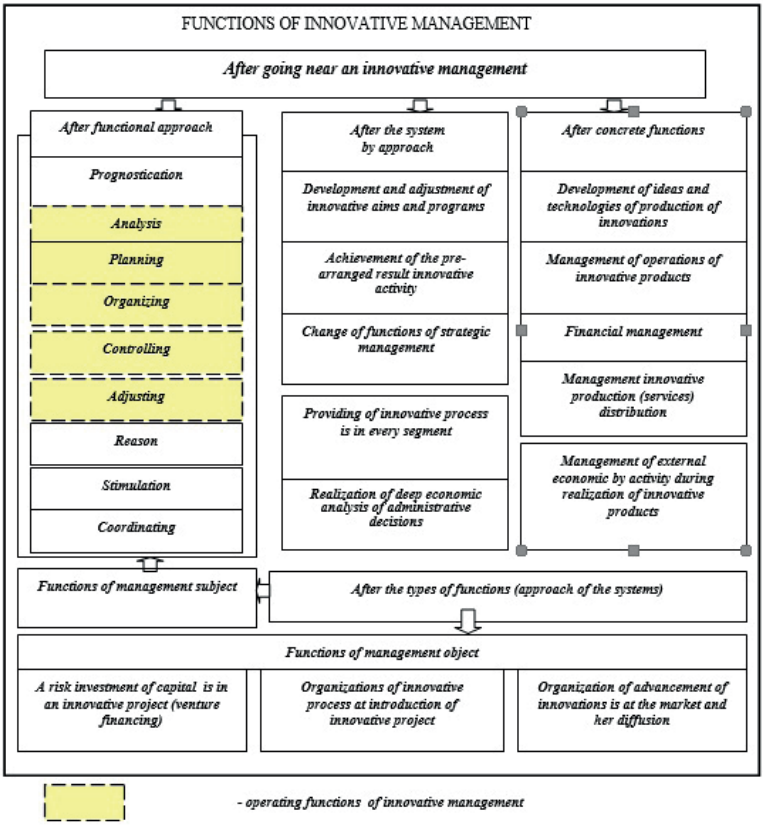

Fig. 1. Basic functions of innovative management are after different approaches
Source: it is built after materials [7, p.116; 11, p. 67-68; 6; 12]

In professional and educational sources for each of going near understanding of innovative management (fig. 1) the different are offered classifications of their functions are on different criteria and signs.

As a result of change of the state of affairs of investment market, financial state of firm, miscalculations in an innovative portfolio and other factors construction actual and expected efficiency of separate innovative projects (financial instruments) can appear far below from a calculation.

In this case made decision about an exit from such innovative projects (sale of separate financial instruments) and the forms of this exit (realization, corporatization, and others like that) are determined.

Accordingly adjustments of innovative brief-case comes true by the selection of other innovative projects or financial instruments, where the freed capital is reinvested [5, p. 23-30].

Distinguish two types of functions of management of innovations:

1) functions of subject are managements which partly duplicate functions after functional approach (fig. 1 and fig. 2);

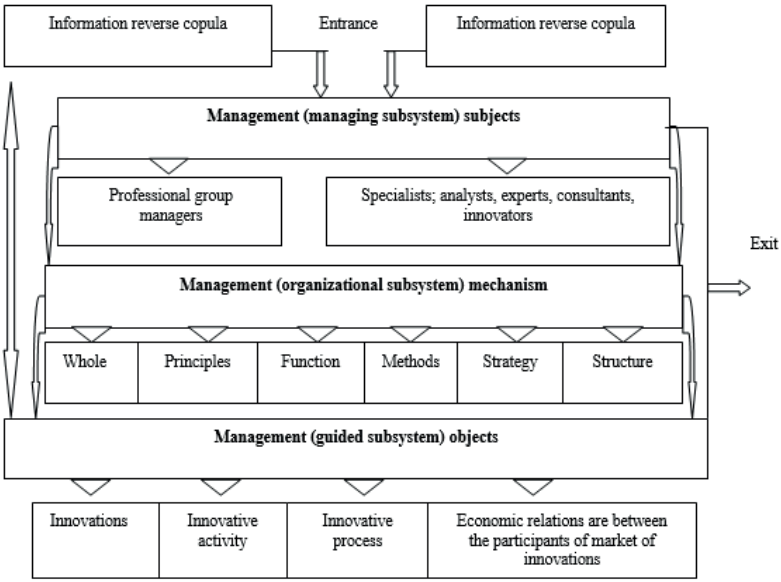

Fig. 2. General chart to the innovative management according to approach of the systems [4, p.9]

2) functions of management object: risk investment of capital in an innovative project;

3) organization of innovative process at introduction of innovative project and

organization of advancement of innovations are at the market and her diffusion.

The function of risk investment of capital clearly shows up in organization of the venture financing of investments at the market of innovations. The investment of capital in a new product or in a new operation is always related to the vagueness, with an enormous risk. Thus, it always comes true through creation of innovative venture funds.

The table of contents of function of organization of innovative process will be rational organization of innovative activity in relation to creation, realization and distribution of new product or new favour [13, p. 69].

Two major categories of management - functions and methods are dialectical constrained inter se. The basic task of functions to the management, as directions of administrative activity, forming of management methods is, id est methods and receptions of influence on workers (fig. 3).

A term «method» results from Greek «methodos», that in translation means a «way to something», id est knowledge is about that, by what methods, in what sequence it is needed to decide those or other tasks.

Management methods are methods and receptions of influence of the sensor-based system on guided on different levels and management (enterprise, subdivision, service and others like that) links [14].

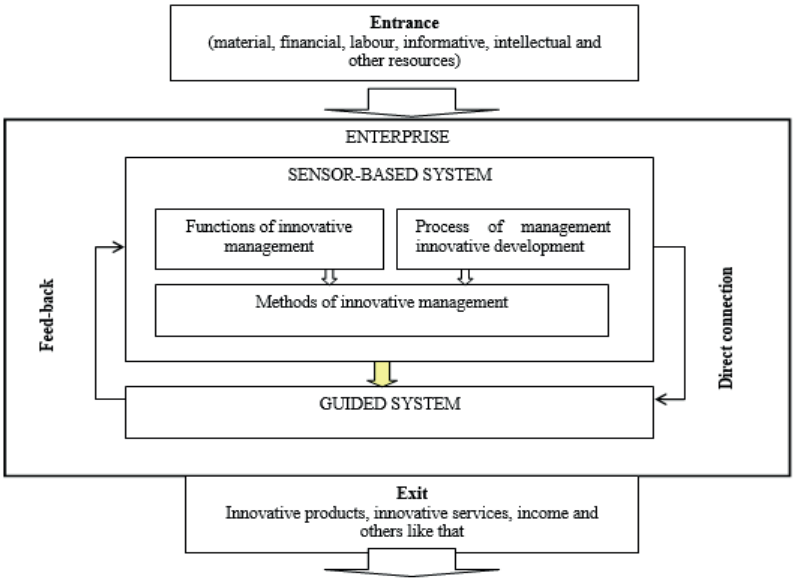

Fig 3. Place of to of the methods of innovative management in the process of management

Source: [7] with an authorial revision

In practice management methods are the aggregate of methods and receptions of influence on the collective of workers and separate performers with the aim of implementation of mission of organization and achievement of her aims.

They are the managements (firm, department, subdivision and others like that) sent to the object, id est on the workers of different types of activity, their maintenance appears through the features of receptions and methods of influence, and a primary objective is providing of harmony, organic combination of individual, collective and public interests[14].

In foreign literature from a management management methods equate with the methods of financial and economic or organizational work, methods of record-keeping, commercial activity, marketing [7].

An of management uses both general methods (economic, social psychological, administrative- legal, scientific et al), which apply in all spheres to activity and special, which represent the specific of activity.

Management methods classify on different signs [14]: by direction of influence on the guided object; by the form of influence; by character of influence and others like that.

After direction of influence on the guided object distinguish: methods of direct influence – directly influence on the guided system (orders, orders, pointing, instructions, positions, tariffs and others like that); methods of indirect influence - create terms for influence on the guided system of management (methods of selection of collective on different signs, methods of forming of psychological climate in a collective and others like that).

On of a form influence: quantitative methods (calculations, estimates, prices, budget, wage incentives and others like that); high – quality methods (pointing, moral stimuli, methods of selection of collective is after psychical physiology factors).

By the nature of influence:

– the technological methods of management foresee influence on workers through documents, which determine technology of production and economic processes. Technological documents belong to them; designer documents [14];

– economic methods are an aggregate of receptions and facilities, which provide the use of objective economic laws, conformities to law and interests in activity of organization on the basis of commodity-money relationships with the aim of achievement of her aims. Aims and general line of behavior, within the limits of which he searches the most acceptable to him ways of their achievement independently, are set only a performer. Initiative is advantageous not only for a worker but also for an enterprise, timely and high-quality implementation of tasks is rewarded, foremost as cash disbursements [9];

– social psychological methods are methods of influence on the collectives of people, which are based on drawing on scientific accomplishments of social and general psychology in the management of operations. Conceptually these methods are taken to two basic directions: 1) forming of favourable morally-psychological

climate in a collective; 2) exposures and to developing individual flairs each, that allow to provide maximal self-realization of personality in an operating process. They find a display in the social planning, moral stimulation of forming of collectives and creation of favourable socialpsychological climate in them;

– administrative methods – It methods, which will be realized as concrete no alternative tasks which assume minimum independence of performer, as a result all responsibility depends upon a leader which gives order. These methods were widely used on industrial enterprises and in the field of services at command-administrative control system by an economy in our country [9];

– organizational methods are an aggregate of facilities and receptions of direct managing influence on organizational relations between workers in the process of functioning of the system with the aim of management her state in accordance with terms which change. Essence of these methods consists in that for realization of any activity the system at first must be optimally organized: projected, aimed, regulated, rationed, provided with instructions which fix the rules of implementation of works and behavior of personnel. Organizational methods are preceded to activity, create necessary terms for her, and thus is passive [9].

As all methods of management are directly related to his functions and management stages and sent to innovative development (ID), it is expedient to consider classification of methods exactly in such context (тabl. 1).

Table 1

Basic methods of innovative management are depending on functions and management stages

Management functions	Management methods
Management methods are after functional approach	
prognostication	facts graphic are methods which are based on fact sheets (extrapolations, method of cross-correlation-regressive analysis) and heuristic - foresee realization of prognosis developments by means of logical receptions (intuitional methods are a questionnaire, method of «brainstorming»; analytical methods are a method of morphological analy-sis, method of optimization and others like that) [15]
forming of innovative aims	method of construction of «tree of aims» [8]
planning	balance, normative, economic and mathematical, analytical; programmatic-having a special purpose method; calculation-structural method, trial-statistical method, method of optimization and others like that [15]
organizationally	organizationally-prescriptive methods: order, order, pointing and instructions [7]
analysis	logical methods of treatment of information, methods of the determined factor analysis, methods of stochastic factor analysis, methods of optimization deci-sion of economic tasks [9]; comparative, statistical analysis, method of expert estima-tions [11, p.70]

adjusting	comparative analysis of the state of management object, diagnostics
stimulation	-direct economic stimuli: payment of labour, bonus for rationalization, participating in incomes, payment for preparation and retraining of shots; -indirect economic stimuli: additional charge for experience, favourable services; -not money stimuli: assistance to initiative, creative character of labour.
monitoring	analysis of consumers, analysis of terms of competition, analysis of scientific and technical potential of enterprise, market of commodities-innovations analysis[16, c.97]
Management methods are depending on the stages of management innovative development of enterprise [9]	
Management stage	Management methods
Analysis external internal environ-ment	method of segmentation, methods of analysis and statistical estimation, PEST of -аналіз, SWOT of -аналіз, method of construction of matrix of possibilities, methods of comparative analysis
Forming of aims and tasks of ID	methods of analogies, expert methods; methods of active search, cerebral assault, method of Delfi, methods of passive search (marketing researches, suggestions of consumers, developers and inventors)
Development of strategies of ID	method of scenario of development and expert estimations, extrapolation of tenden-cies, simulation models and designs, methods of the dynamic programming
Determination of innov. to potential	methods of theory of supplies, theory of mass service (turns), method of brainstorm-ing, method of break, methods of cost analysis
Calculation of efficiency of ID	methods of estimation of efficiency of investment projects; to the break-even of projects analysis, methods of analysis of sensitiveness of projects
Development and acceptance of development of projects are in relation to ID	methods of regressive analysis, expert methods, methods of analysis of the systems, operatively-calendar management, analysis of rejections

Source: materials are systematized [6, 7, 8, 11, 12, 16]

The methods of analysis of the systems of problems which arise up are widely used in practice of management innovations; probability theory; design of processes of making decision; situatioonal approach, which gives an opportunity of the creative use of adequate situation, scientific receptions of management[11, p. 22].

It is set that traditional functions are necessary for adjusting of development of innovative activity of industrial enterprises in accordance with a public innovative policy, assists the mechanism of adjusting of activity, present legislative base, favourableness of their development, normative providing of this activity on an enterprise and their inhibition to the use [17] receptions of management and management functions, that allows to the industrial enterprises to work high-efficiency because in the conditions of present time their activity is characterized by worsening of financial results, decline of level of competitiveness, loss of leading

position both on internal and on external markets, by the low level of security from the threats of market environment, by absence of the proper level of development of economic security.

Management methods are formed in a next sequence:

- evaluation of situation and put tasks with the aim of determination of basic directions and types of influence;
- choice of composition of methods and ground of their high-quality and quantitative parameters;
- providing of terms for effective application of select methods, that forms a technique and technology of administrative work in end-point [14].

Thus, pre-condition of forming of effective management of industrial enterprises innovative activity is determination of methods, principles, functions, which it is expedient to adhere to during their realization which will provide the achievement of the put aim and expected results of activity. To the basic functions it was taken: control; motivations; regulative; planning; prognostication; planning; organizations; forming of innovative aims, analysis, stimulant; to monitoring. Among principles will mark: to expediency; to authenticity; to availability of information; to validity; adaptations; to effectiveness; to purposefulness; sequences; to the system; to priority; to continuity; to scientific character; orientations are on end-point; to the complexity.

At the same time, all methods of management must function not as separate, separate and independent methods of influence, but as integral system which consists of interactive and inter related elements. Methods which are used in the process of management of enterprises activity improve constantly, they are not determined. Development of innovative activity, new approaches and conceptions, can not develop without the new going and methods near their realization and realization.

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A DYNAMIC MODEL OF MAKING DECISIONS IN THE ENTREPRENEURSHIP SECURITY SYSTEM

Volodymyr Panchenko,
Doctor of Sciences (Economics), Associate Professor,
Central Ukrainian State Pedagogical University named after
Volodymyr Vynnychenko, Kropyvnytskyi, Ukraine

The process of making personnel decisions at the enterprise requires high accuracy and speed, because the efficiency of work of the enterprise in general depends on the performance of the employees, their correspondence to their chosen position.

Scientific principles of economic security of entrepreneurial activity are laid down in the works: B. M. Andrushkiv [1], O. I. Zakharova and Ya. Prygunova [14], L. G. Shemaieva [10], A. F. Yaremenko [13] and others.

Personnel security of the organization as an object of management appears in the writings of such scientists as:

- M. A. Zhabrailov [3], K. V. Goncharov [5], N. V. Kuznietsova [6], N. K. Nazarova and Kh. Yu. Chzhana [8], I. B. Shvets [11] and others.

The works of scientists that are devoted to the methodology of assessment of personnel security:

- N. L. Gavkalova and T. S. Bushman [4], Yu. A. Poskipko [9], Kh. V. Zhydetska and L. A. Shvaika [15] and others.

However, the imperfection of the available methods for assessing the personnel potential of the company staff is that the evaluation process ends with the fact of obtaining results. The assessment is required to identify the problems of management of personnel security and solve them.

Therefore, the question of personnel security at the enterprise, namely, the construction of such a management system that would allow improving financial results and satisfying the needs of every employee, remains relevant.

The purpose of the study is to develop a dynamic model of making decisions in the personnel management system of the enterprise regarding the candidate's suitability for his/her position for its further integration into the model of intellectual management of the personnel security system of the enterprise.

To accomplish this task, it is necessary:

- to present the criteria for evaluation of candidates in the form of a hierarchical tree;
- to determine membership functions of unclear terms;
- to develop the knowledge base to model the process of making decisions based on unclear rules;
- to determine the method of unclear logical inference;
- to carry out parametric identification of the model;
- to evaluate the accuracy and transparency of the unclear model.

The methodological approach to determining the level of formation and ensuring the security of the personnel of the enterprise is offered by scientists N. L. Gavkalova and T. S. Bushman [4] which we will take as the basis.

The candidate's suitability criterion for his/her position is indicated by the integral index D ϵ [0, 1].

Candidate evaluation criteria are designated as K_1, … , K_n, n = 1 ÷ 10, the candidate assessment model for his / her position will be a functional display (Formula 1):

$$K = \{K_1, K_2, \dots, K_n\} \rightarrow D \in [0,1]$$

The factors are conveniently represented as a hierarchical tree.

The Tree elements are interpreted in the following way:

D – the root of the tree – the candidate's suitability to the position;

k1, k2, k3 – non-terminal vertices – large influencing factors;

Kn, n = 1 ÷ 10 – terminal vertices – separate influencing factors of intellectual control of the personnel security system of the enterprise.

The unclear dynamic model of making decisions in the personnel management system of the enterprise regarding the candidate's suitability to the position is based on expert knowledge and experimental data; therefore, to improve the adequacy of the model, the parameters of term membership functions were adjusted in such a way that the standard error was minimal.

The dynamic model of the enterprise personnel security system (SKBP) consists of the following components:

– the knowledge base that is based on the expert assesments, production rules system and enterprise personnel security system model, consisting of «black box» model, methods of making decisions;

– unclear model of the personnel security system of the enterprise (developed the Mamdani algorithm [8]), the result of which is to obtain a dynamic indicator of the personnel security system of the enterprise (fig. 1).

The application of static and dynamic model of making decisions in the enterprise personnel management system in the enterprise personnel management system will make it easier to make decisions.

Attention in this model should be given to the informational security, as it is indicated by E. Maikl, T. Vitman, Dzh. Gerbert [7], as well as I. Tashi and S. Gernauti-Geli [12].

The developed model of making decisions in the system of management of personnel safety of the enterprise can be used to monitor the dynamics of the employee's development for a certain period of time.

The Scientist O. V. Chernenko [2] focuses on the psychological and pedagogical aspects of the formation of professional adaptation of young managers to the

conditions of work in trade organizations, which we used in our model for trade personnel (supermarkets «ATB», «Furshet»).

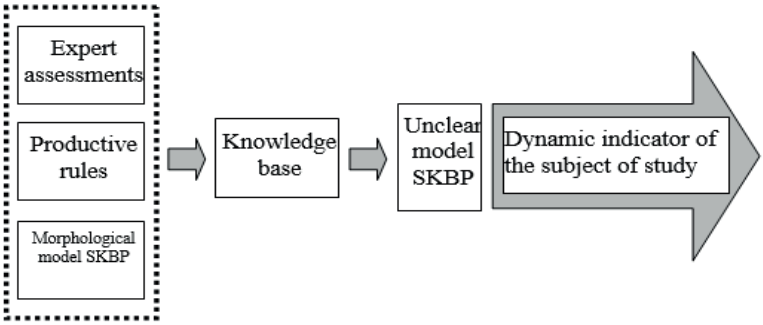

Fig. 1. Dynamic model of the personnel security system of the enterprise

For example, it is necessary to evaluate the suitability of a candidate for his / her position for 2 years. The developed model of making decisions in the system of management of personnel safety of company allows to determine the indicator of compliance at the control points – every 3 months, there are 9 estimates in total.

Table 1 presents the baseline data for the assessment in the dynamics, and fig. 2 shows how the candidate's compliance rate changed over the 2 years.

Such an analysis will allow you to fix break points, moments of emotional burnout or vice versa, career advancement.

According to the obtained results, management will be able to promptly respond and reduce the risks of personnel security at the enterprise.

Table 1

Initial employee data for 2 years

Criteria\ periods	1	2	3	4	5	6	7	8	9
K1	0,22	0,22	0,22	0,22	0,32	0,32	0,32	0,32	0,32
K2	1	1	1	1	0,25	0,25	0,25	0,25	0,25
K3	0,25	0,25	0,45	0,45	0,45	0,45	0,45	0,45	0,45
K4	1	1	1	1	0,3	0,3	0,3	0,3	0,3
K5	0,3	0,3	0,3	0,3	0,35	0,35	0,35	0,35	0,35
K6	0,75	0,75	0,8	0,8	0,8	0,8	0,8	0,8	0,8
K7	0,25	0,25	0,4	0,4	0,5	0,5	0,75	0,75	0,75
K8	0,4	0,4	0,4	0,4	0,6	0,6	0,6	0,6	0,6
K9	0,5	0,7	0,9	0,9	0,6	0,6	0,6	0,6	0,75
K10	0,8	0,85	0,95	0,95	0,95	0,95	0,95	0,95	0,95

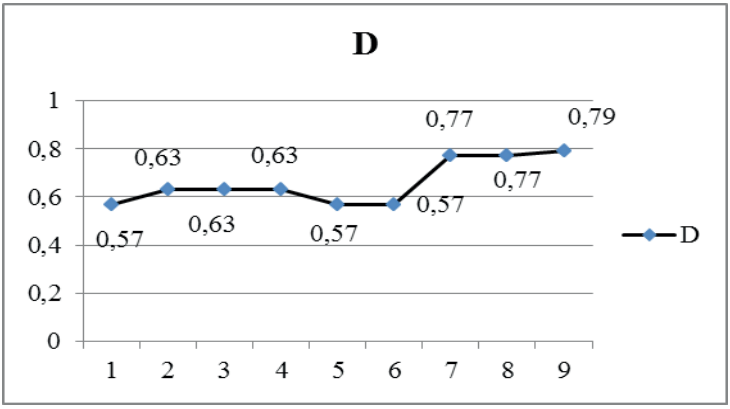

Fig. 2. Dynamics of employee compliance assessment

The developed system of decision-making models in the system of management of personnel safety of the enterprise is a hybrid, as the following methods and approaches are applied for its practical implementation:

- methodology of system analysis for morphological model construction, determination of inputs-outputs, environment, structure and relations between elements of the decision-making system in the enterprise personnel management system;

- methods of expert assessments for processing information while constructing functions of unclear terms of linguistic variables and in forming the knowledge base;

- the method of unclear logics for building a dynamic model of decision making in the system of management of personnel security of the enterprise, namely for the implementation of the system of logical inference;

- methods of statistical analysis for estimation of accuracy of decision-making model in the system of management of personnel safety of the enterprise and for processing of statistical sample in the construction of functions of belonging of terms of input and output linguistic variables of the model.

The personnel security system is directly connects with the personnel management system and economic security of the enterprise. There are two issues that management should pay particular attention to.

Firstly, it is the process of hiring a potential candidate for his or her position that requires automation and processing of large amounts of information.

Secondly, it is a constant monitoring of the development of existing employees in the enterprises and timely adjustment of positions and requirements to them.

Thus, the practical value of the developed and implemented by us the author's dynamic model of making decisions in the system of personnel safety management of the enterprise will allow the personnel managers to take into account quantitative and qualitative indicators of a candidate's professional suitability for a job, to

investigate the development of a given employee at the stage of hiring and for a certain period of time further adjusting the personnel strategy and personnel management system.

The practical value of the research lies in the application of the developed model of making decisions in the system of personnel safety management of the enterprise to assess the dynamics of development of employees in the enterprise, with the aim of improving and improving the level of management of the personnel safety system.

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LAND RESOURCES MANAGEMENT IN THE CONTEXT OF STRENGTHENING FOOD SECURITY OF UKRAINE

Mykola Zos-Kior,
Doctor of Sciences (Economics), Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine,
Ruslan Markov,
Ph.D. in Economics, Doctoral student,
The National Institute for Strategic Studies, Kyiv, Ukraine,
Vladislav Sevryukov,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

Land resources management in the context of strengthening food security of Ukraine is considered either from the point of view of ensuring the absolute value of a certain quality of food or from the point of view of the possibilities of further production of the same food in general, which are related to the ecological efficiency of the management of land resources due to at least two ecological reasons: the need to create an environmentally safe environment for humans and wildlife, which preserves biological balance and water balance of the territory, improves the circulation of organic matter, provides increased reproduction of economic fertility of the soil, accompanied by increased content of humus, production of environmentally friendly non-agricultural production the environment by agricultural chemicals; the need for an indicator to determine the sustainable development of rural areas, improved circulation of organic matter provides increased reproduction of economic

soil fertility, accompanied by increased humus content, production of ecologically free daily non-agricultural production of the environment by agricultural chemicals; the need for an indicator to determine the sustainable development of rural areas.

Logicaly, that the whole history of rural agriculture, as well as of modern civilization, is an attempt to compromise between the desire to maintain high yields and preserve the fertility of the land in the future. With the increase in production of economic products, the environmental value of the site decreases. At some point an equilibrium is created between environmental and economic benefits derived from a tract of land, which is an indicator of the effectiveness of the organizational and economic mechanism of rational agricultural use. Of course, the maximum possible economic indicators of agricultural land use need to reach only if a sufficient level of land reproduction is ensured. This requires an increase in the number of indicators and criteria for assessing the effectiveness of agricultural land use, as well as the high efficiency of land conservation and use measures for sustainable rural development relevant to this study.

From the general set of indicators performance indicators for land resources management, we highlight those that are important analytical material at the national level. Among all indicators (35 in total) of the environmental efficiency of land resources management, the agent of land interests state responds to 26 indicators, of which 15 (weighing 0.14-0.15) were selected by the expert method in three criteria (weighing 0.3-0.4) - anthropogenic loading, reproduction, harmonization. Considering the above, and the author's considerations and expert evaluation, we will present a system of criteria for assessing the level of economic efficiency of land resources management of the agricultural sector of the economy. The environmental efficiency of land resources management is closely intertwined with the social one, since the creation of an environmentally friendly environment is a necessary factor, which significantly influences the formation of normal living conditions for workers and the population in general [1-5, 11]. All types of land resources management efficiency should be considered not in isolation, but focusing on avoiding the situation when higher economic efficiency is achieved by violating environmental security and curtailing social programs [6, 8-9].

Among other priorities, depending on economic results of national subject of land resources management, the protection of natural resources acquires a high status only after achieving high profitability of economic activity. Accordingly, the state, as an agent of land relations, should take some of the responsibility for these processes in conditions of low profitability. Therefore, the study generalized indicators and developed criteria for the environmental effectiveness of land resources management, taking into account their importance and the impact of all agents of land interests.

Prospects for managing land resources of the agrarian sector of the Ukrainian economy in the present conditions have a short horizon of forecasting. This phenomenon is explained by the increasing globalization influences on all spheres

of being of modern society, including land relations. Therefore, taking into account the current general trends in the development of the world economy, more possible is scenario modeling in the development of ecological efficiency forecasts for agricultural land resources management [7, 10].

In view of the above, the estimation of the predicted impacts of environmental performance of land resources management has been carried out. Let λ is an arbitrary indicator. It defines two functions on the set of all indicators. The function fλ (aijk) is 1, if changing λ changes aijk, and equals 0, if there is no connection between λ and aijk. The function gλ (aijk) determines the regression coefficient the indicator aijk to the indicator λ. Then, when the index λ is changed by the value of Δλ, the change in the integral efficiency of land resources management is determined by the equality (1):

$$\Delta = \sum_{i=1}^{3} \sum_{j=1}^{3} \beta_{ij} \sum_{k=1}^{5} \alpha_{ijk} f_{\lambda}(a_{ijk}) g_{\lambda}(a_{ijk}) \Delta_{\lambda}$$

Indicators of environmental efficiency of land management resources cause the most indirect impacts (table 1).

Table 1

Predictive rating of influence of indicators on the assessment of the integrated efficiency of land resources management according to 2018 *

Indicator	Influence	Indicator	Influence	Indicator	Influence
AL5	0,688	B1	0,120	D2	0,045
R3	0,616	M1	0,120	D3	0,045
LR1	0,417	B4	0,080	D4	0,045
PM4	0,403	P5	0,080	D5	0,045
AL3	0,378	LR3	0,060	B5	0,045
AL1	0,366	LR4	0,060	H2	0,045
LR2	0,330	LR5	0,060	H3	0,045
D1	0,256	AL2	0,060	M2	0,045
AL4	0,231	P2	0,060	M3	0,045
H4	0,172	P3	0,060	M4	0,045
R2	0,167	P4	0,060	M5	0,045
P1	0,167	PM2	0,045	C2	0,045
H1	0,160	PM3	0,045	C3	0,045
C1	0,160	PM5	0,045	C4	0,045
PM1	0,120	H5	0,045	C5	0,045

Symbols: value added per 1 ha of farmland (LR1); weight of profit per 1 ha of farmland (LR2); the difference between the rate of increase of land value and the rate of increase of

prices for other non-residential real estate (LR3); the difference between the growth rate of gross production and the growth rate of acreage (LR4); rate of rent (LR5); the difference between the level of profitability of agricultural activity and the average deposit rate (PM1); level of profitability of agricultural activity (PM2); rate of increase of profit from the sale of agricultural products and services (PM3); the share of agro-dollars in the total net output of the agricultural sector (PM4); the amount of net profit attributable to one founder of the enterprise per year (PM5); share of livestock products in the structure of gross production (D1); the share of perennial plantations in the structure of farmland (D2); the share of arable land that has not been sown (D3); provision of energy power of agricultural enterprises (D4); rural economic activity (D5); the number of people who actually feed 1 ha of agricultural land (P1); the difference between the rate of increase of labor productivity and the rate of increase of land-use of workplace (P2); value added per employee (P3); the difference between the rate of increase in labor productivity and the rate of increase in wages (P4); labor productivity (ПР5); the ratio of the wage of an agricultural worker to the average in the economy (M1); share of wages in value added (M2); rural social activity (M3); the share of those wishing to engage in commodity production on their own land (M4); share of expenditures for social activities in total expenditures (M5); the rate of increase of rural population (C1); the rate of increase in the number of agricultural workers (C2); number of farmers per 10,000 villagers (C3); the number of workers per 1000 ha of farmland (C4); rate of increase in area of agricultural lands of citizens (including farms) (C5).

Source: authors' own calculations.

Thus, an increase in the amount of chemical fertilizer application per 1 ha of acreage (AL1) has a positive impact on the economic efficiency of land resources management through an increase in gross collection and, consequently, of total household resources (in this case, workers' salaries and rent payments). The use of land resources per unit of gross output (AL3) has a positive impact on the economic efficiency of land resource management by increasing land returns, and on the social efficiency of land resources management by increasing labor productivity under all other things being equal. Regarding the share of sunflower and rapeseed in the structure of acreage (AL4), according to the author's studies, more diversified farms are more profitable, and more personnel can be involved in the production process, which is observed on the impact map.

The negative impact of livestock density (AL5) on the social effectiveness of land recources management is explained by the decline in livestock production and, hence, by the much lower value added per employee. The positive impact of this indicator on the economic efficiency of land resources management is due to the multiplier effect of diversification of production.

Regarding the positive impact of humus balance (R2) on economic and social efficiency, any increase in this indicator means improving the quality of land resources → yields + quality of products → gross collection + sales prices → the income of all agents of land interests. Specific weight of acreage fertilized with organic fertilizers (R3) has a negative impact on the economic efficiency of land resources management due to the high cost of manure and its application and the

inability to objectively calculate the economic effect due to its long-term nature.

The decrease in the share of eroded land in the structure of farmland (H1) is associated with additional costs, which leads to a decrease in the economic efficiency of land resources management, and, on the contrary, increases the social efficiency of land resources management due to the possibility of obtaining additional resources by households.

The computer program was used to predict the change in the cost of integrated land resources management using the proposed methodological approach, which, taking into account mutual influences, allows to calculate the predictive rating of the impact of indicators on the assessment of the integrated efficiency of land resources management. One of the variants of this forecast is presented in Table. 2. Of the 15 most influential indicators, 9 are environmental, 4 are economic, 2 are social.

The content of this forecast is that when you set a change in one of the indicators (for example, by 1) by a certain value (in conditional assessment points), the value of the integrated efficiency of land resources management changes.

For example, an increase of 1 point of AL5 (livestock density) leads to an increase of 0.69 points of the value of integral efficiency land resources management. That is, an increase in the density of cattle by 59% (1 point of the value of this indicator is 59%) increases the value of the integrated efficiency of land resources management by 2.89% (1 point of the value of the integrated efficiency of the land resources management is 4.18%, respectively 0.69 points are 2.89%).

If for 2018 the density of livestock was 31.5 c.h. per 100 ha of agricultural land, the absolute increase of 59% would be 18.6 c.h. per 100 ha of agricultural land. In terms of cows (1 conditional head = 1 cow) and the entire area of agricultural land in Ukraine, this will mean the need to increase the population by 6501 thousand heads. The second most important factor (sensitivity of change in the value of integrated management of land resources) is R3 (the share of acreage fertilized with organic fertilizers) and again related to the development of animal husbandry. This indicates that it is impossible to increase the efficiency of land resources management without diversifying production.

The matrix of forecasts of values of integral efficiency (IE) of management of land resources of the agrarian sector of economy for all analyzed criteria is developed (Table 2).

For example, a change of 1 point (moving from an estimate of 5 points to 4) of applying chemical fertilizers per 1 ha of acreage (AN1), which increases the integral efficiency of land resources management by 0.366 points (or 1.55%), is equivalent to an increase of AN1 by 9.9%. In absolute terms, this means an increase in AN1 from 82.0 to 90.1 kg a.s., which is equal to the additional introduction to the entire acreage of 152.6 thousand t a.s. The calculation of the dynamics of other indicators is identical.

Thus, the predictive data take into account the interrelationship of individual indicators and is a versatile tool for managerial decision-making in the presence of

certain resources and food security capabilities.

Table 2

Predictive values of integral efficiency (IE) of land resources management of agricultural sector of economy under the influence of change of indicators of 'anthropogenic load' criterion by 1 point *

Indicator	Change of IE		Change and forecast indicators		
	point	%	point	%	in absolute measurement
Chemical fertilizer application per 1 ha (AL1) kg a.s.	0,366	1,55	–5→–4	+9,9	82.0 → 90.1 kg a.s. or the whole area of 152.6 th.
Application of plant protection products per 1 ha (AL2), l	0,060	0,25	–6→–5	–7,4	2.7 → 2.5 l / ha of acreage
Using of land resources per unit of gross output (AL3), ha / thousand UAH	0,378	1,59	–2→–1	–11,3	0.141 → 0.125 ha / thousand UAH (–3078 thousand hectares)
The share of sunflower and rapeseed in the structure of acreage (AL4),%	0,231	0,96	–3→–2	–2,3	22.3 → 20.0% (–139.8 thousand hectares)
Cattle density (AL5), mind. / 100 ha of farmland	0,688	2,89	2→3	+59,0	31.5 → 50.1 d. / 100 ha of farmland (+ 6501 thousand c.h.)

Using the authoring system of forecasting matrices greatly facilitates the calculation procedures and the perception of the practical nature of forecasting the economic, environmental and social effectiveness of land resources managment, including in the context of harmonization with globalization prospects for sustainable development and food security, which are the subject of further research.

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MANAGEMENT OF TRANSFORMING SOCIAL PROJECTS AS THE BASIS OF SOCIAL SECURITY

Larisa Lutay,
Doctor of Sciences (Economics), Professor,
Institute of Personnel Training of the State Employment Service of Ukraine, Kyiv, Ukraine,
Igor Baranets,
Postgraduate student,
Institute of Personnel Training of the State Employment Service of Ukraine, Kyiv, Ukraine

For Ukraine, the problem of socio-economic development is becoming more and more urgent every year, which is caused by increasing levels of unemployment, crime, inequality, corruption, shadow relations and so on. All this does not contribute to strengthening the social security of the state. In the face of diminished state aid in solving social and economic problems, the economic burden for which corporate social responsibility becomes the basis of doing business is the main burden on the social security of the population.

Due to the acceleration of globalization processes and the implementation of large-scale changes in various fields of economic activity, great importance is

attached to projects and programs of transformation.

Transformer project management is a complex, multi-level process that requires the development of an appropriate project management concept. Some contribution was made by well-known scientists in the field of project management D. Williams and T. Parr [1, p. 76-108], D. J. Anderson [2],K. Wackowski [3, p. 40-44], who have developed many radical approaches to project management and have found a contradiction between the requirement of a function acting in the face of change and the timely adaptation of management systems to them. The interest given to managing transformation projects as one of the new areas of project management and change management has emerged as a subject of research by domestic scientists: SD Busheva, NS Busheva, AI Belokon, VA Racha, RB Tyan, VD Shapiro, II Mazur, BA Demidov and others [4].

The purpose of the study is to define the concept of «transformative project» and group its components; the concept of «architecture of transformative projects»; understanding of the need for scientifically sound legal norms for supporting transformative projects in the public sphere in conjunction with social security, providing guidance on how to improve the project management process to ensure timely transformation of the organization.

There are three types of change in business today: developmental, transitional and transformational. Traditional project management and what is commonly called «change» effectively support developmental change and transitional change, but they are extremely insufficient for transformational change [2, p. 106]. Unlike change management, transformation management cannot simply be guided by a few discrete, well-defined changes, it must focus on a coordinated portfolio of interdependent initiatives.

The need for a systematic approach to project transformation management is highlighted by the Polish researcher of transformational changes in the field of computer science, K. Wackowski [3, p. 42-44]. The authors of the study «Creative technologies for project and program management» [4, p. 48-73] reviewed creative project management technologies and programs based on the construction of matrix and genetic technologies. British project management professionals have proposed a new approach to program management that maximizes the likelihood of real value creation through programs and transformation projects.

As for the management of transformation projects in Ukraine, this approach is at an early stage of development and therefore needs further development. In general, project management techniques of this type have not yet been sufficiently developed.

Each approach has its own objective prerequisites, as well as prerequisites for organizational transformations, which together have a common and specific character [5, p. 196]. The general objective prerequisites for the transformation of social and economic governance systems to create a modern social security system are as follows: improvement of means of production and labor; increasing scales

of concentration of production, improvement of products; increasing the level of complexity of social and industrial processes; the need for synchronization, coordination and integration of activities; governance as a form of social security; the need for knowledge management.

Other considerations include the evolution of organization management theory and practice [6, p. 103]. The main ones are: increasing human needs; social needs for change; transformations related to globalization, informatization, demographic change, etc.

In 1991-2020, Ukraine underwent a process of internal transformational change in its legal, economic, political and social systems. The main purpose of the changes resulting from the draft Sustainable Development Strategy «Ukraine to 2030. Project 2017» – introduction of the European standard of living and global progress of Ukraine, compliance with social security standards, ie ensuring the security of the state, business and citizens, protection of investments and private property, effective mechanisms for combating corruption. The priority is human life and health. Strategic goals set in the Strategy should be considered as transformational projects [7].

Despite the objective prerequisites for scientific management of transformative projects, there is still no corresponding theory of national management of organizational and managerial transformations. New approaches to managing transformative projects should be based on the conceptual provisions of the science of transformation management and be consistent with the trends of the economy of Europe, other developed countries, and countries with economies in transition.

Based on the aforementioned transformation project management, it should be based on the following conceptual provisions:

1) the concept of «transformative project» should be considered as a form of purposeful management of transformation activities, the transformation process or a set of documents. In this case, the project is an integral part of the organizational transformation management system, which should be built taking into account the conceptual provisions of organizational transformation management in the widespread use of programmatic management in various fields, including innovation;

2) the main elements of the transformation project (fig. 1) should include formulated goals and objectives that reflect the main purpose of the transformation project. There is also a need for a set of project measures to address the problem and achieve the goals set, first of all, their relationship with resources and contractors in order to achieve the goals of the transformative project for a limited period of time within the set cost and quality. Finally, the transformation project should identify the main indicators of project success, both from the target – for the project as a whole and from the individual - for the tasks, topics, stages, activities, executors, including indicators that characterize its effectiveness;

3) projects can be formed as part of a transformation program, realizing the

goals of certain types of transformations (directions) of a transformation program, ie reorganization, revitalization, restructuring, etc .;

4) the formation of transformation projects by individual types will provide a comprehensive, systematic approach to achieving specific transformation goals. This will ensure continuous management of the design process, and can provide a sound decision on the direction of effective implementation of project goals;

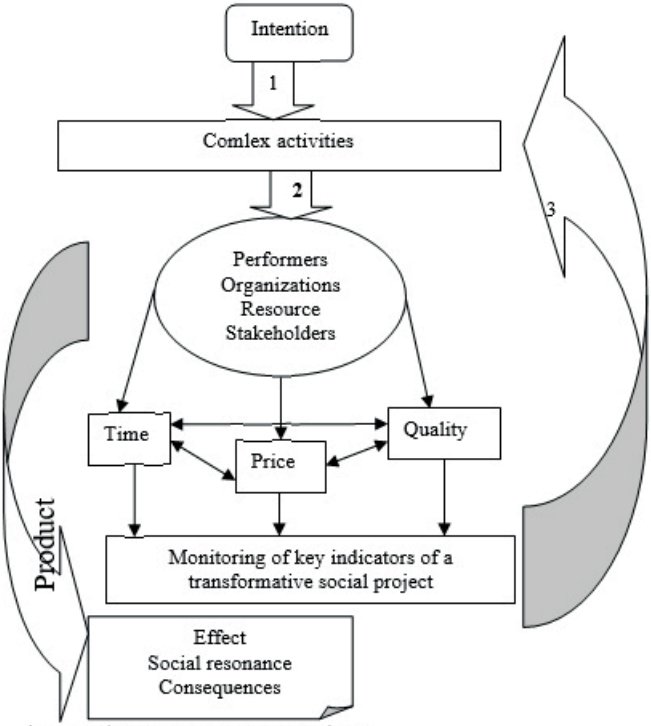

Fig. 1. The components of a transformative project

5) It is advisable to manage the transformation project on the basis of a model document issued by the Project Management Authority (PMI) of the Project Management Authority [1; 8, p. 178-183];

6) formation of project architecture, including leadership structures, team dynamics, behaviors and support mechanisms that allow the project to be implemented, the need to create support structures and mechanisms that will ensure effective project management, including; creating a transformation team;

7) formation of transformation architecture [1; 9, p. 27-44], which focuses on

the human factors behind the program. This architecture will usually be influenced by the programs and projects being implemented. Thus, the architecture of transformation projects can be defined as: it is a way of planning and coordinating human factors across the organization during transformations, which includes understanding the overall strategic goals, context and capacity for transformation, developing an approach to transformation within the organization, further planning and implementing the necessary human measures and transformations for the implementation of the initiative.

Recently, the project approach to managing transformation processes has received recognition from scholars and practitioners in public administration. It is concluded that there are a number of interdependent and interconnected transformational processes taking place in the modern world, which directly affects the state-legal reality of individual countries, determining the development of their socio-political, legal, economic and cultural spheres of life, which are the basis without a hectic state policy [10, 11].

For modern Ukraine, economic globalization is a key factor, which has heightened the tension between democracy and transnational corporate power networks. In addition to economic globalization, transformation processes have led to a number of significant changes in all spheres of life, directly affecting the nature and orientation of transformation processes in Ukraine, determining the current state of its social security [12, 13].

Nowadays, more and more companies are paying attention to the necessity of introducing a socially responsible business concept, the foundations of which were proposed by K. Davis in 1975. According to Wojciechowski N. S. social projects can be considered as investment and scientific and technical if they by their effects affect public life [14, p. 10]. Social project, according to Lukov V. A. is a concentrated initiator of social innovations, the purpose of which is to create, modernize and maintain material and spiritual values that have spatio-temporal and resource boundaries [15, p. 36].

The above definitions do not take into account and do not clearly define the micro-level value of social projects, their importance for the socio-economic development of staff. Social project should be considered in several aspects: first, as a characteristic of investment and innovation activity of the enterprise; secondly, as a socio-organizational condition for the implementation of the socio-economic development of staff, which ensures the formation of factor elements of its cohesion.

From the standpoint of a two-dimensional definition of a social project, standard procedures are being developed, which include the development of the project concept, preliminary feasibility study, planning and drafting of the project, its implementation and liquidation. This approach to social design does not meet today's social security requirements; it must be refined to identify the project as an integral part of the organizational transformation management system.

The functioning of any economic entity is aimed at achieving specific strategic

goals, which necessitates the monitoring of the implementation of developed and implemented social projects. The content of the performance monitoring system is to create guarantees for the implementation of social projects and, therefore, to increase the efficiency of the management process.

The principles of monitoring the effectiveness of organizational transformation management should be defined as follows: Innovation – implementation of innovative management technologies in the process of implementation and monitoring of social projects; timeliness – constant monitoring of changes in the external and internal environment; priority – the focus on the strategic goal of the social project and the enterprise as a whole; creation of conditions for control of achievement of a purpose and the decision of tasks; analytics – a causal analysis of the dynamics of changes during the implementation of a social project; building potential for success in the future based on strategic planning principles.

The decision to implement a social project must be substantiated. The selection of a particular project should be determined by the result of the calculation of the coefficient of need for the implementation of the social project (K_n) by the formula (1):

$$K_n = K_{con} * E$$

K_{con} – the coefficient of compliance of the project with the priorities of socio-economic development of the stakeholders of the social project;

E – effectiveness of social project implementation.

The coefficient of compliance of the project with the priorities of socio-economic development priorities of socio-economic development stakeholders is determined by the results of peer review based on the following criteria:

1) the project fully complies with the most important socio-economic development priorities stakeholders ($K_{сп}$ =1);

2) the project is mainly in line with the priorities of socio-economic development stakeholders (K_{con} =0,75);

3) the project is partly in line with the priorities of socio-economic development stakeholders (K_{con} =0,5);

4) the project does not meet the priorities of socio-economic development stakeholders (K_{con} =0).

If several projects have equal values of the coefficient of need for implementation, then priority is given to the project with the shortest period of implementation.

Thus, transformative social project management requires an innovative approach, taking into account the globalization challenges, the economic state of the macro-, micro-level of the state and households, the saturation of the information field and the exchange of information, changes in society, accompanied by the status change of professional activity of workers and affecting the state as economic and social security. Despite all the complexities, in today's economic environment, project

management becomes a modern management system. This system is effective in the development and implementation of innovations, new technologies, automation systems and information technologies. The implementation process itself requires a systematic approach that involves defining conceptual provisions, planning a set of works, monitoring results on the basis of the proposed principles, and controlling their implementation. That is, the use of methodology for managing transformative social projects requires preliminary scientific and practical research in order to develop mechanisms for automating the processes of effective management, monitoring the implementation of projects and their improvement. This requires further scientific research in this area.

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ECONOMIC SECURITY MANAGEMENT OF EDUCATIONAL INSTITUTIONS BASED ON ENERGY EFFICIENCY

Ievgen Ovcharenko,
Doctor of Sciences (Economics), Professor,
Volodymyr Dahl East Ukrainian National University, Severodonetsk, Ukraine,
Volodymyr Tyshchenko,
Ph.D. in Economics, Associate Professor,
Vice-Director of Institute of Economics and Management,
Volodymyr Dahl East Ukrainian National University, Severodonetsk, Ukraine
Polina Paschenko,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

The current state of pricing policy of the education industry directly depends not only on the quality of providing educational services, but also on the peculiarities of social situation of territorial communities and state policy as a whole. The reform of the educational system in Ukraine provides the introduction of autonomy of educational institutions. At the same time, it should be noted that in order to establish financial independence, it is necessary to search for additional sources of financing. Increasing competition in the educational sector requires institutions to implement priorities in strategic development – to form an effective pricing policy for educational services. An important condition of this process is the attraction of resources through additional educational services, or through savings on utility bills, etc.

Sustainability of the national economy and social direction of development of Ukraine depends on improving the energy efficiency of the country, and requires consistent implementation not only of a long-term state strategy in this sphere, but also the development and coordination of effective mechanisms of interaction between energy sector participants and energy consumers. At the same time, the implementation of target directions of increasing the level of energy efficiency is possible due to the program-target method, which is one of the components of the financial management system. The purpose of the development is to concentrate the resources of economic entities and build a unified system of energy efficiency management and to coordinate efforts of both state and regional authorities, local

self-government, institutions, etc., which is relevant to the research topic.

The formation of an effective regional development management system is largely considered in works of such scientists as O. Berdanova, M. Butko, V. Vakulenko, B. Danylyshyna, E. Libanova, O. Makarova, V. Novykov, R. Plusch, Y. Surmin, and others [1-3, 5-9, 11]. An important role is assigned to the components of the program-target method, as a mechanism of public administration of the unified system of state and regional authorities and local self-government, institutions, etc., which in particular will provide the coordination of energy efficiency and formation of a reasonable price for educational services.

The issues of forming an effective pricing policy in the field of education have become the object of study of many scientists. However, this topic remains relevant today and necessitates finding a unified approach of determining the optimal pricing model for educational services. The process of cost formation on the basis of a integrated approach from the standpoint of a unified energy space, systematic goals and objectives, criteria for determining the degree of target indicators achievement set in state policy, becomes important.

Among the scientists who have devoted their research to methodological approaches to the implementation of program-target management method, L. Abramova, O. Amosha and others can be distinguished [1-2]. However, the improvement of the methodology for assessment of higher educational institutions, the specific features of higher educational institutions, the introduction of energy-saving measures, rules and mechanisms of their regulation in the budget sphere, which should be taken into account when pricing the cost of educational services, remains unresolved. The urgent problem of lack of public finances actualizes and emphasizes the relevance of the chosen research topic. Educational institutions, as a lower sphere of life, directly embody state policy, where regional government acts as a conductor between the state and the institution itself. The implementation of the state strategy is impossible without taking into account the peculiarities and factors of the dynamics of the region of their location and the direct functioning of the institution itself.

The complexity of modern tasks of the state strategy in the energy sector encourages to apply a systematic approach to management in this sphere, which will allow to manage energy efficiency of establishments and institutions through the subsystem of the fuel and energy complex of the region and ensure their energy independence. The program-target method is defined by a set of components that include subjects, regularities, principles, functions, strategic development targeted programs, organizational structures, resources, methods, organizational culture, competencies, technologies and tools. The main purpose of creating mentioned management model is to use such a regulatory lever as a mechanism for influencing regional policy, technical and technological systems for generating, transporting and consuming energy to improve energy efficiency and, as a consequence, reduce the cost of educational service.

Having analyzed the European educational experience, it is possible to

determine the difference from the Ukrainian system of quality assurance of higher education: each university builds its own strategy of its evolution on the basis of the global activity concept and taking into account unique value systems, reflecting the specifics of activity and the purpose of this higher educational institution, which can be very useful for education quality assurance processes. That is, first of all, in order to improve the reliability of energy supply, the realization of energy security, it is necessary to define the concepts of energy market participants behavior and the social processes taking place in this sphere.

Secondly, in order to increase the competitiveness and quality of services of educational institutions, it is necessary to introduce an integrated approach and due attention to regional peculiarities and existing experience from the standpoint of a unified energy space, systematic goals and objectives, criteria for determining the degree of achievement of the set goal and completion of tasks, reaching the target indicators, set in state policy.

The main factors in the development of energy efficiency management in educational institutions are the factors that influence the definition of management goals. First of all, in order to develop a methodology for a modern adaptive and sustainable energy efficiency management system of an institution, it is advisable to identify common factors that require analysis for energy market research and affect the functioning and decision-making by them. A consortium of representatives from the scientific and expert community of energy efficiency can now be involved, if necessary. Then specific factors that are based on common ones and implement direct improvement of energy efficiency in the institution should be identified.

Common factors of external influence are the following: institutional (level of the development of institutional environment); the level of inter-municipal integration; community mentality; organizational (level of knowledge, competencies and creativity of all employees of management bodies); development of morals and ethical standards of employees' behavior in the institution; the level of motivation of civil servants; the level of efficiency and functionality of the organizational structure of regional management, institution; other economic, political and social factors.

It is advisable to identify four main categories of special factors that affect improving energy efficiency in the region, namely: technical and technological; organizational and legal; organizational and economic; financial.

Today, the most acute problems that impede increasing competitiveness and autonomy of budgetary institutions, can be solved by: improvement of the system of educational institutions territorial placement; achieving subordination of ownership relations to the objects of social infrastructure; attraction of various budgetary and extra-budgetary funds for the effective functioning of establishments and institutions; optimization and improvement of staffing of educational institutions; a sufficient level of quality of services provided to the people by objects of the budgetary sphere, etc.

It should be understood that the price of educational services will be justified only

if complex national and regional problems are solved, first of all, finding effective planning of the pricing strategy, which underlies the strategy of development of the educational institution itself. It should be noted that this strategy needs to be constantly adjusted, as environmental factors are capable to ensure or, conversely, hold back realization of the targeted directions for improving the degree of energy efficiency and competitiveness of budgetary institutions.

The exercise of the right to education is governed by the system of current legislation. At the same time, in the context of reform, the legislation changes and sometimes the extension of the rights of educational institutions is limited by some normative acts, which is a violation of constitutional norms.

Thus, the Ministry of Education and Science of Ukraine plans to introduce restriction of a minimum cost of contracted educational service for certain specialties, which should not be lower than the indicative cost of training of specialists with the relevant higher education degree and specialty (specialization) by the full-time form of education for government or regional order.

The draft resolution of the Cabinet of Ministers of Ukraine "On some issues of indicative cost introducing" currently undergoes the approval stage. The prerequisite for determining the minimum cost of contract education was that from the state budget about 44.4 thousand UAH should be financed per education applicant, at the same time, the average cost of training of education applicants at the expense of individuals / legal entities in higher educational institutions was 28 thousand UAH. This is about 70 % of the cost of education.

Therefore, the Ministry of Education and Science of Ukraine proposes to introduce an order that will determine the minimum, marginal cost of contract education in 2020 at 60 %, 2021 – 70 %, 2022 – 80 %.

In accordance with Article 2, Part 3 of the Law of Ukraine «On Education», the subject of educational activity has the right to independently make any decision within its autonomy. If the bill "On some issues of indicative cost introducing" is adopted, the right to determine the cost of educational service will be abolished. In fact, this project will put a large percentage of higher educational institutions in a difficult position. The issue of linking the cost of education to the income of people in the region remains unresolved.

It should be noted that not all educational institutions have the prospect of generating additional income through educational services. The main factors that dictate the conditions of competitiveness formation are the various possibilities of providing additional services due to the location of the institution. In small cities, there is no prospect because of the small contingent of settlements and low level of income of the population.

According to the analysis of the educational activity subjects, a greater number of higher educational institutions are concentrated in Kyiv (262 institutions) and in Dnipropetrovsk and Kharkiv regions – (119 institutions each). The smallest number of institutions is in Chernivtsi and Luhansk regions. 296 institutions of I-IV

accreditation levels in different regions of Ukraine according to the part-time and full-time bachelor degree courses were analyzed [4, 10].

The inverse relationship between these quantities attracts attention. It should be noted that, despite the meticulous distribution of government order between higher educational institutions, equal funding is allocated from the state budget for the education of one education applicant, although the difference in the cost of contract education is observed. Thus, according to the 2019 introductory campaign, Taras Shevchenko National University of Kyiv is considered to be the most expensive higher educational institution in Ukraine. The estimate for the year of study of medicine in English is 71500 UAH. But at the same time, it is the leader in the consolidated rating of Ukrainian universities according to Osvita.ua in 2019 for three consecutive years, and such a price can be justified. Kyiv Mohyla Academy is the second most expensive higher educational institution of Ukraine. Studying at the Faculty of Law or International Relations costs 50000 UAH each. Although, in the consolidated rating it takes fifth place. Almost the same will cost study at the Faculty of International Relations at the Kyiv International University, it is 46400 UAH, although in the rating it takes 123rd place. The second one in rating is Igor Sikorsky Kyiv Polytechnic Institute, which has the highest price of 30600 UAH for the humanities and computer sciences.

Odessa Technological University «STEP» and Ternopil Institute of Social and Information Technologies with average cost of education of 55000 UAH, which are non-governmental institutions, are also leading among private educational institutions.

Obviously, the methodology for assessing higher educational institutions (an integrated index, which contains three complex components: the index of scientific and pedagogical potential quality, the index of studying quality and the international recognition index), has no impact on the cost pricing of educational service.

The expenditure method of calculating the cost of education proposed by the Ministry of Education and Science of Ukraine requires refinement, because, in addition to budget savings, qualitative changes in the educational cluster are not expected. According to the paragraph 5 of the Resolution of the Cabinet of Ministers «On Approval of the Methodology for Calculating the Estimated Average Cost of Training for one Qualified Worker, Specialist, Postgraduate, Doctoral Student» of May 20, 2013 No. 346 (as amended by the Resolution of the CM No. 916 of 06.11.2019), – «The state customer shall submit annually to the Ministry of Economy, by December 1, information on the estimated average cost indices according to the form set by the mentioned Ministry». That is, it is not taken into account that the higher educational institution can be formed and approved only after enrollment and determination of the exact number of places by government order (May-June), not when the higher educational institution approves its budget in January of the same year. Also, the development of a clear mechanism for transferring money to places (regions) addressed to education, that is, to refocus the

method of calculating the cost of training for one education applicant after the fact, after specification of number of places by government order, taking into account its own strategy of higher educational institution's evolution and taking into account unique value systems that reflect the specifics of the activity and purpose of this higher educational institution.

Considering that the payment for utilities and energy, the payment for maintenance of buildings and structures and adjoining territories (paragraph 3) is included in the calculation of the estimated average cost of training for the applicant, there is a need for formation of energy-efficient policy in each higher educational institution, despite the regional location, based on the integrated approach from the standpoint of a unified energy space. At the same time, the review of domestic publications shows that 60 % of the cost of educational services is heating and electricity costs for educational purposes.

Of course, the numbers depend largely on the geographical location and area of the institution, heating and lighting system, etc. Namely, to ensure the rational use of public funds, the formation of an effective mechanism of stimulating the implementation of energy-saving measures, rules and mechanisms for their regulation, which would properly regulate the issue of financing, is being activated.

Examples of the implementation of energy efficient projects, which are one of the key priorities for reducing the cost of educational services, are the following higher educational institutions: Lviv Polytechnic National University; National Technical University «Kharkiv Polytechnic Institute»; Chernihiv National University of Technology; Sumy State University; National University «Yuri Kondratyuk Poltava Polytechnic»; Vinnytsia National Technical University. This opportunity has emerged due to the State Policy on Energy Efficiency of Ukraine, which aims to increase participation in projects of international organizations and communities. Thus, on December 19, 2016, a Financing Agreement between Ukraine and the European Investment Bank (EIB) on the project «Higher Education of Ukraine» was signed in Brussels. Under the agreement, the EIB will provide EUR 120 million for energy efficiency improvement in Ukrainian universities, EUR 10 million for the Eastern European Partnership on Energy Efficiency and the Environment (E5P) investment grant, the Nordic Environment Finance Corporation (NEFCO) agreed to provide EUR 30 million for a loan. The loan funds are attracted for 20 years with a 5-year grace period. The total estimated cost of the project is EUR 160 million. The relevant Financing Agreement between Ukraine and the EIB was ratified on 8 November 2017.

The project was initiated and developed by the Ministry of Education and Science with the EIB, which aims to implement energy efficiency policies and energy-efficient technologies in buildings, home appliances, and spheres of final consumption such as lighting, and correlates with the recommendations of the new World Energy Outlook-2017 (WEO-2017) review of the International Energy Agency (IEA). The project not only elaborated methodological approaches to adaptation of the procedure of improving the efficiency in the sphere of education,

but also determined the amount of work for each higher educational institution addressable. According to the results of the energy audit, it is planned to provide energy saving and optimization of management processes of energy consumption in 147 buildings. Modernization and renovation of Ukrainian university buildings, taking into account the rules of energy efficiency, rational energy saving and creation of an effective system of energy consumption management – allow to form an effective educational environment, which ultimately will directly influence not only the calculation of the estimated average cost of training for education applicant, but also ensure the strategic development of each institution, despite the restrictions of some normative acts of Ukrainian legislation.

The agreement also provides for a second phase of the project aimed at improving energy efficiency and the acquisition of equipment for university research laboratories.

An analysis of the experience of leading countries in the sphere of education shows that more educational institutions receive funding for educational activities without a strong link to the cost of training for one specialist. This model of funding through the education system can influence the demographic and economic indicators of the state as a whole. That is, any institution in any region, within the limits of its financial autonomy, will determine how many specialists it can actually prepare for the allocated funds within the defined strategy of higher educational institution, taking into account regional peculiarities, criteria for determining the degree of achievement of the set goal and completion of tasks, reaching the target indicators, set in state policy. The issue of the distribution of finances between higher educational institutions is the constituent element of the higher education quality assurance system and necessitates a detailed analysis, taking into account a unified management system of energy efficiency and coordination of efforts of state and regional authorities, local self-government, institutions, etc. The issue of refining the expenditure method of calculating the cost of education in order to be able to make its own decisions by each higher educational institution, despite the regional location, based on the integrated approach from the standpoint of a unified energy space remains unresolved.

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INNOVATIVE MANAGEMENT AND ECONOMIC SECURITY OF THE ENTERPRISE'S PROJECT ACTIVITIES

Oksana Svatiuk,
Ph.D. in Economics, Associate Professor,
Lviv Educational and Scientific Institute School of
Business Administration «Banking University», L'viv, Ukraine,
Iryna Zerebylo,
Ph.D. in Philosophy, Director of L'viv Institute,
Lviv Educational and Scientific Institute School of
Business Administration «Banking University», L'viv, Ukraine,
Nataliy Rak,
Ph.D. in Economics, Director of Business School,
Lviv Educational and Scientific Institute School of
Business Administration «Banking University», L'viv, Ukraine,
Nataliy Shehynska,
Ph.D. in Economics, L'viv Educational and Scientific Institute School of
Business Administration «Banking University», L'viv, Ukraine

Innovative activity associated with the transformation of the results of scientific and technical practice into a new or improved product/service involves a range of scientific, technological, organizational, financial and commercial activities. Together, this leads to innovative changes in the project. The main principles of the cost of projects are relevance, general, regional and sectoral values. Study of

classification of evaluation questions from the position of the principle of evaluation of project problems that come from the sources of the bureaucratic management system. The recognition of CEN/TS 16555 and ISO56000 innovation management standards helps to solve both theoretical and practical management processes [1].

The problem of an economic security and the innovative projects was studied by such scientists as Frolova T. (2012) [2], Zhy`vko Z. (2018) [3], Wiengarten F., Fynes B., Cheng E., Chavez R. (2013) [5], Gunasekaran, Ngai E.W.T. (2007) [7], Slav'yuk R., Shkvarchuk L., Kondrat I. (2017) [6],

Yuanzhu Zhan, Kim Hua Tan, Baofeng Huo (2019) [10] and other. Scientists use static and dynamic indicators to determine the alternativeness of projects. New ideas and projects are evaluated in relation the unstable economic and political condition of the country. Foreign methods of evaluation and innovative projects require adjustments in practice, which is the problem of this study.The main driving force of economic globalization is transnational corporations, which constitute the most representative and powerful part of corporate business, where more than half of the world's production, exchange of goods, services, investments, and innovations are concentrated [2].

A potential investor always identifies a number of alternative uses of capital. Each of them is characterized by different parameters: the object of investment, the time period, the size of the investment capital and commercial risk. The goals of both the owner and the investor are obvious — to get the most guaranteed benefits from capital investment. They can be achieved by selecting a quality project that allows for the evaluation and effective achievement of the goal.

The conducted analysis allows us to proceed to the consideration of the indicators of the project evaluation on the materials of «Avto Techcenter-Chervonograd» private enterprise (representation of the «Renault»). They can be used to make decisions on the feasibility of implemented innovations.

The purpose of this study is to substantiate the implemented innovative project of the «AvtoTechcenter-Chervonograd» enterprise as the necessary information for decision-making on changes in investment in innovations.

The choice of investing in the Renault brand was influenced by local criteria: 1. The pricing policy is attractive for the largest group of real customers in the region.

2. Renault cars consider the customer's needs in comfort, safety, reliability, warranty service.

3. Bank credit conditions for the purchase of a car, which is provided by the Renault Finance credit program.

4. Own statistical calculations, observations, analysis of the sales market, evaluation of car service, trends in consumer preferences, personal experience in this market segment indicate the prospect of business development. «The peculiarity of the enterprise's economic security lies in the need to skillfully organize the processes of production, marketing, innovation, investment, and other nature. Activities should be organized in such a way as to minimize losses» [3].

This necessitates a comprehensive approach to the protection of activities, reflected in the need to create a system of economic security. Capital investment is an inseparable part of the activities of any economic entity with the main purpose of making a profit (table 1):

Table 1

Investment objects

Material (real) investment	Financial investments	Intangible (nominal) investments
Acquisition of tangible assets by business entities (land, construction of premises, equipment for servicing machines, equipment, material resources)	Investing in authorized funds, credit from the bank	Acquisition of licenses, rights to use resources, intellectual property objects

Source: prepared by the author.

«Considering the issues of evaluation of innovative efficiency, formulated the effective use of resources of the existing private enterprise» [3].

Providing financial and material resources of participants in the innovation process in «IFG: financial and banking services for innovation processes in the IFG on the basis of the established financial strategy that takes into account the peculiarities of the production, personnel, technological, marketing, social, environmental components of the overall strategy for the development of IFG or the plan of sanation» [4].

The main task of «AvtoTechcenter-Chervonograd» enterprise is the sale of cars under favorable conditions. Construction of a new car dealership, car-care center, driving school, Renault's auto parts store is a strength that limited the external threats of competitors. This contributed to the development of «AvtoTechcenter-Chervonograd» enterprise by neutralizing the weaknesses, for example. The object of strategic marketing of «AvtoTechcenter-Chervonograd» enterprise was an innovative solution for the sale of cars and the provision of services of a technical, material, economic, organizational and social character. Thus, the process of managing the efficiency of the innovative project of the «AvtoTechcenter-Chervonograd» enterprise is divided on the basis of the types of management of the efficiency of management at the stages: pre-investment, investment, operational.

At the investment stage of the innovation project, unsafe commercial prospects for project implementation based on market research (low number of cars sold in comparison with the European Union) have been substantiated (Fig. 1).

The real characteristic of car sales is shown in the diagram.

Long-term investments in the «AvtoTechcenter-Chervonograd» enterprise is necessary for decision-making on the expediency of introduction of innovative changes. Consequently, the total payback of the project was estimated at 16 months, and the actual production and economic activity at 38 months. This is satisfactory

in assessing economic security. The innovation process is cyclical, so the project is extended in time. This indicates the complexity of the organization and formation of the business. However, over the past 6 years, there has been a more than three times increase in the exchange rate relative to the hryvnia. Accordingly, the price of each car has increased. Financial income from the sale of goods/services of a new type is periodic in time, and has a proforma life cycle, so the management process is logical. The sale of Renault cars by model for the period 2016-2019 were as follows: Renault Captur – 2, Renault Dokker – 6, Renault Duster – 2, Renault Kadjar – 2, Renault Koleos – 3, Renault Lodgy – 3, Renault Trafic – 2, Renault Logan – 17, Renault Logan MCV – 8, Renault Sandero Stepway – 12 units.

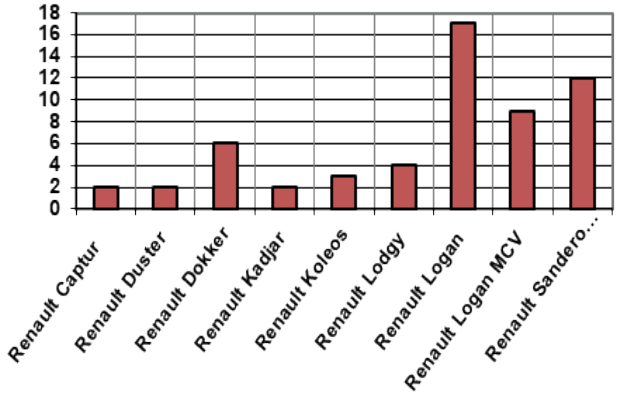

Fig. 1. The number of sold Renault cars for the lineup of 2016-2019.
Source: prepared by the author

The possibilities of a private investor of «AvtoTechcenter-Chervonograd» enterprise project to find the best competitive position in a separate market segment due to the lack of cars in the region. The relevance of them researches is predetermined by the necessity of fixed monitoring of the competition, because joint-stock companies increase causes the state potential growth.

Increased revenues are not 300%, and the cost of purchased goods/services. Maximum material costs have increased, which indicates the growth of the material and technical base, in particular, the cost of equipment and technical means. Therefore, the managers have reviewed the investment project at the investment and operational stages and introduced significant changes. Instead of a part of the project market of auto parts «Renault «own areas under the project» Activity of schools for the training of drivers of vehicles» are used. This happened by opening a new driving school on the basis of «Renault» – a brand with a good reputation and pricing policy that (from their own experience and market analysis), the best way

to acquire customers in the region. The company started to register driving school activities in 2017. Cooperation with a fast food chain «Chicken HUT» was not implemented in practice, and the trading area was used to open its own cafeteria.

Studying the criteria of economic security and efficiency, they were classified according to the following criteria: absolute and relative, are statistical and dynamic. The statistical absolute includes total income (profit) and average annual income, the statistical relative — return on investment. The dynamic absolute includes net present value and annual equivalent, the dynamic relative-the profitability index and internal return on investment. Together they are characterized by an indicator of the payback period of the project. The above-mentioned aspects affect the economic security of the project.

Quality management practices such as total quality management (TQM) are continuously applied to improve firm performance. Specifically, Wiengarten F., Fynes B., Cheng E., Chavez R. «identify that the seven practices closely related to TQM, namely visionary leadership, internal and external cooperation, learning, process management, continuous improvement, employee fulfillment, customer satisfaction, have a significantly stronger impact on operational performance in companies characterized by a high level of innovativeness» [5].

Due to the fact that the innovation project is carried out for its credit funds, one should be particularly careful when choosing a change in the innovation project. Marketing and sales are related to the commercial implementation of the results of the innovation project. To assess the effectiveness of the innovation project, various stages of innovation are considered (table 2).

At this stage, we actually justify the choice of the most acceptable innovation. Summing up the results of the study, we have fully fulfilled the objectives, developed a number of recommendations and proposals for the management of economic security and efficiency of innovative projects for the private enterprise. This is the main feature of the innovative project. An investment project is understood as a plan of activities and changes in business ideas, implementation of which was required to attract investment in «AvtoTechcenter-Chervonograd».

The final stage of the life cycle is important. The moment of recoupment of long-term capital is approaching, and on the other hand, the achievement of an innovative goal is a difficult task due to the payment of borrowed funds from the bank. There is a conflict between the desire to write off the old capital, to abandon it before it will be achieved. Both options involve a huge risk: in the first case, you cannot profit (capital savings); in the second – to lose the advantages in the fight against competitors, if they have time to advance to a newer technical base. Hence the danger that awaits the economy at the completion of the life cycle of capital invested in a franchise. The more the latter clings to the remnants of life, the more catastrophic can be the consequences for the whole economy and the more painful inevitable transition to a new structure. The obvious benefits that come from innovation are the representation of the Renault.

Table 2

Changes in the innovation project at three stages of the innovation process

RENAULT Passion for life	1. Pre-investment stage	2. Investment stage	3. Operational stage
Project	Construction of a two-story shopping and service center as part of the Renault franchise;	– opening of a private «Renault» car showroom; – Renault car service; – Renault auto parts market; – Clayland Corporation and Investment fast food project;	– sale of successful «turnkey business»;
Project changes in the activity of the enterprise	– construction of a two-story shopping and service center «Renault» on the basis of a bank loan; – redevelopment of the interior;	– opening of a service station for cars of all brands; – mini-cafe equipment; – car insurance; – project in the direction of a driving school; «activities of schools for the training of drivers of vehicles»;	– opening of a driving school «activities of schools for the training of drivers of vehicles»; – checking the technical condition of the vehicle with the issuance of a certificate; – provision of services for the conclusion of car insurance contracts;
Theory projects	– the system of economic security of the enterprise associated with the implementation of the project are the costs unevenly distributed at different stages, while it should be remembered about the uneven nature of the innovation process itself; works carried out.	– the possibility of emerging in the field of newcomers is determined by barriers to entry, preventing their entry into the market.	– barriers that can be «economic security», «information technology/ information system», «know-how», «knowledge to innovative», and «total quality management».

Source: prepared by the author.

Achievement of this goal is possible only on the basis of balanced assessment of the opportunities and threats of business development in the analyzed market share. On the one hand, the representation of the «Renault» of entrepreneurs will develop its competitive advantages and eliminate weaknesses as compared with competitors operating with another.

The research identified the stage of economic development (decline) of the private enterprise through the theory of cyclical fluctuations of the innovation process.

Practical significance is the recommendations on improving the effectiveness of the implementation of an innovation project and the economic security of repayment of credit funds received by the bank for its implementation.

Thus, in the implementation of innovative activities, there is a need to ensure the formation of an optimal capital structure using indicators of economic efficiency.

Since manufacturing has become global to address the needs of the global market, companies take advantage of advanced information technologies in achieving their global supply chain. It is not enough to just establish an integrated information system such as enterprise resource planning (ERP).

In the course of the study, it became obvious that efficiency should be managed at certain stages. It was found that the duration of the phase was related to the return on investment in technology. Modern assessment of the Ukrainian financial market competitiveness remains low with the limited nomenclature of financial services, but it can be considered attractive to potential foreign investors.

From the characteristics of the innovation project it turns out that the funds invested in «the project are outside the context of the sources of their origination» (own or borrowed, internal or external) [6]. At all stages of the innovation process, investments are made that are necessary for the implementation of the innovation project.

Today, it is a fairly common way to improve the efficiency and agility of management (sourcing) by transforming a certain amount of internal activity of the enterprise and attracting assets into commercial intermediate products provided by internal or external providers. According to «Garnet's definition, sourcing is the variable use of internal and external business and its resources and services to achieve the business goals of the enterprise» [7].

Without «the integration of people and information technology/information systems (IT/IS), it is very hard to achieve any significant improvement in organizational performance» [8]. Advanced manufacturing enterprises are characterized by a «physically distributed enterprise environment, outsourcing and it-enabled chain management (SCM). This process attempts to ensure the availability of knowledge management (CM) literature in manufacturing in order to identify the gap between theory and practice, strategy and methods for systems management in advanced manufacturing environments» [9].

The innovative infrastructure of the corporate environment covers activities within the framework of the innovation process (science-technology-production-consumption) and it should be characterized by the following properties: information dissemination; universality, flexibility, professionalism, constructiveness, «financial and information security» [10]. The creation of organizational and economic conditions that would permeate the economic system and ensure the formation of a constant need for the development of scientific and technological innovations is the basis for the development of the entire innovation sector.

The economic, social and technical effects are of varying quality, but they are also interrelated. As a result, it is necessary to start considering the criteria, as there are various relevant indicators of economic efficiency. The criteria laid economic, social and environmental approach, where the leading place is economic security and the result of the quality business project.

Project development forecast:

- The center of business in the district is Chervonograd, where the majority of the population works in the coal industry with an income of about $ 1,000 per month.

- There is evidence that about 20% of the able-bodied population is abroad, which indicates the receipt of large amounts of additional funds in the region.

- The term «statistics police», which annually registers about 100 new vehicles in the city of Chervonograd.

- During the crisis, the share of sales of economy class cars has increased (the moderation of the price of Renault cars allows to predict the growth of demand for cars).

The opening of the Renault trade and service center in Chervonograd has allowed the «AvtoTechcenter-Chervonograd» enterprise to increase own competitiveness in the market of sale of cars and their service.

This contributed to the gradual strengthening of its position in selected market segments. An innovative direction (driving school) has helped to establish a strong position of «AvtoTechcenter-Chervonograd» in the automotive market of the Sokolsky district (including t. Chervonograd).

Summary. The interdependence between the innovative development project, organizational changes and investment management of the «AvtoTechcenter-Chervonograd» enterprise. An analysis of the enterprise environment at three stages of the innovation project (pre-investment, investment, and operational stages) was conducted. The «Renault» innovative project trade and service center included: the construction of a two-story office building; the opening of a «Renault» motor show and auto service franchise; Renault auto parts market; cooperation with «Clayland Corporation and Investment» fast food.

The following were reorganized at the investment stage: an own Renault showroom was opened (non-deductible); service station for cars of all types; equipped mini-cafe; car insurance; own extra area was used under the project «Schools for the training of drivers of vehicles». An estimation of economic security and modification of the design of the «AvtoTechcenter-Chervonograd» enterprise was performed. The practical significance of the study lies in the recommendations to improve the effectiveness of implementation of the innovation project and payment of credit funds received from the Bank for its implementation.

Thus, the realization of cooperation of enterprises with the franchise of the international brand «Renault» in the European Union takes place according to the basic rules and clearly defined conditions. Innovative projects at enterprises in Ukraine do not always give income from one type of activity (sale of cars). Managers are looking for additional activities to obtain funds from consumers (auto repair; check the technical condition of the vehicle with the issuance of a certificate; driving school; provision of services for the conclusion of car insurance contracts; cafe).

Optimization of the management process is determined by the peculiarities of the stages of the innovation project (table 1).

The company needs to increase its investment in economic security to reduce the risks of information leakage. Increased investment in information security will reduce risks accordingly.

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MANAGEMENT OF THE DEVELOPMENT OF AGRICULTURAL RESOURCES USE

Oleg Fedirets,
Ph.D. in Economics, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine

Agro-industrial production in our country is a very resource-intensive sphere of the national economy, where more than a third part of all production resources of the country are concentrated. However, due to the acute and extremely long financial and economic crisis, the agro-industrial complex has lost its ability to even simply reproduce the resource potential, and its structural imbalance and lack of some production resources, especially logistical and energy resources, lead to their inefficient use.

Production resources are an integral part of any economic cycle and, accordingly, an integral part of any economic unit. The main task of production resources is to maximally meet the needs of business structures for their uninterrupted operation and development [6, p. 32]. Therefore, a satisfactory organization of production resources of any economic unit can be said only when the organization of production resources is complex, taking into account the technology of production and the composition and sizes of the production resources themselves [3, p. 32].

Resource management system presupposes the need for a complex organization of the formation and use of production resources should be singled out, since this principle is not always maintained not only in practice, but also in theory (fig. 1).

The enterprise with the modern organization of production realizes the corresponding types of economic activity, which are carried out by individual production units of the enterprise with adequate providing resources. Thus, the formation and use of production resources in close relationship with other activities of the enterprise provides the effectiveness of its operation [3, p. 55].

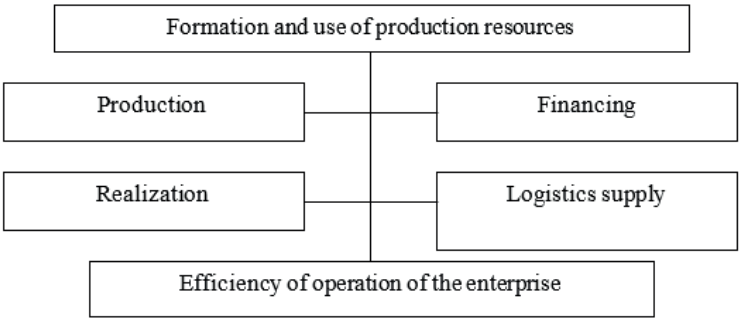

Fig. 1. Main directions of interaction of enterprise

The main task of enterprise subsystems is to comprehensively meet the needs for production resources of economic units of the enterprise and to create appropriate conditions for their effective use within the whole enterprise. It is determined that the needs and means of their meeting differ depending on the production and other tasks of the enterprise. Activities related to the development or modification of organization of formation and use of production resources of the enterprise, should take the form of appropriate measures that can be qualified by the extent of coverage:

- comprehensive, covering all types of production resources of the enterprise;
- partial, related to the appropriate type of production resources;
- organizational and technical measures related to the modernization of organization of formation and use of production resources.

Production planning is closely related to product sales and inventory control. Product sales planning and related use of production resources are the basis for managing the production activity of an enterprise. Schematically this relation can be represented in the following way (table 1).

Table 1

The main interrelations between production resources and production efficiency

Methods	Options	Standards
Cost management	Detailed cost sharing	Cost standards
Management of equipment operation and repair work	Loading equipment; work schedule	Terms of operations
Inventory management	The level of inventory for each type of resource	Cost of resources standards
Production management - a general assessment of the activity of an enterprise	Sales volumes, value of working capital	Profit level, profitability

In the process of manufacturing products (services), different types of production resources interact with each other and the correlation between them establishes an appropriate equilibrium in a certain period of time. Growth, balance and interaction are the main characteristics of the production system. Equilibrium is the main condition for its effective functioning.

The practical experience of agricultural enterprises and its theoretical generalization show that improvements in the use of production resources ensure adequate economic efficiency only when partial measures to improve the formation and use of resources will ensure their rational functioning as a whole.

The resource potential of an enterprise is a system- generalizing concept that

includes a certain number of structured elements and is constantly or periodically influenced by internal and external factors. The resource potential of an agricultural enterprise should be understood as the complex of land, logistical, labor, financial and information resources of an agricultural enterprise, acquired by it in the process of economic activity, contributions of participants and lease and intended for the organization of production, commercial and financial activities [2, p. 62].

All components of the resource potential of agricultural enterprises in a market economy should function as a commodity. And this necessitates the organization of markets of land, labor, logistical resources, capital. Speaking about the land market, it should be noted that its main features in the agricultural sector are: the use of land for agricultural production, its limited space and eternity (provided by rational use). Functioning of land as capital is possible only in conditions of a full-fledged agricultural land market, when it becomes possible for the latter to move from inefficient users to more efficient ones. Without this, it is almost impossible to count on forming sufficiently effective land relationships.

Today, land plowing in Ukraine is much higher than in the vast majority of countries. The share of arable land in the current structure of the land fund of Ukraine reaches 54.4 %, while in developed countries it is much lower. For example, in the US, this indicator is 19.8%, France – 32.1 %, Great Britain – 24.8 %, Poland – 44.2 % [1]. In EU countries, land is not cultivated unless one hectare of land receives EUR 500 in profit. Only with such a profitability, the innovation and investment attractiveness of the industry can be ensured, people can be returned to the villages and be provided with comfortable living conditions [55, p. 41]. Therefore, an urgent problem is the optimization of the land fund of the country, reducing its agricultural reclaiming and plowing, which will allow to improve the ecological status of agricultural landscapes, to intensify production due to the concentration of funds on a smaller land area. Development of the land market will help attract long-term loans to the agricultural sector.

An essential element of any production process is the means of production. They create the production and technical potential of the agricultural sector, which is determined by the set of material elements of production, which provide the ability to perform the entire cycle of technological operations in the production of finished agricultural products [9].

The effective functioning of any agrarian enterprise requires the availability of a proper logistical base and the best possible use of all its components. First of all, it concerns the technical means, which current level of providing is relatively low for most agricultural producers.

The problem of the village is also the faster rate of decrease in the number of working women (compared to men), which deprives rural settlements of development prospects. According to studies, for men, the important motive is the correspondence of the work to the acquired specialty, and for women - a convenient mode of work, proper living conditions and a favorable moral and psychological

climate in the workforce. To improve the sexual condition of the peasants, it is necessary first of all to create or restore jobs for rural women. 500,000 jobs were lost in Ukraine alone as a result of livestock reductions. In addition, according to official statistics, 30 % of the total number of preschools, 16 % of clubs and libraries, 42 % of public catering establishments, 44 % of hospitals, 45 % of shops, 93 % of houses of life have declined over the last 11 years. And this is another 200 thousand women jobs [7, p. 130].

The primary task of the heads of agricultural enterprises is to retain present employees, who have the most productive age, have sufficient levels of qualification and practical experience. They should take care to improve the industry structure of the enterprise, which would allow to provide a fuller workload of employees throughout the year. The employment of rural population is facilitated by the development of labor-intensive industries (vegetable growing, viticulture, gardening, cattle breeding, pig breeding, etc.) [1, p. 23].

Among the measures of state regulation of the labor market, the most important are: implementation of priority financing of rural social sector development; development of regional integrated programs for crisis management; promoting entrepreneurship, private initiative; increase of efficiency of labor resources use; enterprises, institutions, and organizations that create new jobs in high-unemployment regions of the local population should receive income tax benefits and other financial assistance as required by law. An important factor in achieving the proper efficiency of the reformed enterprises activity is the high competence and business qualities of managers and specialists who are able to determine the future development strategy [8, p. 20].

Effective management of the agricultural enterprises resources will ensure a stable position in the market in case of implementation of innovative strategic management tools, namely a successful combination of knowledge, experience, technologies (key competences) under the following conditions:

1) the enterprise, possessing various resources, must combine them in its production activity. This combination enhances and complements resources, making them unique and inaccessible for competitors;

2) market success for an enterprise is guaranteed if the enterprise selects and combines resources more intensively than its competitors;

3) as a result of an effective and successful combination resources take the form of key competencies that are inaccessible and unchanged for competitors;

4) the source of the formation of key competence is the innovation, technical and technological capabilities of the enterprise;

5) the impetus for developing key competencies is the readiness of the consumer to benefit from them and to pay for new products created as a result of their implementation;

6) key competences form tangible and intangible assets (unique knowledge, information technologies, technological and organizational know-how, goodwill)

that only increase over time, the quality and efficiency of their use increases;

7) any agricultural enterprise can acquire key competences through the formation of unique databases, the creation of a suitable climate in the workforce, creative use of innovative ideas [10, p. 40].

The success of an enterprise's strategic development, the effective implementation of its strategic plans, depends on a number of subjective and objective factors, such as management's willingness to undertake large-scale projects, the knowledge, skills and qualifications of managers, or the availability of resource potential. In other words, enterprise managers need to focus on the successful operation of the enterprise through the formation of strategically oriented resource potential of the enterprise. The requirements that the environment puts on the enterprise determine the main directions of transformation of the enterprise resource potential, its strategic line of behavior [5, p. 67].

Resources (depending on their origin) are divided into two groups: primary resources are those created by nature, regardless of the will and desire of man, but used in social production (land and labor resources); secondary – products of the production process that are directly or indirectly used in the production of material goods (fixed and circulating material means, financial and information resources). The resource potential is defined as a complex integrated economic category, which means a set of primary and secondary resources capable to provide social production to meet the material and spiritual needs of people. The set of technologically, economically and ecologically balanced production resources that provide highly efficient and environmentally friendly production of agricultural products, their processing, storage, transportation and sale is defined as production potential [4, p. 99].

Implementation of strategic management of resource potential is carried out with the help of the strategy chosen by the enterprise, since it, if successfully implemented, ensures the achievement of the set goal. Development of strategic priorities is impossible without the formation of elements of strategic management of the resource potential of the enterprise. Literature dedicated to strategic management uses the term «strategic potential of an enterprise», that means the complex of available resources and capabilities to develop and implement an enterprise strategy. In this case, the focus is on the resources of the enterprise used to develop and implement the strategy. However, strategic potential is formed by not only the available resources, but also by the resources that an enterprise can acquire, changing their characteristics in the process of implementing strategic decisions. Therefore, both available and potential resources need to be added to the resources that form the enterprise's potential [10].

A strategically oriented resource potential of an agricultural enterprise is the adequacy and sufficiency of the enterprise's resources and competencies to develop and implement a strategy in order to obtain sustainable competitive positions in the market. This position is completely responds to the resource theory and assumes that

the strategic development of the enterprise is determined by the available qualitative resources, which correspond to the concrete agricultural enterprise, its strategic goals. The availability and quality of resources and competencies determine its own configuration of possible directions for strategic development of the enterprise.

Thus, resource security is the driving force for transition to the new industrial model, that in the long-term perspective provides a transition from taxing labor income to taxing used resources and inflicted environmental damage.

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FOOD SECURITY SYSTEM: CONCEPTUAL FUNDAMENTALS

Iryna Potapiuk,
Ph.D. in Economics, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine,
Stanislav Mazilenko,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

One of the priority directions of state policy development is the promotion of food security in the field of food products supply to the population and in the sphere of industry resources. The problem of preserving food security is not a new phenomenon. It has always been a global issue both in the political and in the socio-economic spheres of life in any state and in the world politics too. Food security is a multifaceted socio-economic and political phenomenon. There are different approaches to the definition of the notion of food safety in the economic literature: philosophical, sociological, economic, methods of economic and mathematical modeling, etc.

As an object of research, food security is seen primarily as a system for the production and distribution of food.

Food security is the protection of a person's vital interests, which implies the state's guarantees of free economic access of a person to food resources necessary for his or her normal life [4].

Food security fundamentals are significant for any country's national security conception. Therefore, the responsibility for creating food safety lies with the state. Sustainable socio-economic development of a society is impossible without providing the population with a sufficient quantity of quality food.

Food security, as defined by FAO, exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

The basics of food security are the availability of food, access to it, its use, and the stability of such a situation. The nutritional aspect is an integral part of the concept of the food security system.

Food security is a system, which is providing a reliable supply of food to the population. The most indicative food security factors involve:

- high level of the agro-industrial complex development, which enables the state to provide the entire population, including the poorest, with food;
- availability of the sufficient transitional strategic food reserves;
- the opportunity to invest in food production to promote the long-term sustainable development of agriculture.

Food security includes three components that are indirectly related to food independence. The first component is the physical availability of food, the second

is economic accessibility, and the third is the security of the food itself. Food independence concerns, above all, the interests of the producer, while food security is a problem of the consumers.

In this context, the feedback of food security and competitiveness is a topical issue, as the main principles for achieving food independence are the effective work of foodstuff producers and the improvement of the general state of the economy. Thus, the competitiveness of business creates conditions for the realization of the food policy of the country. At the same time, the effective work of agricultural and food processing industries contributes to the development of markets for raw materials and food products, promotes creation of new jobs, improves the employment situation of the country and creates conditions to increase income of the population, increases revenues to the budget due to the growth of tax deductions.

In this regard, the following system of criteria is recommended for evaluation of the food security state:

- achievement of such a level of self-sufficiency of food that can ensure independence from external and internal threats;
- assurance of physical and economic access to the basic foodstuff for all social groups;
- high level of state policy development in the field of agro-industrial complex, including training of personnel, forms of state support of native producers, sufficient amounts of subsidies for agricultural producers.

The criteria for food security are related to the level of the share of proper agricultural production in the total amount of commodity resources.

In general, the country's food security is characterized by such indicators as the sustainability of the food security system, the physical and economic availability of food, the level and quality of nutrition among the population, the independence of the country's food security from imports, the size of operational and strategic food reserves. It is also necessary to take into account the state of the agro-industrial complex of a country as one of the main factors of food security.

Based on these criteria and indicators, we believe that the elements of food security should be:

- physical availability of a sufficient amount of safe and nutritional food;
- economic accessibility of quality food for all social groups;
- autonomy and economic independence of national food systems (food independence);
- reliability, that is, the effectiveness of the national food system to minimize the impact of seasonal, weather, and other fluctuations on the food supply of the population in all regions of the country;
- sustainability, which means that the national food system is developing in an extended reproduction mode.

Food security involves a system of resource structure corresponding to the demographic population. It comprises the interconnected subsystems, based on

functional, organizational, resource, and technological principles. The main aim of the resource system is uninterrupted sufficient and qualitative satisfaction of the people's demands for the basic foodstuffs [6].

The system-forming factor for the formation of this system is the agro-industrial complex, all components of which are focused on solving the problem of ensuring food security and food independence of the country. In turn, the subsystems of the agro-industrial complex for the sale and distribution of food, food reserve, and consumption belong to the functionally targeted subsystems of the food security system [5].

The supporting security subsystems are management, financial support, information support, logistics, technological support, research and innovations [1].

The most important indicators of food security include:

1) a high level of development of the agro-industrial complex, able to provide food for the entire population, including its poorest stratum;

2) availability of necessary transitional strategic reserves;

3) possibility to invest in food production the required funds for long-term sustainable development of agriculture.

Like any other system, food security has horizontal and vertical components in its structure. The horizontal structural component concerns the country's food security as it is an integral part of national security.

The analysis of food security in the national security system has led to the conclusion that all subsystems of the national security system are interconnected and interdependent.

In turn, national food security functions as a subsystem in the international food security of neighboring countries of a particular economic and geographical region and global food security.

Kaihorodtsev A.A. suggested the following system of the state regulation measures for the agroindustrial complex, which contributes to and may facilitate the solution of the food problem [5]:

- improving the system of economic relations in production, purchasing, primary and secondary processing, storage, transportation and marketing of agricultural products;
- implementation of flexible taxation of agricultural producers, provision of tax benefits to those producers who invest in the development of priority industries and products, or adhere to the principle of sustainable development of production in compliance with environmental standards;
- constant monitoring of the domestic food market and food security of the country, creation of mechanisms of public control of the imports expediency and quality characteristics of the imported food;
- modernization and a technical re-equipment of the processing enterprises, introduction of the advanced technologies and quality management systems (ISO 9000, ISO 14000);

- creation of the database covering the innovative projects and advanced technologies in agro-industrial complex and informing periodically the participants of the food market about them;

- creation of the conditions and intensifying the processes of the domestic foodstuffs entering the foreign markets, stimulating an export of the cereals and the products of its processing;

- encouraging imports of machinery and equipment for companies that produce capital goods for agriculture and other branches of agro-industrial complex, means of production for promising industrial technologies of production and processing of agricultural products, breeding animals of highly productive genetic lines and seeds of high-yielding and high-protein crops, patents and licenses that contribute to the scientific and technological re-equipment of the agro-industrial sectors;

- increasing the investment attractiveness of the agro-industrial complex, introduction of tax privileges and other exemptions that will help to re-equip the material and technical base and the formation of a logistic system of agro-industrial complex, which includes municipal wholesale food markets in large cities and a network of procurement points in rural areas;

- development of the equipment leasing system for the processing industry enterprises;

- consistent implementation of the import substitution policy, saturation of the domestic market with a wide range of quality and competitive products of domestic production, reducing the import of the foodstuffs that can be produced in Ukraine;

- regulating imported food amounts in proportion to such basic strategic types of food as grain, meat, milk;

- rational placement of enterprises for processing of agricultural raw materials on the territory of the country, extending the practice of building enterprises, workshops and production facilities directly in the farms;

- optimization of the processing industry enterprises' production capacities;

- introducing new high-yielding varieties of domestic and foreign selection with a view to a considerable increase in food resources;

- mechanization and use of chemicals in agriculture; land drainage and irrigation;

- restoration of fertility of degraded soils with impaired humus content;

- promotion of ecological and economic farming systems;

- protection of the population from poor-quality foodstuff by improving the standardization and certification of goods services;

- stabilization of the food market through the organization of purchasing and commodity interventions;

- improving personnel, scientific, legal, and information support systems of the agro-industrial enterprises [5].

Thus, the place and role of food security correlate with other components of the national security system and its reliability is extremely important for the economic stability of the regions and the state.

To achieve the level of the developed countries, it is necessary to solve several interconnected and capital-intensive tasks simultaneously. The decisive among them are: technological modernization of the agricultural and food processing industry, sphere of services in the agro-industrial complex, formation of the personnel potential, capable of developing innovations, carrying out the programs on the restoration of production on the abandoned agricultural lands, including measures of increasing crops, development of the modern social infrastructure in the rural areas (houses, roads, etc.), transition to the policy of the intensive development of the rural sector. It is necessary to monitor constantly the parity price in the agricultural sector and other sectors of the economy, use indicative prices for timely measures to ensure the production profitability of meat, milk, grain, sugar and other vital food products [7].

The key findings of the study prove that today, food security is a prerequisite for the preservation of the country's sovereignty, economic security, and social stability. Without own food production, all other components of the country's national security significantly decrease in their efficiency. The agro-industrial complex of the country is the system-forming factor for maintaining food security, all components of which are focused on solving the problem of ensuring food security and food independence of Ukraine. Effective agricultural production is to be formed as a system of economic and legal measures to ensure the food security of a country with a focus on its domestic food production. For this purpose, it is necessary to create favorable conditions for life and economic activity of the rural population.

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DESIGNING OF LAND USE OF A COMPETITIVE AGRICULTURAL ENTERPRISE

Mikhailo Kobchenko,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

Taking into account the results obtained during the substantiation of the technical and economic parameters of agro-ecological investment, it should be noted that at the present stage of the development of agricultural land use, economic entities have been faced the task of designing sustainable systems that will ensure positive dynamics of the productive state of land resources and competitiveness in the current economic environment.

Modern trends in the formation of sustainable agricultural systems are focused on the new phenomenon of harmonization of environmental, social and economic systems – agro-ecological engineering. Agro-ecological engineering is a modification of farming systems through the use of environmental principles. That is a purposeful systematic process of transformation of agricultural systems into agro- ecological systems, which have the following characteristics. Increasing resource efficiency is a key feature of agro-ecological systems, in which issues as to the use of diversity to ensure synergy between different components are carefully planned. At the same time, one of the key efficiency problems is that, throughout the world, crops absorb less than 50 percent of the nitrogen fertilizers applied, and the rest of them are lost in the environment, causing serious ecological consequences. In agro-ecological systems, natural resources are used more efficiently, especially those that are abundant and free of charge: for example, solar radiation, atmospheric carbon and nitrogen [2, 6, 10]. By improving biological processes and the circulation of biomass, nutrients and water, manufacturers can use fewer external resources, reducing costs and mitigating the negative environmental impact of using these resources. Ultimately, reducing dependence on external resources enables manufacturers to increase their independence and resilience to natural and economic shocks.

One way to measure the effectiveness of integrated systems is to use the Land

Equivalence Ratio (LER). LER enables to compare the results of joint growing of two or more components of the system (e.g., crops, trees, animals) with the results of growing of the same components in monoculture. In integrated agro-ecological systems, LERs are often higher.

In agroecology, great attention is paid to the creation of diversified systems in which the species of annual and perennial crops, livestock and aquatic animals, trees, soils, water and other elements of farms and agricultural landscapes are competently combined to enhance synergy in an increasingly visible climate change. In food systems, the creation of a synergistic effect provides a lot of benefits. By optimizing biological interaction, agro-ecological management practices contribute to the improvement of environmental functions and, consequently, to the increase of resource efficiency and resilience to external effects. For example, by means of the biological fixation of nitrogen by leguminous crops in systems of combining crops or rotation, around the world, they manage to save almost $ 10 million annually. US apply nitrogen fertilizers; this leguminous property also contributes to soil healing and mitigating consequences of climate change and adaptation. Besides, in crop production, about 15 percent of nitrogen comes from manure, indicating synergy as a result of the integration of crop production with animal husbandry.

At the landscape level, synchronization of production activity over time and in space is required to enhance synergy. Grazing farming and extensive livestock grazing create complex relationships between people, herds of different species, and change of the environmental conditions that contribute to the creation of resistance to external effects and the implementation of ecosystem services such as seed dispersal, habitat conservation and soil fertility provision.

Along with the desire to maximize the synergistic effect, agro-ecological approaches imply certain compromises in both natural and anthropogenic systems. In particular, compromises are necessary when allocating resources and access rights. In the agro-ecological, in order to promote synergy within the food system as a whole and to achieve optimal compromises, much attention is paid to partnerships, cooperation and responsible management with the involvement of different subjects at different levels.

To support the transition to sustainable agro-food systems, agro-ecological engineering requires responsible and efficient management. To create favourable conditions that help manufacturers transform their systems in accordance with agro-ecological concepts and practices, management mechanisms are needed to ensure transparency, accountability and inclusivity.

An illustrative example is the management of land and natural resources. Sources of livelihoods for the most deprived and vulnerable groups of rural population largely depend on terrestrial and aquatic biodiversity and ecosystem services, but these categories of population are not guaranteed an access to these resources [1].

Agroecology provides not only an equal access to land and natural resources (this is a key factor in social justice), but also incentives for long-term investment

needed to conserve soil, biodiversity and ecosystem services.

Responsible management at all levels is the best support for the development of agroecology. Many countries have already developed national legislation, policies and programs in the field of agricultural production that promote biodiversity conservation and ecosystem services. Management mechanisms implemented at the level of territories, landscapes and communities are also essential to strengthen stakeholders collaboration and maximize synergy with minimal compromises, in particular, traditional and custom-based management models. Agroecology is focused on re-establishing manufacturers' ties with consumers in a circular and solidarity economy, with priority given to local markets and economic development at the local level, which drives positive changes in other areas.

Agro-ecological approaches help to develop equitable solutions, taking into account local needs, resources and potential, and to create fairer and more sustainable markets. Strengthening short supply chains can increase manufacturers' income while maintaining fair prices for consumers. This implies the development of new innovative markets along with more traditional territorial markets, where most small farmers sell their products.

Social and institutional innovations play a key role in stimulating the agro-ecological method of production and consumption. Examples of innovations that help connect manufacturers to consumers include systems of collective quality assurance, markets of local producers, products origin labeling, community-based agriculture, and e-commerce.

Thus, agro-ecological engineering contributes to the creation of agricultural systems with the necessary level of biological, socio-economic and institutional diversity, and to the harmonization of economic processes over time and in space in order to increase efficiency. The implementation of agro-ecological designing measures requires the identification of key features of the development of the current system of agricultural enterprise land use.

The results of testing the measures of substantiation of the technical and economic parameters as to the implementation of agro-ecological investment measures make it possible to conclude that in order to increase the efficiency of land use in the competitive environment of the agrarian market, it is necessary to develop projects that provide competitive advantages at the sustainability of the productive potential of agricultural land resources. To maintain fertility of land resources, it is necessary to create conditions for the reproduction of organic matter in soil.

A typical (or traditional) practice of land farming operates with a crop rotation system for the organization of the natural cycle of organic matter with the introduction of crops that affect the dynamics of organic matter (legumes, perennial grasses, etc.) [3, 5]. Also highly effective is the practice of application of humus, which is presented by plant components treated in the digestive tract of animals. This speeds up the process of mobilizing components of cultivated plants nutrition in soil.

However, the use of crop rotations with forage crops to ensure sustainability of

the productive state of the soil requires the removal of arable land for them, and, accordingly, the search for a consumer for forage resources to get the necessary level of competitiveness. This is quite a challenge in the context of the regressive development of the livestock industry. In addition, the main directions for ensuring the efficiency of livestock industries are focused on the use of natural land (hayfields, pastures) to reduce feed production costs. So, the task of ensuring sustainability of the productive state of land resources through the use of forage crop rotations and ensuring the profitability of production of livestock products, both within a single farm and in economic interaction, are phenomena with the opposite orientation of the entrepreneurial initiative. Therefore, with priority interaction of the economic initiative of the crop profile with livestock farms, the urgent problem for effective land use is the implementation of measures of organic matter "production", which has a positive effect on the level of competitiveness. That is, unfavorable conditions (for competitiveness) of interaction with enterprises of livestock specialization as the main consumer of forage resources should not affect the initiative and dynamics of the activity of plant enterprises for the implementation of measures to support the productive state of land resources.

In this case, it is necessary to pay attention to production systems that are able to provide the necessary output when consuming at the input of an available resource with ensuring the necessary economic efficiency of this transformation (fig. 1).

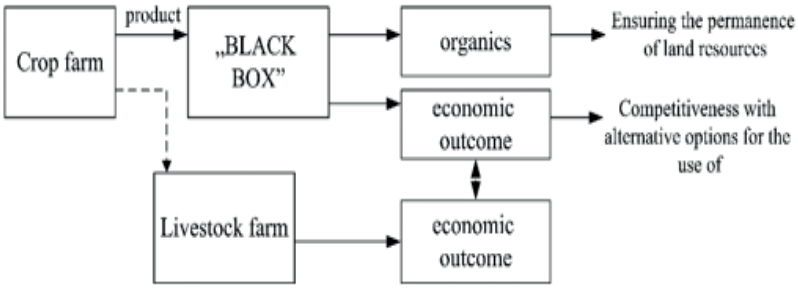

Fig. 1. Scheme of ensuring the competitiveness of prospective land use regime [developed by the author]

According to fig. 1, we can say that the competitiveness of the current regime of land use is ensured by obtaining sustainable economic benefits from making available plant raw materials into organic matter necessary to provide sustainability of the productive state of land resources that are greater than the proposals of livestock farms.

An additional advantage is optimization of the logistics of organizing organic fertilizer application, which will be implemented without fixing to the conditions of activity of livestock farms – consumers of plant raw materials. Thus, agro-

ecological investments can be implemented through the reinvestment of basic products using this scheme.

As part of the testing of agro-ecological engineering measures, in order to form a competitive model of agricultural land use and evaluate the benefits of the mentioned method of fertilizer production, it is proposed to form a model investment project that is relevant for the analyzed enterprises.

The prototype for the development of measures for restoration and maintenance of the productive state of land resources within the framework of resource-oriented agricultural land use is the experience of European countries, where the so-called energy crop rotations are practiced, when one energy crop is changed with another, which enables to harvest green mass twice a year, suppress weeds growth and significantly save money of an enterprise. They also grow two crops in one field at a time, such as corn and sunflower or corn and millet, which enables to increase the nutrient content of silage and stabilize yields during dry years [4, 7, 9]. These technologies can be used in our country – farms will always be provided with high-quality raw materials. Moreover, different crops can be mixed in a reactor: in many cases, it is even more effective than using one type of raw material. Therefore, the main purpose of creating renewable crop rotation is to create agrotechnical conditions for the accumulation of organic raw materials, the next purpose is to ensure the competitiveness of the plant industry of an enterprise through identifying ways to support the economic efficiency of the lands involved in renewable crop rotation.

The energy application of plant resource, which has become widespread in many energy scarce countries, provides adequate economic efficiency, but is accompanied by product recall from the agricultural sector. That is why, a purely energy direction may be seen as a means of ensuring the competitiveness of an agricultural enterprise, but as a direction of restoring the productive potential of land resources is somewhat doubtful.

However, it should be noted that the research of the technologies of accelerated production of organic matter components for soil fertility restoration determines the corresponding advantages of biological agents of fertilizers production. Thus, the main advantage of anaerobic fermentation as a technology for accelerated production of organic matter components is keeping of virtually all the nitrogen contained in the source raw material in the organic or ammonium form. With traditional methods of preparing organic fertilizers (composting), nitrogen losses are up to 30-40 %. Anaerobic treatment of manure four times – in comparison with non-fermented manure – increases the content of ammonium nitrogen (20-40 % of nitrogen goes into ammonium form). As a result, fermented manure in comparison with the usual one in equivalent doses increases the yield of crops by 10-20 %.

Anaerobic fermentation biomass contains much fewer pathogens than in the source material. It contains a significant number of nutrients and can be used as a fertilizer and a feed additive.

Anaerobic fermentation processes are accompanied by the release of significant

amount of natural gas (methane), which can be used to supply energy needs of a farm. It has been estimated that the use of biogas technologies for organic processing can not only completely eliminate its environmental risk, but also annually receive additional volumes of fuel, as well as highly efficient fertilizers, which would significantly reduce the extremely energy-intensive production of mineral fertilizers (about 30 % of the total electricity consumed by agriculture).

These competitive advantages in the production of organic fertilizers by means of anaerobic frementation make it possible to design a technology for realizing the economic benefits from forage crops of renewable crop rotation in the adverse market situation caused by the regressive development of the livestock industry.

A technical prototype of the production capacity of an organic fertilizer farm using anaerobic treatment of raw materials is bioenergy units that use similar technology to produce biogas.

The defining characteristic for the formation of technological conditions is determination of raw materials. The use of plant raw materials requires appropriate preparation, which affects the composition of the production line. Taking into account the objectives of the competitive sustainable land use project, corn silage and corn and sorghum silage were identified as raw materials for anaerobic treatment. Silage corn is currently one of the most efficient types of plant raw materials for processing. It gives a good yield per hectare and a large gas yield of 1 ton (220 cubic meters). The cost of producing corn is relatively small, and the machinery for sowing, harvesting and further processing is practically available in almost every farm. Undersowing perennial herbs adds benefits to physical and chemical restoration of soils and energy value to the processing.

In order to ensure appropriate versatility of the project, it is proposed to identify a technological unit capable of scaling to the needs of a farm. The Cognac plant of Voznesensk in Mykolayiv region is considered as an exemplary enterprise, the technical and technological base of which is taken as a technological unit of fertilizer production. The enterprise operates the Zorg Biogas unit for corn silage processing with a maximum daily load of 17 tonnes of silage and electrical capacity of a 125 kW co-generation unit. We should point out that 6205 tonnes of silage from 155 hectares of arable land at an average yield of 40 tonnes / ha is required to provide an annual volume of raw materials [8].

It should be noted that the effectiveness of investment in production capacity is determined by the scale of activity, but the provision of logistical benefits can be realized through the localization of activities using the represented technological units.

For modeling of a technological process within the framework of the investment program, we took the parameters that determine the peculiarities of implementation of the project as to introduction of organic fertilizer production in the system of competitive resource-oriented land use with the use of biogas technologies of raw material processing (table 1). The operation of the biological unit for anaerobic treatment of silage is ensured by daily loading of 17 tons of corn silage and its

processing within 20 days. Processed raw material in the form of sludge is loaded to a storage. The output sludge has moisture content of about 92 %. In Europe, the retail price of biohumus with moisture content of 40-60% is EUR 500 per ton.

Table 1

Parameters of modeling of the investment project of organic fertilizer production [calculated by the author]

Input parameter	Value
Daily volume of raw material loading (corn silage), t	17
Annual load of raw material (silage), t	6205
Fixed cost of corn and sorghum silage, hrn. / t	800
Output of the digestate (biosludge) from the raw material, %	75
Production of digestate (output sludge 92%), t / year	4654
Biohumus production (50% moisture), t	745
Retail price of biohumus (40-50% moisture), hrn. / t	13500
Investment in the biogas unit, euro	750000
Fixed euro exchange rate against hryvnia, hrn.	27

If to ensure further bringing of biosludge to moisture of 50 % (average of 40% and 60%), then 2.04 tons of biohumus will be obtained from 12.75 t of daily sludge output, which corresponds to 27540 hrn. at European retail prices. Total, for the year, the unit will produce biohumus for 10052 thousand hrn. This is the maximum income that can be obtained from such a biogas unit.

Increasing the profitability of the project is possible due to the expansion of business activities within a technological line.

In accordance with the set goals, in addition to providing conditions for organic fertilizer production as the main activity, as part of the project, it is planed to produce by-products – biogas – to ensure the competitiveness of the economic model. The technical and economic parameters for modeling of associated biogas production activities to enhance investment attractiveness of the project are presented in table 2.

The typical Zorg Biogas modular unit, which is noted within the exemplary enterprise, is designed to process 7500 tonnes of silage per year.

Fixed annual silage capacity of 6205 tonnes will provide a biogas station with the raw material for 125 kW. One tonne of silage yields 187 m3 of biogas, according to Zorg Biogas. For its own needs, the unit consumes only 45 kW of electrical power and 240 kW of heat. When reaching the planned capacity, the biogas unit of 125 kW enables to obtain the following output: in the form of biogas – 1160335 m3 / year, or electricity and heat during combustion in a co-generator – 1095000 kW / year and 799270 kW / year, respectively. The use of additional equipment for the conversion of heat into electricity enables to obtain additional electricity from thermal energy. The system is based on the Organic Rankine Cycle (ORC). The

liquid with a low evaporation temperature is converted into gas by heat and rotates a turbine. By giving away energy to the turbine and losing heat, the gas is converted back to liquid. The oil system at the efficiency coefficient of 20 % enables to obtain 200 kW of electricity per 1 MW of heat.

Table 2

Parameters of modeling of associated biogas production activities as part of the investment project [calculated by the author]

Input parameter	Value
Biogas output from 1 ton of corn silage, m3	187
Co-generation power, kW	125
Electricity generation per year, kW	1095000
Heat capacity per year, kW	799270
Electricity output from 1MW of heat in the Zorg Biogas oil converter, kW	200
Electricity generated from heat, kW	159854
Imposed electricity tariff, hrn. / kW	1,90

Thus, the total annual electricity from the biogas unit is 1095000 kW / year + 159854 kW / year = 1254854 kW / year. Taking into account the current price for electricity, the associated activities on the operation of the biogas unit provide additional income of 2384 thousand hrn. annually. It should be noted that almost 92 % of the costs are spent on the purchase of raw materials when functioning of a fertilizer production center as a separate economic unit. Labour costs are minimal due to a high level of technological equipment automation. Only 1 operator is involved in its maintenance. Significant fragmentary expenses are also recorded for operating ones, which are implemented in accordance with the Zorg Biogas plan (table 3).

Table 3

Operating expenses for the Zorg Biogas maintenance plan when modeling the investment project [calculated by the author]

Biogas unit operation period, year	Cost per year (% of project cost)	Type of work
1, 2, 3	1,4	Scheduled maintenance
4	4	Scheduled maintenance and mid-level repair
5, 6, 7	1,4	Scheduled maintenance
8	12	Major repair

Taking into account these input parameters, the investment model of the project of organic fertilizer production from anaerobic silage treatment was formed; the main indicators of investment efficiency of the model are presented in table 4.

In order to determine economic efficiency of the project, the net benefits of its implementation are identified, that is, the difference between the net benefits of the

project implementation and the net benefits of the project abandonment is found. In the «no project» situation, all indicators are zero, as an enterprise is building new production lines.

Table 4

Investment attractiveness indicators of the project on formation of organic fertilizer production from anaerobic silage treatment [calculated by the author]

Indicator	Value
Investment size, euro	750000
Discounting rate (according to the account rate of National Bank of Ukraine),%	13,50
Payback period – PB, years	4,30
Discounted payback period – DPB, years	6,83
Average rate of return – ARR, %	25,63
Net present value – NPV, hrn.	6078553
Discounted Profitability Index – DPI	1,30
Internal Rate of Return – IRR,%	21,72
Period of calculation of integral indices, years	10

From table 4 we conclude that if the project is financed to the amount of 750 thousand euros, then the NPV index for 10 years of the unit operation will be 6078,6 thousand hrn., which is a criterion for economic expediency of the project. The major repair of the unit is planed for 8th year of its operation, after which the unit will continue to operate.

The dynamics of the project revenue arranged by the years is presented in fig. 2. The payback period of the project from the moment of putting into operation will be 4.30 of the reporting period, i.e. 5 years (4 years and 3 months). With discounting rate of 13.5 %, the payback period is 6.83 years, that is, the cost of the project taking into account the change in the value of money over time will be paid off over the 7th year. That is, when making investments over the sixth year and in the subsequent years of project implementation, economic benefits will be obtained. The internal rate of return (IRR) of the project will be 21.72 %. Investment efficiency will be 130 %. The return on investment of the project will be 21.72 %, which also indicates a sufficient return on investment.

Attractiveness of any project is determined not only by the planned indicators of the economic model, but also by its ability to withstand possible risk situations. Based on this assumption, the one-parameter analysis of sensitivity of the investment project was made. The decisive parameter for the implementation of most investment projects is the price position of a product that is proposed to be produced during the analyzed period. In this particular case, this parameter is purely theoretical, since the organic fertilizers produced are planned to be used within the accepted land use

model. The value of conditional profitability of fertilizer production can be used as a measure of reinvestment or capitalization of an agricultural enterprise, namely its resource base. As part of the assessment of the project investment attractiveness, price indicators are accepted at the level of current European prices, because under Ukrainian conditions the supply of such a product is significantly limited.

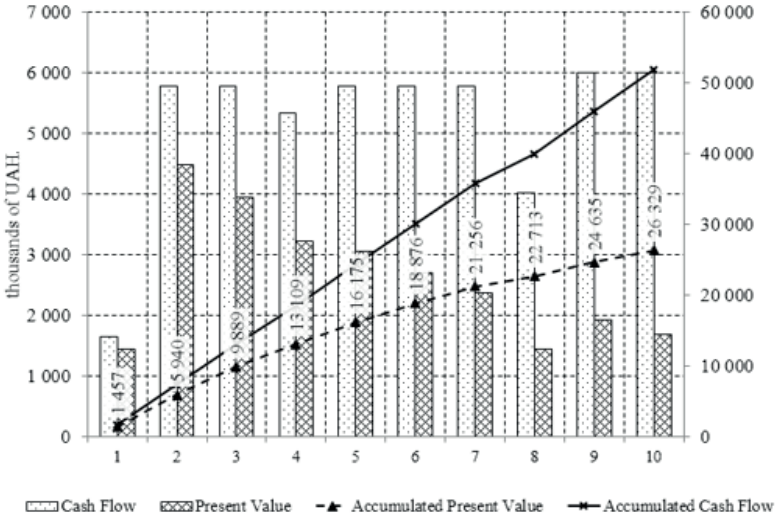

Fig. 2. Dynamics of the project revenue arranged by the years [developed by the author]

Another important parameter of the financial and economic model that affects investment attractiveness of the project is the cost of raw materials. Within the framework of the modeling of conditions, 6 situations were identified:

– the current situation, with the estimation of raw materials – silage at cost of 800 hrn. / t;

– option of purchasing raw materials at market prices, which are agreed at the level of 1000 and 1200 hrn. / t;

– option of using raw materials with their estimate at liquidation prices (about 0 hrn. / t) when processing lots of substandard feed.

The results of the change in attractiveness of the investment project obtained during the simulation experiment are presented in fig. 3. According to the results of the analysis from fig. 3, it can be concluded that the use of corn silage as a raw material for the production of organic fertilizers at production cost up to 600 hrn. / t enables to maintain a sufficient level of investment attractiveness of the project while ensuring the appropriate competitiveness of agrotechnical measures to restore the productive state of agricultural land resources, for example, corn sowing along with perennial grasses.

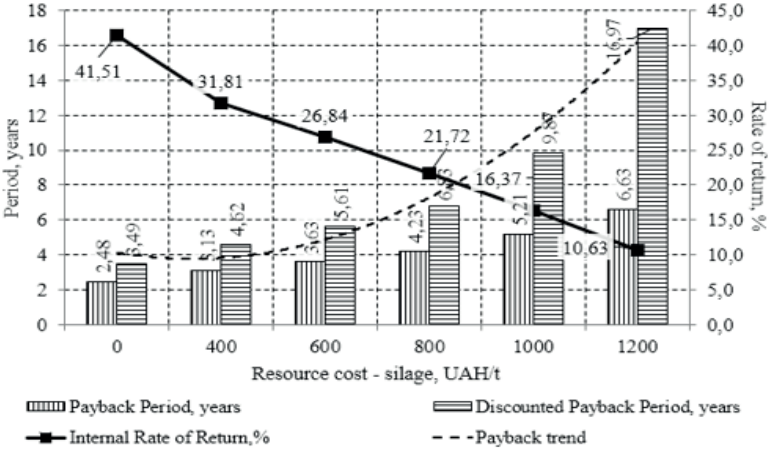

Fig. 3. One-parameter analysis of sensitivity of the investment project for organic fertilizer production to changes in the cost of raw materials [made by the author]

Orientation to use purchased corn silage as a raw material does not sufficiently reveal the financial and economic efficiency of the economic model of production of organic fertilizers from the processing of crop products. Let us determine that at cost of raw materials above 1200 hrn. / t, the internal rate of return of the economic model reaches critical values, falling to a level lower than the accepted discount rate (13.50 % – at the account rate of National Bank of Ukraine).

On the other hand, this fact can be seen as positive, because it eliminates the competition of forage, technical and energy use of the main products of an agricultural enterprise. That is, if an enterprise specializing in crop production when using renewable crop rotations has demand for forage resources, then ensuring a high level of competitiveness will not enable to use this resource for the production of fertilizer or fuel. The problem of competition between food and technical uses is a serious challenge for the sustainable development of agricultural enterprises.

Thus, the cost factor of raw materials contributes to the conditions of maintaining the competitiveness of agricultural enterprise actions aimed at ensuring the efficiency of land use and impedes the development of competition in the way of priority use of crop products.

Additional information on investment attractiveness of the project for implementation in the economic conditions of Ukraine is provided by a simulation modeling of sensitivity of the project to changing the need for investment resources. This circumstance can be described by the conditions when irreversible funds are attracted to finance the process of manufacturing capacity formation, for example, grants, state support, etc. In this case, the estimate of the own investment changes for the project initiator.

Today, when providing the conditions of anaerobic fermentation of crop raw materials, foreign technologies and building materials are used. Encouraging the development of own technological innovations in biogas production as a technological platform can be good for attractiveness of the project and reduce the investment pressure on the project initiator. In fig. 4 we can see the results of the simulation experiment in determination sensitivity of the economic model to the change in the need for investment resources. Within the model of the simulation experiment, a 15 % rate of change in the need for investment was accepted.

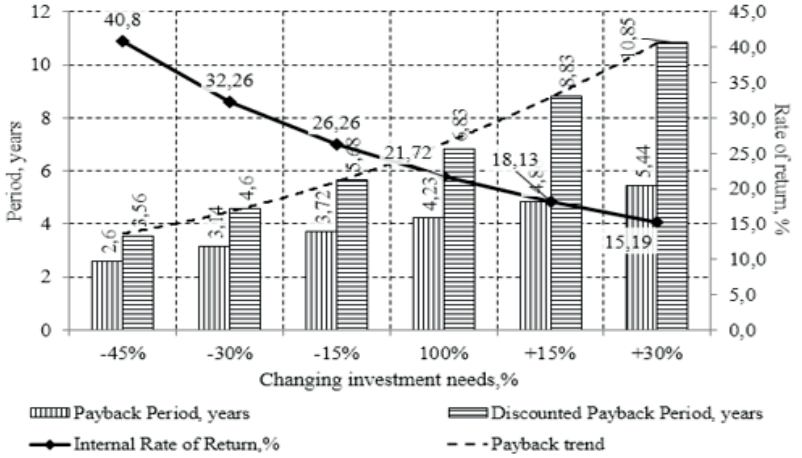

Fig. 4. One-parameter analysis of sensitivity of the investment project for organic fertilizer production to the change in the need for investment resources [developed by the author]

According to the results of the analysis in fig. 4, it can be concluded that the cost of generating production capacity has a meaningful effect on investment attractiveness of the project. It should be noted that such a situation can be explained by participation of the estimated cost of the project in the manufacturing model of organic fertilizer production. This is due to the fact that the cost of scheduled maintenance under the program of the contractor Zorg Biogas is determined from the cost of the equipment involved.

Regarding the actual data, it should be noted that increasing the project cost from the base cost by more than 40% is critical for the project implementation with the accepted technological line. It is necessary to point out that such a situation can be triggered by strong currency fluctuations, because the project uses a European supplier with payment in euros. Increasing the need for investment resources by 15 % and 30 % significantly reduces attractiveness increasing the discounted payback period by 1.5 times.

As for reduction of the need for investment resources, lowering the volume of own investments by 50 % makes it possible to reduce the payback period by 1 year and to ensure the capitalization of resources of an enterprise in a limited period. Determining the effective amount of change in the cost of investment resources, we note that optimal conditions are provided with a 15 % reduction in demand. Further reduction means greater benefits, however, even at 15 %, the payback is provided during one cycle of a typical crop rotation accepted in testing.

Thus, the investment need factor for the project implementation determines the main incentive for agricultural land users to use land effectively, so support by stakeholders, including the state, to implement such projects is decisive. In this case, the support is not limited to financial aid, but also focuses on innovative development of domestic agricultural production.

The results of the study of technical and technological innovations in different sectors of the national economy allow the «black box» to be manifested. In our opinion, these conditions and requirements can be implemented by organizing organic fertilizer production based on biogas units. In this particular case, biogas units are an effective tool that accelerates the conversion of plant components to organic substances like in animal digestion, at a higher rate of this process. That is, obtaining organic fertilizers in a fast mode is ensured. The by-product – biogas – is a product that provides economic results as a source of competitiveness of resource-oriented land use.

The results of the one-parameter analysis of sensitivity of the efficiency to market valuation of the cost of forage crop products allow us to conclude that the proposed mechanism enables to obtain an effect for ensuring competitiveness: the lower price can be offered by potential consumers of forage products, the higher the efficiency of fertilizer production is. Therefore, the problems of an agricultural enterprise turn to economic benefits.

As part of the project of organizing organic fertilizer production based on biogas units, it is envisaged to remove part of the main products, the sale parameters of which do not meet the planned indicators of efficiency or sustainability. On the basis of the biogas unit, it is proposed to form an appropriate flow of products to ensure competitiveness of the accepted model of agricultural land use.

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MANAGEMENT PECULIARITIES OF AGRO-PROCESSING ENTERPRISES MARKETING SYSTEM IN THE CONDITIONS OF GLOBALIZATION

Yaroslav Aksyuk,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

The current development of market relations in Ukraine determines necessity for highly competitive products of Ukrainian enterprises, in particular agro-processing ones, which implies the intensive production development, and also requires improvement of the organizational methods of production and economic activity. The mechanism of market instruments, the main of which is the formation of marketing at agro-processing enterprises must be improved. The peculiarities of marketing in the agri-food economy in the conditions of globalization are determined by the nature of the needs that it must satisfy, in particular, the mechanism of demand formation for agricultural products, features of the agri-food industry as a branch of material production and its products as goods, as well as the peculiarity of formation, functioning and development of the system of market relations in this sphere of economy, which actualizes the subject of this research.

Clear understanding of marketing nature and content is necessary for effective implementation and use of marketing at agro-processing enterprises.

Marketing as a special kind of activity emerged in the seventeenth century in

England. Even then, the local sale of goods and their export outside the country were performed mainly with the participation of specially formed intermediary market services [5]. A great number of marketers associate marketing only with sale activities. This characteristic is traced to the first definition made in 1960 by The American Marketing Association. According to this definition, marketing is the implementation of various types of economic activities which direct the flow of goods and services from the producer to the final or intermediate consumer [3].

According to the definition of British Institute of Marketing and Sales Management, marketing is a type of creative management activity that contributes to the expansion of production and commerce, as well as the increase of employment by identifying consumer requirements, organizing researches and development in order to satisfy these requirements; marketing connects production potentialities with sales potentialities for goods and services, determines the nature, direction and scale of all work, required to gain profit from the sale of the maximum quantity of products to the final consumer [3]. According to I.L. Akulych, marketing is an applied science that combines both its own methods and methods borrowed from other fields. The own methodology can include the following components: market research, marketing mix, etc. [1]. They are organically supplemented by methods of other sciences: microeconomics (definition of elasticity and market equilibrium); mathematical statistics and econometrics (methods of economic analysis, forecasting and modeling); psychology, computer methods of economic analysis, etc.

However, marketing problems, focused on regional, cultural and sector specificity in the conditions of globalization are remained unsolved. The concept of marketing emerged in the United States in the 10-20s of the twentieth century. Marketing appeared as a reaction to such negative manifestations of a booming «wild» market as excessive spontaneity, unpredictable development, unordered competition, permissiveness, increasing tendencies to monopolization, etc. All these factors threatened with serious economic and social crises. But business executives took this direction into account only in the early 1950s, due to the significant market saturation (US market) and the fierce competition. This fact aroused the considerable scientific interest, and resulted in a large number of scientific works abroad. Due to the rapid marketing evolution, a great quantity of definitions, terms, concepts, etc. have been accumulated in the field so far.

It is necessary to decide what is meant by marketing. There are many definitions that have been formulated by both domestic and foreign marketers. We consider the most famous and important of them in order to formulate the definition that will be the basis for the further study. So, the term “marketing” (English “market”), which literally means market activity, appeared in American economic literature in the early twentieth century. During this time, many definitions of marketing have been developed: from the shortest to the most detailed ones, covering the goals, principles, functions and methods of marketing [8].

Marketing definitions can be combined into two main groups: classical and

modern. In the classical sense, marketing is defined as an entrepreneurial activity, aimed at promotion goods and services from producer to buyer or consumer. A broad range of marketing was formally recognized by the American Marketing Association (AMA) in 1985, when the traditional definition of marketing, approved in 1960, was replaced by the following: «Marketing is a process of planning and implementing the project, pricing, promotion and realization of ideas, products and services through the exchange that meets the needs of individuals and organizations» [4].

According to the definition of a well-known marketing specialist Professor F. Kotler, «marketing is an activity aimed at satisfying people requirements through exchange» [5]. And English specialist J. Steiner shares the point of view that marketing is a task of management in the strategic planning and regulation of the enterprise in order to implement profit programs that will meet customer needs; a task that involves the integration of all forms of activity (including manufacturing, financial and marketing) into an updated system of actions [6].

One of the leading economists P. Drucker says that the purpose of marketing is to make sale efforts unnecessary. Its purpose is to know and understand the consumers so that the product or service absolutely satisfies them and sells itself [2].

A more precise definition of the "marketing" concept was proposed by A.V. Korotkov. Marketing is an activity aimed at achieving the market goals of enterprises, based on the principles of an open feedback management system. It focuses on achieving the market goals of the enterprise and improving its position on the market based on the study and satisfaction of consumer requirements as a result of a comprehensive impact on the consumer and the demand by means of setting parameters of the marketing complex [7]. The first part of this definition does not specify which management is used – direct or feedback, but it separates the purpose of the enterprise and the way of business activity. The purpose of marketing is to develop the enterprise, improve its position on the market, and the way is to meet the needs of consumers.

Therefore, marketing in our understanding is a combination of relations and services of a market organization that through intermediation provides the necessary delivering goods or services from producer to buyer, creating favorable conditions for entrepreneurship in order to fully meet the needs of consumers.

A clearer understanding of marketing as an instrument of strategic management gives the essence of the marketing concept. The concept offers scientifically substantiated linking of such components as idea, strategy, instruments and goals. In this context, the concept of marketing is a scientifically substantiated idea (project) of organizing and managing marketing activities of an enterprise. Often the concept is considered as a system of basic ideas, general design and philosophy of organizing activity of a firm or an individual entrepreneur, the direction of his actions [3. 9].

According to F. Kotler, one of the founders of the modern marketing theory, there are five basic concepts: the concept of production improvement, the concept of product improvement, the sale concept (intensification of commercial efforts), the concept of

«pure» marketing and the concept of social and ethical marketing [5]. These concepts help to reach the compromises of the interests of enterprises (organizations), consumers and society and to find new forms of their mutually beneficial relations.

Table 1

Evolution of marketing concepts [author's development on the basis 6]

Years	Concepts	Idea	Main instruments	Main purpose
1860 – 1920	Industrial	Increase in production of goods	Cost, productivity	Production improvement, sales growth, profit maximization
1920 – 1930	Goods	Production of qualitative goods	Measures of production policy	Improvement of consumer properties of goods
1930 – 1950	Sale(intensification of commercial efforts)	Development of sale chain, sale channels	Measures of sale policy	Intensification of sales through marketing efforts to promote and sell goods
1960 – 1980	Traditional marketing	Production of goods which consumer needs	Marketing complex (marketing-mix)	Meeting the gaps of target market needs
1980 – 1995	Social and ethical marketing	Production of goods which consumer needs, taking into account the requirements of society	Research and consideration of social and environmental consequences of the firm production activities in the further development	Meeting the gaps of consumer needs while saving all resources and preserving the environment
The second half of the 1990s	Innovative marketing	Production of new products and services that satisfy the requirements of the current stage of scientific and technological progress (STP)	Use of the latest technologies, introduction of new interactive methods of consumer research and communication with many participants of the innovation process	Satisfying the needs of consumers for new qualitative products, forming an "educated" (new) category of customers

Modern marketing differentiates the stages of marketing concepts evolution, referring to the approximate years of their implementation, basic ideas and used

instruments [10]. The table 1 shows the evolution of marketing concepts according to these characteristics

According to the data, it should be noted that the concept of production improvement is one of the oldest (the end of the nineteenth century) and is based on the improvement of production and the increase of distribution system efficiency [6].

The current development of market relations of the enterprise and consumers indicates that the traditional marketing concept changes the sale concept content, providing customer orientation, supported by a complex aimed at meeting the needs of the market events. The marketing concept begins with identifying real and potential customers and their needs; defining the enterprise long-term and short-term goals which can only be achieved by meeting the needs and desires of the certain consumer groups. Thus, in the process of establishing market economy, when market demand and supply were changing, relations between the main market participants were becoming more complicated, their competition was increasing, views on marketing activity and its concepts were changing, the emphasis shifted from production to sale, then to satisfaction of consumers requirements. So, growing orientation on changeable consumer needs and social aspects finally appeared. There are many circumstances in public life which determine the type of marketing and, as a result, the effectiveness of its implementation in the specific circumstances. Today, a lot of scientists often consider marketing as an element of cultural life and even a peculiar mechanism for forming a new culture. However, effective marketing is impossible without considering the peculiarities and conditions of different countries development. This is an important problem for affecting the audience due to the fact that ethnic peculiarities of perception, thinking and behavior play an important part in planning and conducting advertising campaigns, while commercial structures enter the markets of other countries or other regions [5].

Let's consider these circumstances in the form of a bipolar system. In reality, the number of alternative changes will depend on the specific group of consumers and talent of the marketer in finding effective actions to develop and expand the market for manufactured products.

The first direction is closely connected with the processes following the processes of globalization and transnationalization of the national economy of states and regions. Enlargement of the European Union was accompanied by the major socio-demographic changes within the integration group. In 2008, the EU ranked the third place in the world in terms of population after China and India, if we consider the EU as a whole unit. The International Institute for Systems Analysis estimates that the EU population will grow by only 30 million to 527.7 million (if territorial expansion is not taken into account) by 2030. If we imagine that the migration growth will be zero, the EU population will be reduced to 493.7 million people. Considering that the process of population getting old have been growing within the European Union, it might be told that the area is doomed to demographic stagnation and aging without territorial consolidation and migration.

An illustrative example, the population in Germany will be reduced to 81 million people by 2030. Moreover, if there is no influx of immigrants, the population will decrease even more – up to 76.9 million people. Italy is in a similar situation, it will lose 1.4 million people by 2030. The population in many new EU member states – Romania, Poland, Bulgaria, Hungary, Czech Republic, Lithuania, Latvia, Estonia and Slovakia is also reducing [8].

So, the role of migration growth in changing the EU population is currently very significant. Overall, about 75 % of the population growth in the EU is immigration. Crossing the boundary density with foreigners creates conditions for the formation of significant communities with the appropriate location. For example, in the UK, Asian migrants live mainly in Greater London, Greater Manchester, Birmingham and the surrounding area of Yorkshire (city of Bradford is called «small Pakistan»). In France, there are at least 10 million citizens with at least one foreign parent. Most of them live in Greater Paris (38.3 %), the districts Rhone-Alpes, centered in Leon (12 %) and the Alpes-Cote d'azur, between Marseille and Nice (8.4 %). In Germany, there are similar tendencies: the largest number of migrants resides in large cities (Berlin, Munich, Hamburg, Frankfurt am Main, Cologne, Stuttgart). In the last three cities, as well as in Offenbach, the part of migrants reaches 20 % of the total population. In the western cities there are already areas of ethnic enclaves – China-town, Arab, Indo-Pakistani blocks, etc.

Obviously, effective marketing should pay much more attention to reaching the multicultural audiences, as their representatives play a significant role in the aggregate purchasing power of many countries. At the beginning of globalization, theories that claimed that internationalization would create common world cultural environment, or at least prepare its emergence were popular. As a result, cross-cultural communications would become easier. Many scientists set the products of such transnational companies as «McDonald's» or «Coca-Cola» as an example, creating a benchmark for markets and, therefore, affecting the basis of different cultures that have acquired similar traits around the world. Indeed, now many goods can be found all over the world, but this is no longer characteristic of transnational corporations.

The issue of cross-cultural marketing development has been updated with the inclusion of Ukraine in the European integration processes since independence, according to the official statistics. Thus, according to the statistics, the population of Ukraine at the end of 2018 consisted of 77.8 % ethnic Ukrainians, Russian (17.2 %), Belarusian, Moldavian, Crimean-Tatar, Bulgarian, Hungarian, Polish, Jewish, Armenian, Greek, Gypsy, German, Gagauz, Slovak and other minorities. From 1991 to 2018, the number of relatively new ethnic minorities such as Azerbaijanis, Georgians, Koreans, Uzbeks, Chechens, Chuvash, Mordovians, Kazakhs, Ossetians, etc. has significantly increased. At the same time, representatives of some completely new ethnic groups for Ukraine have been identified: Arabs, Afghans, Chinese, Vietnamese, Hindus, Pakistanis, Kurds, Persians, etc. Ukraine is becoming a part of the European migration movement,

repeating the general tendencies of social change [7].

At the same time, the world practice of developing value-based marketing demonstrates the experience of concentrating particular attention on the national priorities. This is proved by the growing number of advertising agencies specializing in the knowledge of ethnic characteristics and creation of adequate advertising messages for them [9]. For example, in Australia there is «National Multicultural Marketing Awards», which is awarded to the companies that promote products based on the specifics of the Australian people. As the description says, the award is given to the modern companies that encourage cultural diversity [10]. Ethnic features of behavior and perception of information affect value orientations. Therefore, to achieve the maximum result of any information flow, it is necessary to match the values, reflected in the message with the values of the society for which this message is being sent.

Thus, simultaneously with the great development of cross-cultural marketing technologies, the task of which is to maximize the audience, the ethnic marketing technologies, focusing on national values and ethnic flavor are becoming increasingly important too. The domestic ethnologists and sociologists note that, the independence of Ukraine and the development of its own nationality contributed to the gradual ethnic remarginalization and reidentification of the corresponding part of Ukrainians by origin both on the territory of Ukraine and abroad. This regularity also relates to the representatives of various ethnic minorities in Ukraine. In this case, the task of developing an effective marketing system is to find the optimal proportions of cross-cultural and ethnic activities of the marketing system under the given market conditions and enterprise development goals.

Thus, the transnational environment is characterized by a high influence of tendencies towards standardization of goods and services, and is preserved by the forces striving to guide enterprises towards adaptation to the conditions of an individual market. On the one hand, it should provide the unified approach to entrepreneurship in different countries, and on the other hand, take into account the peculiarity of the markets of these countries. As ethnocentrism and polycentrism are very strong, transnational environment is the most difficult for the organization of marketing activities of the firms. In accordance with these two forces which affect the ethnocentric and polycentric international development of the enterprise, it is proposed to distinguish three types of marketing: cascade, global and transnational. One of three types of marketing can be used in a neutral environment [3].

Cascade marketing, while deeply adapting to the market conditions of any country, satisfies consumer requests quite accurately, but due to the great complexity and accuracy of consideration of the marketing complex changes, performs it rather slow. Due to the peculiarities of this marketing type, the main focus is not on the speed of change according to needs, but on the marketing complex correspondence to the market demands.

In global marketing the leading role is played by timely transition to the new

marketing complex in accordance with customer requests, because only standardized products or services are sold. In this regard, global marketing is at high risk of failing because of untimely satisfaction of consumer requests. However, global marketing potentialities to meet the qualitative needs of the market are limited, which in the context of mass demand for goods and services forces firms to use transnational marketing. At the same time, as the number of markets grows, the company is increasingly forced to turn to globalization, taking into account the peculiarities of the individual markets. An enterprise can not always stop its development while expanding the number of new markets in global marketing, because competitors can gain advantages due to the concept of transnational marketing.

Within cascade marketing, to increase the number of markets is not so important in comparison with the profitability of foreign economic activity. Since the internal and external marketing complexes do not coincide, the task to save on production volume is not usually set from the beginning. The success of global marketing, by contrast, is determined by the number of countries where the standardized marketing complex can be applied. Transnational marketing makes it possible to occupy the international markets on the larger scale thanks to the combination of cascade and global marketing advantages [2].

The increase of firm competitiveness is also connected with the types of marketing.

Cascade marketing is used by firms primarily to determine the needs of the individual country market, which undoubtedly contributes to the creation of high quality goods and services. At the same time, it is impossible to save on the production volume. So, the firms have rather limited capabilities in price competition. Small number of markets within cascade marketing compared to other types of marketing restricts the firm's capabilities. A dramatic change in the market conditions even in one country can complicate the financial position of an enterprise and weaken its competitiveness on the international markets. Global marketing, in comparison with cascade marketing, improves two of the three components of a firm competitiveness: production cost and the number of countries where the firm enters the markets. However, standardized goods, supplied to the markets as a result of this type of marketing, are not always capable of meeting the needs of consumers to the full, which reduces the firms' competitiveness.

Transnational marketing enables to reduce costs compared to cascade marketing, but not below the level of global marketing, and by adapting the products to the markets of each country contributes to the creation of products or services which satisfy the requirements of the market more accurately. At the same time, the potentialities of transnational marketing are much greater than the global marketing potentialities in the opening of new markets.

Therefore, marketing activity in the context of globalization is a challenging process, but it is still accepted by society as an inevitable and very complicated process, similar to a new path to a «bright future» for humanity. This process opens up new opportunities, but it also has negative consequences. The positive impact of

globalization is related to the effect of competition, to which it inevitably leads, and the negative impact is connected with the potential conflicts in which it is rich. The problems of globalization can be solved through broad international cooperation, strengthening of existing ones and creation of new international institutions.

The modern formation of the international market relations is a complicated and contradictory phenomenon. In the new millennium, it is necessary to have firm guidelines for economic integration and a strategic action plan embracing clear understanding of the basic principles, main priorities, sources and mechanisms of economic development. It is essentially to determine the way to achieve a sustainable increase in the standard of living.

In the long term, the formation of transnational enterprises in the context of the national economy globalization will remain the sphere of rivalry of two approaches to the integration into the world economy:

1. The policy of the direct connection to the system of world labor division (individual enterprises, industries, regions and so on). This approach in marketing is connected with finding and locating domestic enterprises in the existing world production and sale systems, in which they will be able to realize their own national competitive advantages.

2. The policy of joining the world economy, actively using the integration potential within the domestic economy. This approach in marketing is connected with creation of domestic production and sale systems with active involving of resource, technological and other opportunities of the world economy for the formation of the target competitive advantages.

This dilemma affects the creation of a regulatory framework for integration processes, which significantly suppress the development of integration processes in the world economy. The main reason for this is the lack of clear understanding of the priorities and goals of the state development. Hence, the main idea of the country development, the main idea of European Ukraine must be the increase of the national economy competitiveness. Ukraine seeks international cooperation, but this cooperation should not be used for the unilateral delivering of domestic raw materials, but for a radical structural restructuring of the economy, for technological modernization of the Ukrainian processing industry.

Ukraine faces a strategic goal to change its raw materials international specialization by ensuring high technology of industries, that is, providing conditions for the development of industries producing competitive products on the world market. It is necessary to change the unfavorable international raw materials specialization for Ukraine due to the processing industry development; to specialize in the production of «smart», competitive products which come to the fore in the modern world. The peculiarities of marketing of agro-processing enterprises in the conditions of globalization are determined by the wide development of transnationalization in all branches of business. This process is accompanied by the wide development of cross-cultural marketing technologies, which aim is to expand

the audience. But the ethnic marketing technologies with a clear concentration on national values and ethnic flavour are becoming increasingly important too. The specific character of modern life requires agro-processing enterprises to carry out a thorough analysis of the processes on the market to ensure effective use of scarce available resources and quality satisfaction of consumer requirements. Marketing activity is considered to be an element of people's cultural life and even a peculiar mechanism for forming a new culture.

Taking into consideration the current development of markets, which in most cases is characterized by an orientation on consumer preferences, it is necessary to expand the functional characteristics of modern marketing of agro-processing enterprises, including a synchronizing role. The synchronizing role of marketing is to find the optimal proportions and parameters for changing the entrepreneurial behavior of agro-processing enterprises in order to gain the appropriate sales market and the degree of impact on the consumer's consciousness of the offered products with the purpose of obtaining the planned competitive advantages. So, in the process of business transnationalization, the task of developing an effective marketing system for agro-processing enterprises is to find the optimal proportions of cross-cultural and ethnic activities of the marketing system under the given market conditions and goals of the enterprise development.

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ENVIRONMENTAL MANAGEMENT SYSTEM OF MODERN ENTERPRISE

Maksym Stetsenko,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

Today, in the extremely complicated environmental situation in Ukraine, the study of environmental management at enterprises is a burning and topical issue. Pollution of the environment by industrial production waste and emissions of all types and inefficient use of resources by enterprises increase the relevance of this problem. Implementation of the efficient environmental policies at enterprises will promote the improvement of the environment at the macro level, and help to retrench resources and reduce the costs at the micro-level.

In the conditions of the ecological crisis aggravation in the world, it is a top-priority task of the enterprises to seek out the ways to renew ecological balance initiating and introducing effective legal regulations. The main trends characterizing the state of environmental safety show that two-thirds of harmful substances get into the air from the stationary sources of pollution at the industrial enterprises, the environment protection activity of which is not regulated by coherent normative documents. At the state level, environmental policy should lay emphasis on the main tools and factors of influence on the environment situation. They must comprise both managerial and market-oriented issues. Currently, the environmental status in Ukraine is regulated via standardization and coordination of the ecological norms. Moreover, while the standards are clear and binding, the norms of the environmental activity determine the limits within which it operates, affecting the environment [2].

According to the international standard ISO 14001, the environmental management system is a part of the general management system, which includes organizational structure, activity planning, distribution of responsibilities, practical work, as well as procedures, processes, and resources for development, implementation, evaluation of the achieved results and improvement of environmental management policy, its goals and objectives [1]. In terms of the above provisions, environmental management of the enterprise is a proactive and productive activity of the economic entities, aimed at achieving their environment safety objectives and implementation of the projects and programs, developed on the basis of eco-efficiency and environmental justice principles [5, 7].

At the national level, environmental management is regulated by the provisions of the State Standards and Technical Specifications (DSTU). In 1997, Ukraine adopted the international standards of the ISO 14000 series. Companies are obliged to observe clearly defined requirements of the document. Thus, according to ISO 14000: 2004, they must design, implement and uphold the production processes in the proper condition, which allows them to identify the probability potential for

disasters or emergencies which may affect the environment. In turn, we can not ignore the emergencies that business entities are obliged to respond to, in particular, by mitigating the effects or preventing their negative impact on the environment [8].

At the international level, the regulation of environmental management is carried out in accordance with the international standards developed by the International Association for Standardization of the ISO 14000 series. The decision to introduce ISO 14000 norms is the result of the Uruguay Round of negotiations under the World Trade Agreement. The ISO 14000 specifies the requirements for an environmental management system [8].

Today, the implementation and environmental management systems certification, based on the international standards ISO 14000, is considered to be the best way to win the trust of not only consumers of goods and services, but also investors. Environmental certification allows us to confirm that the enterprise and its products are safe for humans and the environment. Note that the expertise and development of environmental documentation are required both at the design stage and throughout all aspects of the company's economic activity. Timely registration of such documents allows the company to avoid penalties for non-compliance with environmental requirements and reduce costs through the accurate calculation of the eco-compensations. Eco-compensations are the payments for environmental pollution that are charged for:

- emissions of harmful substances into air;
- water pollution by the emissions into surface and groundwater bodies and into catchment areas.

In addition, eco-compensations are charged for the pollution of subsoil, soil, and other negative impacts on the environment. The certificates of quality environmental management according to the standard are compulsory for the enterprises of such industries as chemical and petrochemical, metallurgical, mining, cement, pulp and paper, mining-mineral processing, defense, nuclear power, and others.

In reality, business managers are not much enthusiastic about implementing environmental management systems, not seeing the feasibility of such systems or unwilling to see it, thus violating the requirements of the standards. However, along with this, there is a steady upward trend in obtaining certificates for environmental management systems in Ukraine. But business managers attempt to get certificates, without implementing environmental management systems. And this is another specificity of this process in the market.

Thus most managers of the enterprises without well-organized quality management pursue to get a certificate on the environmental management, not implementing the environmental management system. Despite this, quality management and environmental management systems are steadily developing and implemented.

Some enterprises develop effective programs and project to promote their environmental policy, namely organize excursions, press conferences, issue

advertising booklets and leaflets, include the information on the company's environmental policy in annual reports to major news agencies, libraries, organizations, place this information on the company's website on the Internet.

Typically, the report content is limited to listing the general statements in the field of ecology with comments describing the innovations that allowed the company to decrease either direct or indirect impact on the environment (e. g. owing to the reduction of resource consumption).

The key findings of the study show that an introduction of the environmental management systems at enterprises is a significant factor for increasing the competitive chances of the domestic companies.

In this regard, it is appropriate to determine the peculiar features of the environmental management system utilization in the enterprise management mechanism:

1. The strategic direction of the enterprise economic activity. The standard of the environmental management system is based on the assumption that the fundamental mission of the enterprise is determined, and the strategy of its development is worked out. Implementation of the environmental management principles is associated with complementing the business strategy with environmentally relevant issues as its integral components. The environmental policy is worked out within the framework determined by the mission and the direction of the enterprise development. The goals of the company's activity are predetermined by the environmental management system. Thus, implementation of the environmental management systems becomes a significant factor of influence on the enterprise strategic planning efficiency.

2. Harmonization of the organization's internal environment. One of the major postulates of the environmental management systems is the requirement for planning and consistent improvement, including strategic planning and operations management. Practical experience shows the imperfection of the management of enterprises operating on the basis of the operations management mechanism. We suggest interpreting the environmental management system as harmonization of tactical and strategic planning.

3. Business processes and organizational structure improvement. Functioning of the environmental management system is impossible without coordination or, more precisely, an interaction of all functional sectors within an organization, taking into account optimization of the organizational structure. It is this interaction that allows the company to avoid conflicts of its leading activities and environmental ones and to set adequate and obtainable environmental goals.

4. Management technologies improvement. The methodology of the environmental management system offers a wide range of tools that ensure or facilitate the coordination of the structural units and functional areas.

5. Document management optimization. Environmental management systems pay great attention to the organization of documentation management in the enterprise functioning. In terms of the requirements specified in the ISO 14001 series

standards, it is possible to manage the documentation system of any complexity and do it effectively.

6. Development of human resources management. Qualified, motivated staff is required to implement environmental management systems and improve approaches to develop a high-quality managing of the organization. Competent training and motivation can strengthen the enterprise, increase the interest in its success, and the desire of the employees to promote this success. An important prerequisite for achieving the desired result is a company's all-round support for the implementation of environmental management systems. The positive result will be negligible without such support.

We argue that all of the above features of environmental management systems can lead to a positive result only if they are successfully implemented in the enterprise management system. In most cases, the level of management development is rather low in the companies of Ukraine. For them, implementation of the environmental management system means practically complete restructuring of the existing management system at the enterprise [3].

We have distinguished between the following reasons and advantages for the introduction of the environmental management system in the enterprise:

• continuous production and operating costs reduction, more efficient use of raw materials, energy and other types of resources, reduction of costs related to the company's environmental impact;

• feasibility for the enterprise maneuvering in the competitive counteraction in the domestic and international markets;

• adjusting the enterprise activity to the provisions of the environmental legislation;

• increasing investment attractiveness;

• providing a favorable image of the company in public and among consumers;

• gaining new recognition opportunities internationally and in the world markets;

•actualization of the additional opportunities to prevent the environmental emergencies and accidents, typically resulting in damage or injury at the enterprise, and can provoke significant pollution and financial losses;

• reducing the negative impact on the environment via better management and motivation.

Environmental expertise and environmental audit are the most frequently used environmental management strategies at Ukrainian enterprises. In view of the described above advantages, every rationally-minded business should carry out an environmental assessment or ecological expertise of all its projects, which are regulated by the laws of Ukraine On Environmental Protection and On Environmental Expertise. It is one of the most effective mechanisms able to guarantee environmental security since it combines independence, publicity, social justice, ensures citizens' constitutional rights to a safe living environment, an appropriate level of the health care, and high-quality environment. The Law of Ukraine On Ecological Expertise

considers ecological expertise as a kind of scientific research and practical activity of specially authorized state bodies, ecological expert formations and associations of the citizens, which is based on inter-sectoral ecological research, analysis and evaluation of the pre-project, project and other materials, implementation and the performance of which may adversely affect the state of the environment. The project expertise is aimed at providing conclusions about the company's planned or current activity compliance with the standards and requirements of the legislation on the environmental protection rational use and renewal of the resources. The principal aim of it is ensuring environmental security.

The main objectives of the environmental expertise are: to reveal the degree of environmental risks and safety level of the planned or current activity; organization of complex, scientifically-grounded assessment of the facilities, identification of the compliance of facilities with the regulations of the environmental legislation, building codes and standards, assessment of the enterprise facilities activity impact on the state of the environment and the quality of natural resources, evaluation of the effectiveness, completeness, validity, and adequacy of environmental protection measures, preparation of the objective and well-reasoned conclusions [4].

An enterprise that has introduced an environmental management system ought to be systematically audited to improve the effectiveness of the system. If the verification confirms that the system complies with the requirements of the international standard, the enterprise shall be entered in the appropriate register and shall have every reason to use a certain eco-label, indicating it on the product label or packaging.

It supplements the environmental management system attractiveness for the investment projects and significantly increases consumer's interest in the company's products or the services provided. The effective functioning of the environmental management system and certification of the enterprise is one of the significant advantages of any company in the competition.

It supplements the environmental management system attractiveness for the investment projects and significantly increases consumer's interest in the company's products or the services provided. The effective functioning of the environmental management system and certification of the enterprise is one of the significant advantages of any company in the competition.

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NEW MARKETING DIRECTIONS

Vladyslav Mykhatilo,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

Marketing Directions – a projection of classical marketing processes of a new marketing concept on marketing processes with use of new technologies' possibilities. This fact allowed distributing marketing trends to the following four groups. Directions based on the changed marketing concept:

- personalization;
- inbound marketing;
- content marketing.

Marketing directions based and regulated by the results of processed data based on statistical methods and methods of unstructured data processing:

- data-driven marketing;
- marketing automation.

Marketing trends created by adaptation to the Internet, social media:

- SMM (social vedia varketing);
- viral marketing;
- guerrilla marketing;
- search-engine marketing;
- gamification;
- email marketing.

Marketing directions using the space created by mobile networks and devices technology. It is characterized by ubiquity and accessibility:

- vobile marketing;
- geo targeting;

- personalization.

Personalization means the use of technology to meet differences between people. Personalization methods allow you to dynamically insert, customize, or offer content in any format that is relevant to the individual's personality, based entirely on his or her behaviour and preferences, and precisely specified details. Personalization uses both predicted and oral customer information obtained in two ways. First, the customer may explicitly provide some information, such as gender or date of birth, and may directly suggest the desired product.

The advantage of new markets swinging around information companies is that information can be easily differentiated, customized, personalized, individualized and sent over information networks at incredible speeds.

Thanks to the rapid Internet development and other communication technologies, companies gain experience in collecting information about their customers and business partners (suppliers, distributors, retailers) and introduce them to products, news and media.

An example of this is Dell Computer, which allows customers to accurately determine what they want on its websites and provides reports within days according to customers' own specifications.

Procter and Gambling allow consumers to formulate their shampoo needs through online questionnaire. They then create their own unique shampoo for each customer.

Individualization means that the company takes the initiative and adjusts the market offer [1, p. 104].

Personalization and customization in a website environment that is personalized based on individual characteristics (interests, social group, context). Personalization means that changes are based on implicit data, such as purchased goods or websites visits. The term customization is used when explicit data, such as rankings or preferences, is used on pages. In intranets or B2E (Corporate Business Communication) of corporate web portals, personalization is often based on the users' characteristics, as well as the separation of functional areas and roles. The term customization in this context refers to the ability of a user to modify the output of a page or specify what content should be displayed.

Inbound Marketing. This term is based on the modern marketing concept where information from potential customers is collected, about their attitudes, needs and ideas. For inbound marketing purposes, web 2.0 technology is mainly used. Inbound marketing gets its clients through direct traffic, social media links, blogs, emails, Internet PR catalogues and other functions [2].

Content Marketing. Content marketing is based on the creation and placement of useful and valuable content that attracts and involves customers in communication and business. The most successful companies in developed countries, including Coca Cola or Microsoft, use content marketing. Instead of expensive advertising, a company provides valuable and interesting information that helps and trains customers [3].

Data-Driven Marketing. This means a controlled increase in the efficiency of marketing operations based on measurement data. The method uses an increased measure of marketing efficiency, and the data obtained are processed mainly by statistical analytical methods. However, the term data-driven marketing emphasizes the vital role of data in digital marketing [4, p. 250]. Consumer data is used for:

- A/B testing sites;
- personalization of sites;
- advertising targeting
- segmentation and personalization of postal services;
- remarketing (retargeting) or precise targeting of people who have already visited a particular site.

A/B-testing – a classical marketing method for testing computer programs or applications usability, the purpose of which is to increase project conversion or

conversion coefficient by changing one functional or design element [4, p. 253].

Marketing Automation. It is a software platform that allows automating all communications of potential clients from the moment of their purchase, by taking care of them in the form of providing with the necessary information at the right time and after they have been transferred to the sales department.

The most widespread system of marketing automation is CRM (Customer Relationship Management), the system representing the management focused on the client, the business approach characterized by active creation and maintenance of long-term relations with clients [6, p. 20].

SMM. Social networks have become a recent global trend. Internet users with the appearance of Facebook noticed their biggest boom. Based on combinatorial calculations, it is likely that everyone knows each other for a maximum of 7 people. Thus, social networks represent the untapped potential of marketing environment. The general motto of social media is: Share what you like with the slides around you [7, p. 562].

I see the greatest potential of social networks in viral marketing and from lip to lip use by oral referrals of known or other authority, which is the main effect for buzzmarketing. Social networks have a huge marketing potential, including due to their massiveness. Buzzmarketing (marketing buzzing) is an unconventional form of marketing that causes vanity, fuss, brand noise, product, company or social event among customers.

Social networks are based on communication between users. Users create content that they also consume. Social networks give them the opportunity to do so, and their creators usually do not interfere with the content. This means that if we want to use social media for effective promotion, we should respect this and try not to change it [8, p. 70].

Viral Marketing. Viral Marketing (VM) – a way to convince customers to share information about a product, service or website. The term passive or tell a friend is also used in this context. Viral marketing became known in 1998 when a new free

Hotmail (free mail service) was introduced. More than 12 million users. VM was easy and inexpensive. Instead of requiring marketing campaign preparation, it is now possible to announce an attractive offer via the Internet or with a few friends via e-mail and allow consumers to work for you. This concept has a great advantage in the speed of intervention, and e-mail is an ideal tool in this regard. We recognize passive and active forms of VM. The passive form of VM relies only on the positive word of a client and does not attempt to influence their behaviour in any way. The active form of VM is to attempt to influence client's behaviour through reporting, thereby increasing product sales or brand recognition [9, p. 64].

SEM. SEM (Search Engine Marketing) – an Internet marketing on search engines. The main goal is to increase traffic to the site, in the form of paid links in search engines. This is a paid service from the search engines operators. It is a service limited in time and focused on specific search engines. SEM should be used to ensure a good position of the site, which otherwise would not be possible to achieve through proper and qualitative optimization (e.g., the reason for the great competition of equally optimized sites) [10, p. 68].

Gamification. Gamification works on the principle of game thinking and game mechanics in addition to game activity to involve its users in solving problems. Gamification is studied and used in several areas where user participation is required, such as various exercises, return on investment, data quality, timeliness and training. The results of the gamification studies show that most of the studies conducted have had a positive effect: in the Czech Republic, this method is most often used on discount portals (Wheel of Fortune, Slevomat).

E-mail Marketing. Most people in developed countries use e-mail. Its use is taken for granted, not above the standard. However, the use of email in marketing is still underestimated. E-mail is a direct and very fast channel of communication at zero cost. The use of email in marketing can be huge. From contacting selected potential customers (directmarketing), sending periodic offers (newsletters) to providing customer service. For example, the customer may receive information about new products related to the purchased item via e-mail. The customer may also be informed of the right to an internal inspection [10, p. 71].

Mobile Marketing. Mobile marketing - a form of advertising, created as a result of the mobile networks development and offering such marketers the fastest communication with customers. Mobile marketing is a huge virtual market. It is about 1.6 billion users worldwide. The main advantage of mobile marketing is the event preparation efficiency. If traditional promotion methods require several weeks of preparation before the actual implementation, the launch of a mobile campaign is a matter of days. Thus, it can react more flexibly to market needs [9, p. 140].

Geotargeting. This marketing method belongs to a group called Targeting. Companies can target a group of people who meet certain criteria. Geotargeting is one of the most widely used types which allows one to target an advertising campaign at visitors in a particular region or country. Everything is reflected from

your provider's IP address. This effective service has become the most popular type of advertising. Geotargeting is used to find the target area for the business plan [11].

Guerrilla Marketing. This method was gradually developed as a result of a hard struggle due to more intense competition. Guerrilla marketing appeared in the sixties of last century. However, compared to the sixties, its importance has changed significantly. Therefore, it is related not only to the fight against competitors, small and large, but also to the development of technology and communication opportunities in general. Its essential element, as in the case of viral marketing, is its low cost of balancing on the verge of legality. An unconventional marketing campaign to maximize the effect with minimal resources [9, p. 186].

Digital Marketing. Digital marketing – a comprehensive term covering all digital marketing communications. It also includes online marketing, mobile marketing and social media. Digital marketing is an integral part of marketing communications and advertising and information communications recipients [9, p. 41].

Affinity Marketing. Affiliate marketing (affiliated or affiliated marketing) means a number of specific ways of communicating between two or more web projects. There is a synergy between these structures with the result that both parties benefit. Partnership opportunities are significant and very often realized according to the needs of both partners. In the affiliated model, there is one supplier organization and more partner organizations with potential clients (specialized portals). Then partners receive the commission from the supplier for the involved clients. Commissions can be either proportional (client redemption percentage), or fixed (fixed sum for attraction the client who has concluded the deal) [10, p. 94].

Contextually Targeted Advertising. It's a special kind of Internet advertising. Appears on web pages in the context (content) network not in the search network, and on partner sites. CTA is displayed only on the website, the text content of which is closely related to the keywords of the advertising message. Keywords play an important role as they are very much dependent on which website the CTA is displayed on. CTA is a targeting method and does not limit the form of advertising format that can be used. CTA is particularly suitable for products that are not well known to users to search for themselves online, search engines. This spreads awareness of the product service. Contextual targeting is usually lower in clicking rankings, and CTA on the CTA network also typically has a lower conversion rate than search engine advertising [12, p. 233].

Lead Generation. The method of potential customers generating is an Internet-based method of obtaining potential customers or contacts with potential customers who have a genuine and obvious interest in purchasing a particular product or service. This marketing method takes advantage of the fact that consumers are more resistant to direct marketing and offer the opposite solution - a motivated customer who comes alone. In most cases, the lead subscriber pays for each leadership received by only one partner. Through the marketing of potential customers, companies can use expensive traders' time mainly to obtain key orders. Marketing

of potential clients is also useful for consumers who can get information about the cheapest service on the comparison site [5].

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IMPLEMENTATION OF ENERGY-SAVING TECHNOLOGIES AS AN INTEGRAL PART OF TECHNOLOGICAL RESTRUCTURING OF PRODUCTION

Mykola Vovk,
Postgraduate student,
Viktoriia Voronina,
Ph.D. in Economics, Associate Professor,
Zulfiia Mamedova,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

Low energy efficiency is one of the determining factors of the economic crisis in Ukraine. The inefficient utilization of energy resources, irrational use of the energy carriers, and the inability to replace their supply sources are also the burning issues that require urgent solutions.

Although numerous scientific researches of such scientists as Ginzburg M., Zakharchuk O., Kaliuzhna O., Lupenko Y., Mohylova M. Pushkarevsky A., Rachynska H., Semenova T., Tomchyshen O., Khizhniak D., and others have been devoted to the use of energy-saving technologies, few attempts have been made to investigate the problem of improving the efficiency of development and use of energy-saving technologies in agriculture.

In terms of the Energy Strategy of Ukraine until 2030, the projected energy-saving potential of Ukraine in 2030 will make 318.4 million tonnes of fuel equivalent, which is almost 1.5 times the current level of primary energy consumption. Implementation of technological and structural energy supply measures will reduce energy consumption by 51.3% in 2030 – from 621 million tonnes of fuel equivalent at the current level of energy efficiency, up to 302.7 million tonnes according to the projected improved level of energy efficiency [2].

In the modern economic environment, energy-saving technologies contribute to the solution of a wide range of issues related to guaranteeing the food supply stability, preserving the environment, and meeting the growing energy challenges. Among the most complex problems of analysis of modern economic mechanisms of energy-saving (both for the world and domestic agrarian sphere) are:

– ensuring an integrated approach to the energy-saving sphere;

– analysis and evaluation of the energy efficiency of the leading agricultural sectors;

– development of recommendations for improvement of the economic structures and mechanisms of energy-

saving taking into account the specificity of agricultural production [4].

The detailed study of this problem needs to investigate first what constitutes the energy-saving process. The Law of Ukraine «On Energy Saving» states that energy

saving is «an activity (organizational, scientific, practical, informational) aimed at the rational use and economical consumption of primary and transformed energy and natural energy resources in the national economy and which is implemented by using technical, economic and legal methods»[3].

V. Timofeiev and I. Nemyrovsky argue that «energy-saving is one of the components of energy management, concerns the practical side of its activities, utilization of the advanced technologies and equipment», while the concept of energy management is much broader and involves, besides energy-saving, «introduction and use of the unconventional and updated energy sources, the development of pricing policies, the energy market rules, in the focus of which, first and foremost, are the interests of the state, and then the interests of business» [9].

The process of energy-saving in agricultural production is a complex of competent management measures aimed at achieving a concrete positive result in the production process, in view of its energy-saving efficiency. Consequently, energy-saving efficiency is a further important aspect of the issue.

According to M. Ginsburg, energy efficiency is a characteristic of the equipment, technology, production, or a system as a whole, which indicates the energy costs per unit of the final product. Energy efficiency is evaluated both in terms of quantity (energy used per unit of the final product) and quality (low, high) [1].

We believe that improving the energy efficiency process management at an agro-food enterprise is a crucial and particularly important factor in saving energy resources of the company. After all, the expansion of agricultural production is impossible without an increase in electricity consumption. The use of electricity in the production of agricultural products allows to intensify the technological processes, provides their automation and high preciseness of regulation, which leads to a significant increase in labor productivity, reduction in the material resources costs and improvement of product quality.

The impacts of the energy-saving strategies implementation on the enterprise's incomes, costs and output are determined by the correlation of the factors which have both positive and negative effect on its economic activities.

The main factors of positive impact on the profits of an enterprise may include:

1) possible increase in the productivity of the technological facilities and equipment in case of implementing energy-saving strategies, which can reduce energy consumption per unit of production and improve its quality;

2) saving energy and other resources, which leads to lower material costs and cost of production;

3) a reduction of the enterprise payments (taxes) for the environmental pollution owing to the decrease in the amount of fuel and energy resources utilization[8].

The enterprises can solve the problems of machinery and technological renewal, as well as an introduction of energy-saving technologies in agricultural production via modernization of their production facilities.

Popova O. and Kulakov O. consider modernization, which is used for the

development of fixed assets, as expansion and improvement involving a quantitative and qualitative updating of fixed assets, the intensification of production, increase in the production capacity and the level of equipment productivity. The principles that enable the production organization to influence the functioning of the production system should be at the heart of production modernization, ensuring the economic efficiency of it. That is, a high economic efficiency of the production should not be based merely on the reduction of the production costs. Enterprises, along with the resource-saving strategies implementation, should strive for achieving a stable work of the enterprise, producing high-quality products, intensifying the production processes. It is essential to assume an increase in the production efficiency as a possibility for an enterprise to expand its presence in the market.

The main explication of this is insufficient systematization of the proposals regarding the urgent state support steps for the introduction of advanced technologies and technical means, which can increase the competitiveness of the agricultural products by energy and resource-saving technologies. Lack of strategy to stimulate investments in national machinery for agriculture is also the impediment on the way of modernization [5].

Table 1 shows the regulatory needs for fixed assets for agricultural production for 2020 and 2025 in UAH billion equivalent.

Table 1

Regulatory needs for fixed assets for agricultural production for 2020 and 2025 in UAH billion equivalent

Fixed assets	Agricultural enterprises		Households in rural areas		All types of farms	
	2020	2025	2020	2025	2020	2025
Buildings, constructions, transmitting devices	382,6	488,3	157,8	201,4	504,4	989.7
Machinery and equipment	272,1	347,2	112,2	143,2	384,3	517,4
Vehicles	59,5	76,0	24,5	31,3	84,0	107,3
Productive livestock	41,6	53,2	17,2	21,9	58,8	75,1
Perennial plants	8,5	10,9	3,5	4,5	12,0	15,4
Measuring instruments, equipment, tools, etc.	85,9	109,5	35,5	45,3	121,4	154,8
Total	850,2	1085,1	350,7	447,6	1200,9	1532,7

Source: calculations of the researchers of NSC Institute of Agrarian Economy [5]

According to the calculations of the NSC Institute of Agrarian Economy, the regulatory needs for fixed assets for agricultural production for the period until 2025 are determined by the sum of UAH 1532.7 billion for all categories of farms,

while the actual availability of cost is 523.3 billion UAH. For instance, the need for machinery and equipment is UAH 384.3 billion for 2020 and 517.4 – for 2025, while their actual estimated value is UAH 1633.6 billion [5].

The data of table 1 provide insight into the importance of major evolutionary transformations in the agricultural sector, based on the regulatory needs.

We share the opinion of Rachynska H. and Lisovska L. who, exploring the problem of innovative transformations of the enterprise, offer the following [7]:

1) change in the type of workflow technology (production type);

2) introduction of new technologies and technological processes;

3) re-engineering of the technological processes (restructuring of the production process by more rational utilization of certain links of the technological process, eliminating their unnecessary components, etc.)

4) replacement of individual items of the technological process or its elements (the process of improvement of the existing technology);

5) updating and re-designing of technical equipment (measures to optimize and improve basic processes via the application of technological equipment of the appropriate quality corresponding to the structural and technological conditions of the manufactured product, type, and volume of production). The successful solution of the problem of the energy-saving technology implementation depends on many factors.

First, it is necessary to identify and formulate the principal factors that determine the enterprise potential for technological development (fig. 1).

In their work [7], Rachynska H. and Lisovska L. have identified the principal factors that determine the enterprise potential in technological development, which are the following:

1. Technological features of the enterprise: the level of its technological process integrity, the possibility to make changes in it, introducing technological innovations.

2. The degree of the technological development intensity in the industry/ field: (frequency, swiftness of implementation of innovation), specifics of the market (its capacity and prospects for actual products); age of the company or industry, which determines their motivation for technological innovation, use of patents, ensuring the dynamics of scientific research, etc.

3. The economic factors relate to: the financial condition of the industrial enterprises, the costs of resources, the competition intensification (in particular, the establishment of dumping prices), the level of concentration of the industry, the value of illegal investments in the industry, the cost structure (material intensity) of production, the protection of the intellectual property of enterprises, customs tariff, and tax regulation.

4. Technological capabilities The enterprise must have the potential for developing innovation, staff training, and improving the currently applied technology. Adaptation of new equipment should be held in the existing technical and technological conditions of the enterprise, which also requires adequate

improvements, and creates technical and creative problems.

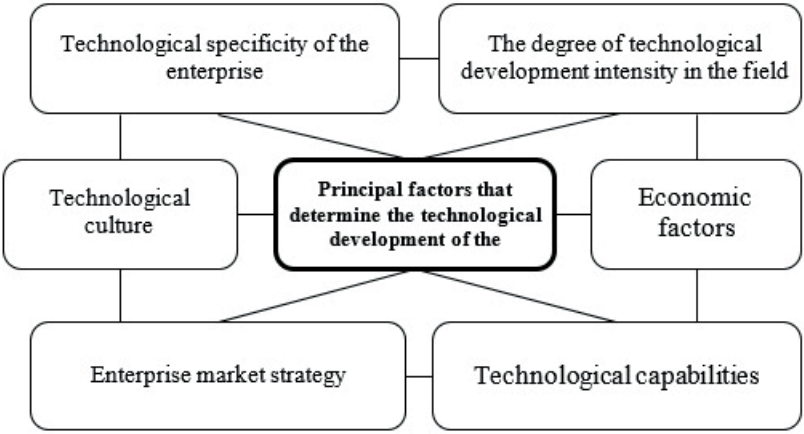

Fig. 1. Principal factors that determine the enterprise potential for technological development

Source: designed on the basis [7]

5. Market strategy of the enterprise. Protective strategy or expansion are important strategic management decisions. Under the current conditions, it is impossible to implement strategic management at the enterprise, neglecting the problem of technological development and appropriate strategies for its implementation.

6. Technology culture. Susceptibility to technological innovation and technological development of the enterprise depends primarily on the motivation and professional and psychological qualities of the top authorities, managers, and staff of the enterprise. If ambitious development goals are not set or achieved, the technological potential of the enterprise will not be actualized [7].

Thus, the implementation of effective management of technological restructuring should be based on the introduction of energy-saving technologies and taking into account the factors that determine the potential of agrarian enterprise in technological development.

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

PERSONNEL AND INTELLECTUAL SECURITY AT THE MODERN ENTERPRISE AS A COMPONENT OF ITS' ECONOMIC SECURITY

Yurii Safonov,
Doctor of Sciences (Economics), Professor,
Kyiv National Economic University named after Vadym Hetman,
Kyiv, Ukraine,
Viktoriia Borshch,
Ph.D. in Economics, Associate Professor,
Odessa National I. I. Mechnikov University, Odessa, Ukraine

Security for the enterprise is the key to its productive activity and prosperity. This state contributes to the fact that all employees direct their efforts to achieve new results. However, any business can be exposed to various dangers, such as: leakage of confidential information; financial loss or bankruptcy; risk of losing valuable employees; risk of misappropriation of cash or valuable objects; danger to the health and life of personnel.

So we are seeing there's a need for ensuring personnel security at the enterprise as a part of the whole economic security, main aim of which is provision of sustainable and efficient functioning of the enterprise at the present time and ensuring a high potential for development and growth of the enterprise in the future.

Personnel security is one of the components of economic security (along with others, such as financial, information, technical and technological, legal, environmental (fig. 1). It is sometimes called the «personnel and intellectual» component of economic security.

Personnel security is the process of ensuring the overall economic security of the organization by preventing the risks of threats that are associated with poor work or low intellectual potential of employees, and labor relations in general.

Threats related to personnel management, could be dived on two groups: internal and external. External threats are actions, phenomena or processes that do not depend on the will and consciousness of the employees of the enterprise and entail damage. The main external threats are the following: competitors have better work conditions or/and motivation system; deliberate brain drain of personnel; external pressure on employees; inflation and so on.

Internal threats are actions (intentional or reckless) of employees of the enterprise that also entail damage. So the main internal threats are: inadequacy of staff qualifications; poor training of staff; weak personnel management system;

poor provision of on-the-job training; inefficient motivation system; mistakes in resource planning; withdrawal of qualified personnel; lack of or weak corporate policy and so on.

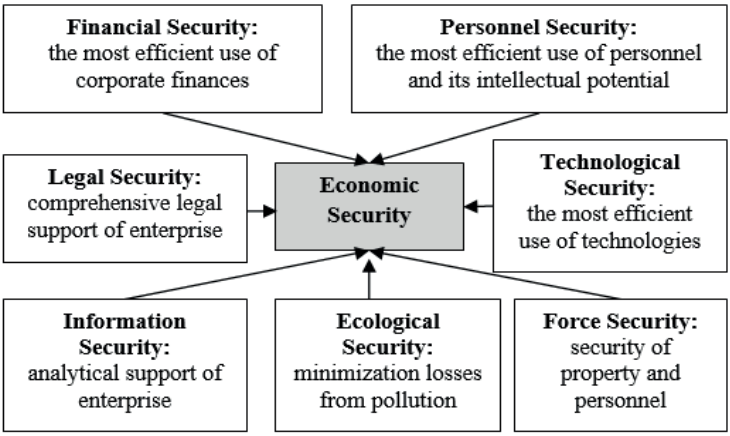

Fig. 1. Functional components of the enterprise's economic security

Undoubtedly, all these negative environmental impacts affect the processes within the enterprise, in general, its safety in terms of personnel.

In our view, personnel security dominates in relation to other elements of the enterprise's security system, as it is connected with personnel, which is primary component in any enterprise.

The key structural unit, which is functionally responsible for the personnel security at the enterprise, is hr-department. The complex of its main functional responsibilities, such as qualified recruitment, rational use of human resources, and development of the efficient techniques to encourage and stimulate personnel, – is the main tool for ensuring vocational protection. Personnel policy is a core for ensuring personnel security. As we know, the activity of the hr-department could be broken down into the several stages and components, the main of which are: personnel search – recruitment – personnel adaptation – professional development – attestation – remuneration – motivation and stimulation – termination, but this list of elements is not final, we have to remember about strategic planning (personnel policy and strategy) and external component of the personnel management. At all these stages the problem of the security exists: any act of hr-manager at any stage is a trigger of strengthening / weakening of the enterprise's personnel security. World statistics provides ample evidence of that: about 80 % of damage to physical property of companies is caused by its personnel. It's just 20 % of hacking attempt to the net for obtaining unauthorized access to the computer-based information is external one. Other 80 % of accidents are provoked due to the enterprises' personnel. In

average, these attempts cause 6-9 % of losses. We have provided just the statistics on intentional damage, but what's about the damage to the enterprise related to illiterate use of resources, incompetence, omission, lack of loyalty of enterprise's personnel? This could cost billions of damage for the enterprise. Again let us emphasize that hr-department is the core structural unit, ensuring personnel security, which allows to reduce losses of the enterprise, related to its personnel, by 60 %.

The main lines of actions of hr-management, directed of ensuring personnel security, by means of special techniques:

1. Recruitment. Here is a whole set of security measures in hiring and forecasting reliability. The main processes of hr-manager, which influence the personnel security, are personnel search, selection process, and documentation, legal enforcement of recruitment, probationary period and adaptation.

Thus, the main principles of ensuring personnel security during this hr-management stage are:

- the desire to protect the enterprise from the penetration of people related to criminal structures;
- the desire to set up barrier in front of people prone to theft. Moreover, the higher the position occupied by such a person, the more economic damage he / she can cause to the enterprise, in which he / she works;
- screening for addiction to alcohol and drugs;
- ensuring information security of the enterprise. This includes not only the protection of production and trade secrets, but also the protection of databases, marketing research results, plans related to contracts with other companies, and other information important for maintaining its competitiveness;
- employees' compliance with organizational culture.

This aspect of security has very often been underestimated in recruitment process, although it is clear that one person who adheres to destructive attitudes can do much damage to the enterprise, which is expressed in worsening moral and psychological climate, squabbles, conflicts, and worsening labor and executive discipline.

There are a number of approaches that allow solving security problems in recruitment. HR-department has to check information about applicant by communicating with people, which know him/she, and also by appealing to the previous employees. HR-department carefully examines documents, provided by the applicant.

Particularly important for enterprise's security is hr-manager. He / she is supposed to be a good psychologist and has to see through people. His / her insight and understanding of human psychology help to discover problematic applicants, i.e. people, which could create some problems, leading to disrupt security. These problems can refer economic, information or personnel spheres.

When seeking employment, candidate in turn wants to find out the aspects of his / her security: financial security (how much he will receive; in which way: cash

payouts or bank account); reliability of his / her workplace (how long the firm exists; whether business is legal and so on); organizational culture (whether there is the nice psychological climate); psychological and legal support (the desire not to have psychological stress related to the performance of his / her work); social security (what social package the firm offers its employees and so on).

During the probationary period the proclivities and abilities hazardous to the enterprise could be examined by means: (1) «extreme» testing of staff morale and performance through stress situations, which is related to the modeling of non-standard situations in a collective communication environment to test the adequacy and consistency of behaviour in conflicts, involvement in intrigue, etc., and on the other hand – with intentional creation. In such cases, the ability to think quickly and productively and make correct and operational decisions is identified; (2) method of provocations.

2. Loyalty. Here a set of measures is used to establish positive attitudes of employees towards employers. This component of security threat prevention has traditionally received little investment. However, in saving on this, the enterprise will have to spend even more resources on the activities of the next, third block.

3. Control. Here a set of measures established for personnel, including administration, regulations, restrictions, regimes, process processes, assessment, control and other operations, security procedures is used. This complex is directly targeted at elimination of potential damage and is usually carried out by the security or other departments, but to a lesser extent by hr-department.

One of the key points of cooperation between the hr-department and the security department is the management of disciplinary relations. Managing the discipline is a struggle against disorganization, passivity, dishonesty, and irresponsibility. In case of a conflict, security department's assistance is also required.

4. Information management. For the safety of personnel and the enterprise as a whole, it is necessary to protect information and prevent its leakage. Only an integrated approach to solving this problem is able to provide the necessary level of security for any enterprise - both state and commercial.

So, to begin, we must define the causes of the failure of information systems, which, as a rule, are the mistakes of users and system administrators. Inadvertent user errors when entering, modifying and processing information annually bring big losses to the organization. Theft of physical information carriers, paper documents, as well as information leakage through personnel can be attributed to the second place. In third place in terms of damage to information and its processing systems are all kinds of natural disasters, fires, heating system accidents and, which is especially important for our country, power failures. And one of the latest threats is the threat of information theft through public networks and the Internet.

If the employer has evidence of disclosure by the employee of information constituting a trade secret, then he has the right not only to apply disciplinary measures to the employee, but also to demand compensation from him for losses

caused by his actions.

Consequently, in order to create a reliable personal security system and its further development in the modern information world, the enterprise should accelerate the certification of information security management based on the international ISO 27001 standard. In recent years, management of security systems in the enterprise has been widespread, including those related to personnel, based on the methods of data mining

Thus, personnel security, as an element of the economic security of the company, is aimed at such work with personnel, at establishing such labor and ethical relations that could be defined as «break-even». All this activity is not a separate direction in the functional of the personnel manager, but only organically fits into it. And here, practically no additional resources are attracted, provided that the company has all the stages of organization and personnel management.

There is no doubt that among the tools for providing personal security at the enterprise, issues of increasing the degree of technical protection of strategically important corporate information are actualized, but the primacy, according to the author`s deep conviction, belongs to the non-technical side. Therefore, for domestic enterprises, an important step in the implementation of an integrated and holistic system of personal security is the improvement of the practice of psychological diagnosis and monitoring of employees` actions, in particular, the improvement of systems for collecting information on employee behavioural indicators in the corporate environment and beyond. The introduction of modern modeling techniques will contribute to the strengthening of systematicity in the practice of providing personal security under the influence of external and internal threats.

In the conditions of the formation of a new economy, when high-level information and communication technologies are developing rapidly, among the managerial aspects the issues of managing the psychological and motivational potential of employees are updated. Among moral values, a special place occupies trust, as a complex socially significant phenomenon of the reality of a modern, volatile and contradictory world, which has not yet received the proper scientific theoretical and applied rationale and is among the scientific interests of the author of this article. Among the issues of further scientific research by the author is the evaluation of the effectiveness of the application of various systems, methods and tools for personal security management at the enterprise

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NEW TRENDS OF THE PUBLIC MANAGEMENT - THE REMUNICIPALISATION

Szilárd Hegedűs, *Ph.D.,*
Researcher, University Lecturer,
Budapest Business School and National University of Public Service, Hungary,
Petronella Molnár,
Researcher, Ph.D. student,
National University of Public Service and Szent István University,
Budapest, Hungary

The approach of organizing public services varies from country to county, and is affected by the development of economics, law, management. However, the desired system is the same, as they all serve the highest satisfaction of citizens, taxpayers. So, on the one hand, our research includes a theoretical history presentation from the 1970s to the present. During this, we present and evaluate triggering processes from the perspective of NPM, and we also cover the most significant events of the present.

In the study, we investigate the most important incidences contributing to the born of the theory, and also the national and international, "re-municipalization", contrary to NPM activities of the last few years.

In the other section of the research, we analyze the bankruptcy of a UK-based, profit-oriented, private owned, but public service provider company, from the aspect of financial and operational risks.

Literaty overview. In management of public sector, the base is Weber's organization theory because of its pioneering nature, describing the main characteristics of bureaucracy, identifying the reasons of its growth and social concomitants.

According to Public Choice: An Introduction to the New Political Economy, the root cause of the bureaucracy can be found in the nature of stimulating and controlling systems used by public administration. According to the statement of the theory, legislation gets only incomplete information from the administrative organizations, it was identified as the "process of losing control", which is caused by the fact that it is difficult to define the responsibilities of the associates. The problem is that the prices of public goods and services are not determined by the market, so their performance is not comparable to the private sector. Finally, the organizations growing bigger than optimal are the biggest problem. [1] points out that the main difference is hiding in personal aspects, so self-interest cannot be ignored when talking about decision makers and politicians.

The New Public Management (NPM) paradigm was born in the 1970s in the Anglo-Saxon countries, with the aim of increasing efficiency in the public sector by extending the role of private management, adopting its methods to enhance customer satisfaction [2]. Efficiency requirements for public sector became part of mainstream economic literature when the period of the economic growth had stalled. Main idea of New Public Management paradigm is that the base of the economic crisis in the period was the fact that the modernization of private sector was not followed by update in the processes of public sector. [3.] In their opinion tasks that can be completed by market contribution should be handed over to the more efficient private sector, and modernizing the functioning of the state is also a necessary requirement.

In our opinion, turning up of New Public Management is in harmony with the spreading of monetarist economic theories which intended to set the stage of economy for development from stagflation by reducing the role of the state and supporting deregulation and marketization. Based on its assumption, in case a given public service can be provided by the contribution of private companies, it is advisable to prefer private sector.

Essential points according to [4,5]:

- Active professional management,
- Applying standards and performance indicatory
- Moving to the direction of smaller organization units
- Competitive spirit, focus on utilizing methods of private management

• Being strict in usage of resources[6].

[1] has summarized the tools of NPM as below:

• Organizational restructuring,
• Usage of management tools and methods,
• Budgetary reforms,
• Being customer-oriented,
• Marketization and privatization.

Regarding to the business organizations owned by local governments, [7] has pointed out the fact that, as a result of NPM, utility companies form a transition in privatization and other private constellations in their organization format, however, for wealth management and real estate companies, local government ownership can be permanent.

Essential goals of NPM include:

1. Reducing the size of polity or at least maintaining it,
2. Privatization of central state property or handing it over to local governments,
3. Designing the new organization forms of public services,
4. Last but not least, as a replacement of country-specific public management techniques, organizing a new public management which is based on international cooperation and knowledge sharing, utilizes best practices [4].

Research results. Re-municipalization can be translated using Hungarian terminus "new socialization" or "re-localization", which practically means that mostly public services, which had been previously outsourced or marketed to professional investors, are being taken over and provided again by local authorities' own, specific organizational units. So, the local government cancels the already existing public service contract, and possibly repurchases the part ownership. In Hungary, National Property Law requires that some specific public services including water utility and waste management services shall be provided by companies owned by the local governments.

One of the most significant researchers of re-municipalization is Public Services International Research Unit (PSIRU). During the survey of the organization, they detected nearly 180 occurrences from several spots of the world, especially in case of water utility services, but it is also typical in power supply and waste management.

Surprisingly, in 136 cases, it occurred in modern, higher income countries, which is perfectly indicated by the fact that France on its own had 49 occurrences besides Paris, and also, to only mention the biggest ones, the phenomenon occurred in the cities of Berlin, Atlanta, and Indianapolis. Besides Indianapolis and Atlanta, there were 59 other occurrences in the USA, and the phenomenon is also typical in Spain. (Figure 1).

If we divide the Earth into Northern and Southern Hemispheres, then, from the bigger cities of the Southern Hemisphere, it also occurred in Buenos Aires (Argentina), La Paz (Bolivia), Johannesburg (South African Republic), Dar es Salaam (Tanzania), and in Kuala Lumpur (Malaysia). By the way, in the developing

countries the phenomenon follows a downward trend which refers to the lack of capital and the high resource requirements of building up public services.

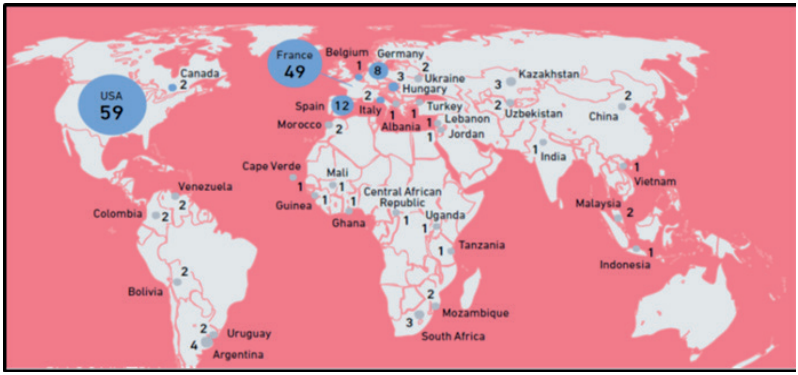

Fig. 1. Worldwide occurrences of implemented re-municipalizations between 2000 and 2014

Source: [8]

Explanation and understanding of the trend raise the question why these phenomena are occurring. In developing countries, occurrence of re-municipalization can be explained by the weak public service activity, especially in case of Johannesburg. In developed countries, the root causes are manifold, for example, "underinvestment", which occurred for water utility sector in Tallinn and Berlin. In these cases, the professional investor did not fulfill the contracted professional conditions by not significantly renovating the existing assets. When it comes to the USA, analyses pointed out the lack of monitoring activities and financial transparency, firing manpower, poor quality services as the root cause of the abolition especially in case of Atlanta and Indianapolis. Lack of transparency was also alleged by the complete report against Paris and Grenoble. Discarding of the service provider was caused by the high prices and increasing costs in Almaty, Kazakhstan.

There has already been an example for a similar situation in Hungary, with high media coverage, related to Pécs. In case of Pécs, the professional investor has fulfilled the obligations under the contract for the technical content, but started to found new companies, which made local governments worry, therefore the minority owner local government has cancelled the contract with the investor and repurchased its share.

Between the enterprises, cancelling the contract is the most typical in case of the French Veolia, Suez and SAUR, the German RWE and Remondis, the United Water in the USA, and the Aqualia in Spain.

After discarding the professional investor, it is typical to give the right of the operation to a local, or municipal company, in some cases civil sphere was also

involved in the decision making, for example, in case of Grenoble.

The process of market liberalization seems to be reversing in the developed countries, in parallel, in the developing countries, the contribution of public service providers from the market is more and more growing. However, it can be filtered that the trend is more typical in case of developed countries, which is supported by the fact that having the average of GDP/capita rate in every countries affected by re-municipalization, and the number of occurrences in a yearly time series, a positive correlation can be detected between the two values, where the value of the coefficient is 0.56 at a significance level of 1%, while a relation could not be detected by the analysis in case of less developed countries.

Case study: Bankruptcy of a public service provider – market risk vs. state risk? In a case study, we attempted to present a case from England. The analyzed company is the Carillion group, which operates as a market enterprise and is not owned by the government or any local government, however, it has a significant role in providing public services in the Great Britain. It covers cafes, cleaning service, and real estate management. The latter is a classical municipal task as a part of the property management function, in case of England, they managed the housing stock of local governments. Because of the specialties of English pension system, the company had its own pension fund for its more than 20 000 employees, with mandatory payment. As a result, the group has grown into a serious public service provider and has become responsible for serious investments. The company also had serious market power by having up to 35 000 partners on the supplier side.

Providing public services was seriously undermined by the business insolvency of the company, BIG4 auditing firms also took part in the assessment and selling of the assets of the enterprise. After termination of services provided by Carillion Group, English local governments and state organizations had to sign nearly 300 new public service contracts.

The problem is complex as the accounting, auditing provider of the company did not notify the company about the violation of accounting principle of going concern which indicates the accounting irregularities and the dysfunctionality of government controlling.

In the study, we also tested the predicted bankruptcy risk using a commonly used bankruptcy model accepted in England. Its formula and cur-off points are summarized below.

Taffler's Model [9]:

X1 = EBIT/(Current liabilities)

X2 = (Current assets)/Liabilites

X3 = (Current liabilities)/(Total assets)

X4 = Sales/(Total assets)

Z = 0,53X1 + 0,13X2 + 0,18X3 + 0,16X4

Under model value 0.2, the chance of bankruptcy is high, while in case of a value above 0.3, the chance is low.

Table 1

The results of Taffler's Model

Company	2016	2015	2014	2013	2012	Mean	Standard deviation	Median	Nace
CARILLION PLC	0,42	0,44	0,42	0,41	0,43	0,42	0,01	0,42	4120
CARILLION CONSTRUCTION LIMITED	0,43	0,40	0,39	0,39	0,43	0,41	0,02	0,40	4120
CARILLIONAMEY LIMITED	0,73	0,71	0,96	1,19	1,16	0,95	0,23	0,96	9609
CARILLION UTILITY SERVICES LIMITED	0,59	0,54	0,52	0,56	0,52	0,55	0,03	0,54	4120
CARILLION SERVICES LIMITED	0,44	0,56	0,51	0,49	0,59	0,52	0,06	0,51	8299
CARILLIONAMEY (HOUSING PRIME) LIMITED	0,50	0,61	0,68	0,79	0,84	0,68	0,14	0,68	9609
CARILLION INTEGRATED SERVICES LIMITED	0,60	0,73	0,72	0,71	0,94	0,74	0,12	0,72	9609
CARILLION (ASPIRE SERVICES) LIMITED	0,86	1,19	1,70	1,54	1,84	1,43	0,40	1,54	8299
CARILLION ENERGY SERVICES LIMITED	1,22	0,48	0,44	0,29	0,32	0,55	0,38	0,44	7022
CARILLION FLEET MANAGEMENT LIMITED	1,80	1,20	0,99	1,03	0,51	1,11	0,46	1,03	9609
CARILLION ASSET MANAGEMENT LIMITED	0,80	0,88	0,68	0,45	0,36	0,63	0,22	0,68	4399
CARILLION (ASPIRE CONSTRUCTION) LIMITED	0,49	0,55	0,93	0,73	0,85	0,71	0,19	0,73	8299
CARILLION SERVICES 2006 LIMITED	0,60	0,42	0,53	0,52	0,65	0,54	0,09	0,53	4120

CARILLION LGS LIMITED	0,36	0,36	0,38	0,54	0,53	0,43	0,09	0,38	4211
CARILLION (MAPLE OAK) LIMITED	0,36	0,24	0,39	0,59	0,85	0,49	0,24	0,39	4110
CARILLION AM GOVERNMENT LIMITED	0,41	0,37	0,54	0,64	0,53	0,50	0,11	0,53	4120

Source: Own calculation based on Amadeus database

As it is clearly presented by Table 1, in the analyzed year, the bankruptcy model with high reliability could also not able to predict the violation of going concern principle. This can be filtered out of data from 2016 as the bankruptcy was announced on 15th January 2018, so the latest annual report available for the analyzer is the one from 2016 which is the last closed year before the bankruptcy.

The auditor company found no good reason to determine the violation of the going concern principle in annual report of 2016. Based on this, the conclusion is that:

- Accounting reports did not reflect the real performance,
- The company did not keep the conditions of responsible corporate governance,
- There were unreasonable bonuses at the company.

Fig. 2. The company's share price
Source: alfatrader

Figure 2 indicates the effect on exchange rate. After announcing the bankruptcy, the exchange rate has broken, the shares lost their value. The company lost most of its contracts, Bankruptcy Authority accompanied with auditing companies could ensure that 60% of the employees until could remain until August 2018, however, claims for damages due to the lack of provided services have just started. So, leaders of the company can be held responsible for the situation as they did not act properly and did not act according to their responsibilities, the state actors who did not verify the performance of the corporate in substantively, and also the auditor companies

for not revealing the presumed accounting irregularities. It can be concluded that going concern principle shall also be taken in account, especially in case of public service provider companies [10,11,12]. One solution of its support is to utilize controlling systems and analyzer tools like [13,14].

The topic affects the lesson of the subprime crisis of 2007 if the company is "Too big to fail?", and if it really fails, "Who pays the piper?". However, the main lesson of this question is how an enterprise can become a dinosaur when it comes to public services. It can be filtered from this huge size organizations should not be organically or artificially created without reasonable state controlling as it gives chance for risks to build up. In our country, it was not created a market-based way, but by laws, especially in case of waste management, but also in case of traffic, some similar centralization process can be recognized. So, a well-functioning state shall be properly prepared for the risks, and shall also utilize the results and experiences of science and build them into the regulation environment.

By this, we defined the operative tasks of modern state management and its role in providing high quality public services.

Functions:

- Usage of modern controlling environment and toolkit,
- Continuously supervising the organizational framework task delivery, pursuit of ensuring economy of scale
- Certification of partners, working out own tools for them
- Creation of an effective property portfolio

To achieve this, we recommend the processes of strategic creation, and usage of strategic (e.g. Balanced Scorecard, strategic maps) and operative controlling tools which can support achieving transparency and legitimation for the citizens.

In Hungary, fiscal decentralization has been restructured since 2011. As a result, state and local government tasks have been restructured. Municipalities took over a major task through public utility companies, while human public services became a state task. This is because the fiscal measures taken during the financial crisis eroded the viability of Hungarian local governments [15,16,17].

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INFORMATION SECURITY AND ECONOMIC CRIME: PROBLEMS AND SOLUTIONS

Zinaida Zhyvko,
Doctor of Sciences (Economics), Professor,
Lviv State University of Internal Affairs, Lviv, Ukraine,
Olha Ruda,
Doctor of Sciences (Economics), Associate Professor,
Lviv State University of Internal Affairs, Lviv, Ukraine,
Liliia Kucharska
Postgraduate Student,
Lviv State University of Internal Affairs, Lviv, Ukraine

Any activity should be based on certain principles, reconnaissance activity is not an exception.

Principles are guiding ideas, fundamental aspects, developed by operative and reconnaissance practice expressed in the norms of legislative acts; political, economic and social patterns of Ukrainian society development; ethical and legal understandings of the citizens of Ukraine about the meaning, purpose, tasks and procedures for carrying out operative and reconnaissance activities.

The first and most important principle of the organization of any reconnaissance, in particular economic, is the impartiality in the selection, systematization, processing and transmission of the information received to the addressee.

The principle of systematic information obtained by economic reconnaissance ensures the reliability of the data, and therefore, the effectiveness of intelligence. It is due to the fact that most objects, companies, corporations, enterprises, organizations, etc., are complex systems that have such components as production, marketing and financial subsystems. Since they are inseparable and interdependent

units, their indices must be mutually confirmed.

In business organizations, the greatest interest and, accordingly, the number of threats arise in the field of economics. Therefore, operative and reconnaissance activities to ensure economic security are the main ones.

Other important principles of planning for reconnaissance in the economy are: (1) Determining the purpose of conducting reconnaissance activities; (2) Determination of the subject's need of the economic activity in information to achieve these goals; (3) Identification of sources to obtain the necessary information.

For productive economic activity, the management of the enterprise must adopt multi-level solutions, the information support of which is provided by the system of economic reconnaissance. Management of any organization has at least two levels: management of the current activities of the enterprise and management of its strategic development. The results of the excepted decisions on these issues are demonstrated variously: current - in the near future, strategic - in the future.

It should be noted that the nature of information for each level of decisions is different. In this regard, in the work of economic reconnaissance department of the enterprise, should be distinguished two components:

Strategic (macroeconomic) - collection and analysis of strategic information on global processes in economy, politics, technology, etc., which can (positively or negatively) affect the development of an enterprise.

The purpose of the strategic level of decision making (opening of new production, introduction of new goods or services on the market, etc.) is to determine the direction of further development of the enterprise. These decisions determine the need to orient themselves in the market and analyze the prospects for its development, that is, to see the market places that have not yet been filled by competitors.

Unfortunately, in our country, business executives spend less time on strategic management. However, a serious business is designed for many years, and the fact that the enterprise will fit in its development in 5-10 years, you need not only to plan, but also scrupulously to calculate in advance: which political associations to support, and which is not worth it; in which «noisy» cases to participate, and from which it is desirable to stay away, despite their external attractiveness. Information for reflection on these important issues facing the management of the company, and should provide a strategic component of economic reconnaissance.

Operational and tactical (microeconomic) component of economic reconnaissance - collection and analysis of operational and tactical information for the approval of the management of sound decisions on current problems of the enterprise.

The purpose of the operational and tactical level of decision making (construction or purchase of a building for a new workshop, training of personnel for the production of new products or the provision of new services), in accordance with the direction of further development, - to choose the optimal way to achieve it

and minimize the cost of development in this way [1; 2].

Purposes of intelligence activities are clearly structured. Each goal is predetermined with the purpose of a higher order, while remaining autonomous for the needs and sources of information. So, after the strategic goal (definition of the direction) is an operational and tactical goal (the choice of the best way of development and it advancement ahead).

Creating an «e-mail system» linking various divisions of an enterprise will solve the problem of timely dissemination of open (non-public) information documents.

The purposes of creating a system of economic reconnaissance of the enterprise. The main purpose of the economic reconnaissance system is to: ensure the company management with reliable, objective and complete information about the intentions of partners, affiliates, clients and counterparties, about the strengths and weaknesses of competitors; collect data that can influence the position of opponents in business negotiations; inform about possible crisis situations; administrate and control of implementation of concluded agreements and agreements reached earlier.

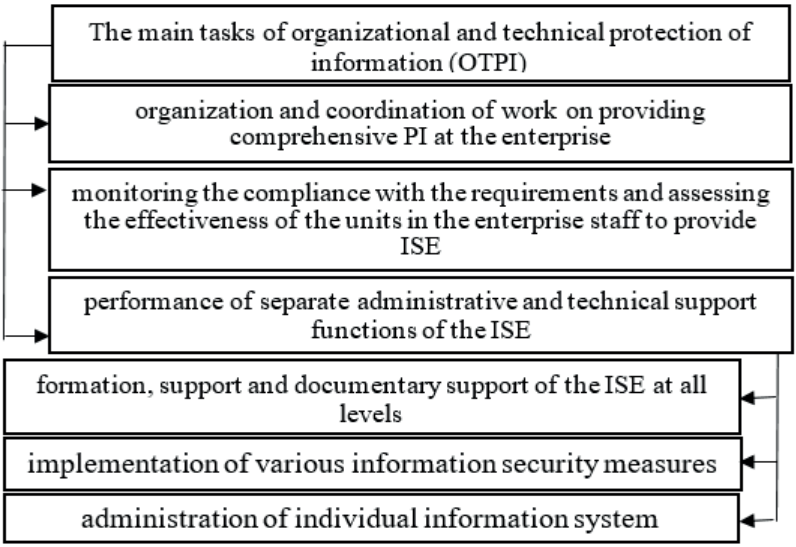

Fig. 1. The main tasks of organizational and technical protection of information

In general, it is customary for banks, joint – stock companies, large firms to organize security services (SS), which include competitive intelligence (CI), counterintelligence, technical protection (TP), throughput and security units. In particular, the units of organizational and technical protection of information of the enterprise is an independent structural unit of the enterprise engaged in protection of information of resources (PI). The main tasks of organizational and technical

protection of information (OTPI) and information security of the enterprise (ISE) are (fig.1):

The main features of the operation of the enterprise, the composition of the tasks of the units and its internal organizational structure in each case is determined by the following features (fig. 2):

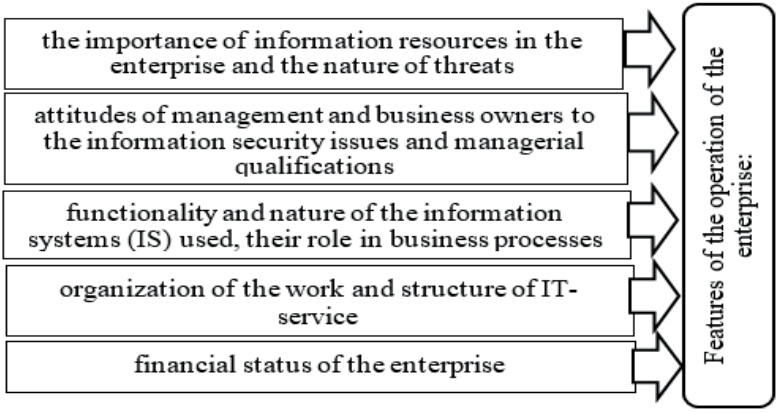

Fig. 2. Features of the operation of the enterprise

There are a number of functions related to providing information security, namely: (1) functions related to the formation, support and documentary provision of the company's information security policy; (2) Functions related to the implementation of the information protection facilities; (3) Functions related to the administration of information systems and information security systems; (4) Functions related to the control of compliance with the requirements of the information security policy and the conduct of audits [1; 2].

Subdivision of organizational and technical support (SOTS) is as a structural unit in the Enterprise Security Service, it includes the Information Security Division (ISD).

The employees of SOTS are in administrative and functional subordination to the head of the enterprise, who is responsible for ensuring information security at the enterprise. The conclusion of the head of information security from the structure of IT services at Enterprises is one of the important modern trends in business management, information technology and information security, because, according to some experts, these units have some Partially mutually controversial interests and therefore some assignments cannot be effectively resolved within a single structural unit [2].

As part of IDS of the enterprise, the company usually allocate independent groups specializing in the performance of certain functions: (1) Administration Department of IS; (2) Department of normative documents; (3) Information Security Audit Department; (4) The Implementation Department of the IS and the ISS.

The Department of normative documents solves tasks related to the formation,

support and documentation of the ISE policy, and should mainly include management and business analysis professionals who have undergone additional training in the field of Information security management. Also the department consists of lawyers.

The Department of information systems administration, as well as the IS implementation department and the ISS include IT and means specialists with significant experience in implementation and operation of corporate IS.

In general, the implementation of the existing information security policy requires the company to attach considerable effort.

One of the main and most difficult directions of work is to work with the personnel, whose goals are: 1) selection and checking of the personnel, for work; 2) training of employees; 3) Achieving mutual understanding of executives and employees in providing IS; 4) Psychological training of personnel to avoid the influence of social engineering methods.

Thorough selection is conducted in the ESS and in the information security subsection, one of the important fundamentals of HR work is its training in ways of providing IS and safe work with the information system. Training and subsequent control of knowledge gained can be both primary and repeated.

In general, an employee of an enterprise cannot be admitted to the performance of his / her duties and work with the IS without passing training on IS and fulfillment of the following requirements: 1) Detailed acquaintance of the current on the enterprise requirements and General rules; 2) knowledge of the methods and techniques of the IS, required for the performance of functional duties; 3) acquaintance with the measures of disciplinary, administrative, criminal liability which may be applied to it in case of violation of the requirements, and also in case of damage on its fault.

At the end of the employee must give all necessary obligations to non-disclosure confidential information, to certify that he is fully acquainted with the basic provisions of the security policy.

In the process of operation, the company can also conduct periodic monitoring of knowledge and skills related to providing information security for the purpose, to certify the competence of employees in this field. Also one of the teaching tools can be a periodic acquaintance of the staff with real examples of the recently occurring incidents related to information security. In addition, the additional training of personnel of the enterprise is carried out in the following cases: introduction of new automated information systems; Business processes changes;

Changes in security policy requirements (example: due to changes in legislation requirements) [2].

Similar organizational measures to ensure the protection of information may be necessary and when changing business processes of the enterprise, when its structure changes, distribution of functions between the units and duties of employees, and accordingly, are made Changes in organizational charts, staff murals and job descriptions. The changes in the security policy requirements may be related to the

emergence of new threats, changing legislative requirements, expanding markets, changing the attitude of management and owners of the enterprise to issues of information security and other factors. All these clarifications and changes should also be timely and fully to the staff.

The modern information system is a complex system, consisting of a large number of components of autonomy varying degrees connected among themselves and exchange data. Almost every component can be exposed to external influences or go wrong.

The general threat classification of an automated information system of an object is as follows: 1) the threat of data confidentiality and programs; 2) the threat of the integrity of data, programs, hardware; 3) the threat of data availability; 4) threat of refusal to execute transactions [2; 3].

An assessment of the vulnerability of an automated information system and the construction of an influence model involves the study of all options for implementation the above threats and identification the consequences to which they lead. Information security threats can be conditioned by human factors, human-machine and machine factors.

Human factors are divided into: passive threats (threats caused by activities that are accidental, unintentional) and active threats (threats caused by intentional, deliberate actions of people) [1; 4].

There are threats of damaging data processing systems caused by physical influences of natural phenomena that are not human-dependent.

However, the wider and more dangerous range of artificial threats caused by human activity, based on motives, can be distinguished: 1) unintended threats caused by mistakes in design, preparation, processing and transmission of information; errors in the actions of the staff, software, accidental crashes in the work of computer facilities and communication lines, power supply, user errors, the impact on the equipment of physical zeros, etc.; 2) deliberate threats caused by unauthorized actions of service personnel and unauthorized access (UAA) to the information by the third party.

Threats that are not related to human activity [3]. Therefore, in the design and operation of data processing systems, there are mandatory fire prevention issues. Particular attention should be paid to protection against the fire of computer data carriers, file servers, individual computers, communication centers, archives, and other equipment and premises or special containers, where huge massifs of very important information are kept. For these purposes, special fireproof safes, containers, etc. can be used. Another threat to data processing systems in computer systems is lightning strikes. This problem does not arise often, but the damage can be caused very large.

Organizational and legal ways: (1) non-compliance with the requirements of the legislation and delays in the adoption of the necessary legal and regulatory provisions in the information field; (2) unlawful restriction of access to documents [2; 3].

Illegal collection of information can take place via: 1) stealing of relevant information or objects that it contains from the premises where they are stored; 2) secret criminal penetration of the premises and copying information on paper or electronically; 3) bribing employee of a company that had or has legal access to information; 4) bribery of intermediaries in the negotiations which have certain information; 5) illegally obtaining information from lawn for cement or regulatory authorities, which collected such information while performing their direct duties; 6) threats of physical violence against a person or his close relatives to whom information has been authorized as work responsibilities; 7) blackmail an employee who is on the «hook» because of certain circumstances; 8) installing a spy as a member of staff of an enterprise; 9) recruiting an active employee or using an incentive to disclose information by a laid off person on the grounds of ethnic, racial, religious affinity, to avenge manager for illegal dismissal, transfer to another job, dismissal; 10) using various technical devices that record and transmit information; 11) penetrating the computer networks.

Is very important Enterprise competitive intelligence activities, external and internal monitoring of team morale, identifying risk factors, timely receipt and processing of information, cooperation with law enforcement and security agencies are very important for counterintelligence division of the enterprise. Only a systematic and comprehensive approach to enterprise security will lead to developing a common approach and mechanism of protecting business.

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MANAGEMENT BY TALENTS IN CONTEXT OF CONCEPTION OF ABSORPTIVE ABILITY OF ORGANIZATION AS DIRECTION OF PROVIDING OF HER SKILLED SAFETY

Lyudmila Shymanovska-Dianych,
Doctor of Sciences (Economics), Professor,
Poltava University of Economics and Trade, Poltava, Ukraine,
Tymur Ishcheikin,
Ph.D. in Economics, Associate Professor,
Poltava state agrarian academy, Poltava, Ukraine,
Valentina Misyuckevich,
Ph.D. in Economics, Associate Professor,
Poltava University of Economics and Trade, Poltava, Ukraine

Today in the conditions of globalization of economy a personnel, his knowledge, level of qualification and efficiency, becomes one of important directions of receipt of competitive edge and providing of skilled safety of any organization. The height of competition at the market of labor substantially complicates the tasks of bringing in, motivations and withholding of employees, therefore companies perfect the approaches constantly.

Along with understanding of necessity of найма, development and withholding of talented people, organizations know that they must manage talent as major resource for the achievement of the best results and her skilled providing.

Management by talents is critically an important process, which allows to organizations to pick up exactly those people that would be able to bring a most contribution to work of company taking into account current and future priorities of business. A process embraces all key aspects of life cycle of employee is a selection, development, educating, planning of career and management by the productivity.

Growing fluidity of global labor-markets, displacement of demography of labor force and change of character of work, hamper bringing in development and withholding critically of important talent, creating a value for organization [6]. Talent stimulates the productivity, and in turn commands with the best people come forward at higher level. Leading organizations know that exceptional business activity is conditioned by excellent talent. People are a resource, skilled providing of organization.

Talent is strategy, skilled safety of organization. Another, no less important problem that stands before many companies is a requirement in permanent development of ability effectively to create and move knowledge, which is an important factor in the achievement of competitive edge at the market [11]. Actuality of study of conception of absorptive ability of organization, or, in other words, her capabilities to acquire knowledge, master them, transform, and, finally, save and use for the increase of economic and financial indicators, flows out from here [2, 11].

But on the other hand, now not so a question is widely studied that, how exactly and by means of what practices a company can influence on the absorptive ability, that underlines actuality hired once again.

The aim of this research is determination of intercommunication and influence of practices of management by talented employees on ability of companies to find, master, transform and use new knowledge (absorptive ability).

A management is extremely important talents for the acceptance of different decisions, first of all, at strategic level; it allows engaging an employee in a management by a mission or tasks of organization [1, 2]. However, it is needed to mark that at the large variety of determinations of «talent» in domestic and foreign literature uniformity is absent in the question of research object, that does not allow to form single determination of talent.

In addition, in a number of sources other terms different from talent are used, under that the similar categories of employees are understood. For example, many scientific publications [2, 3, 4, 6, 11], sanctified to the management by talents, take talent for something in itself understood and does not give some obvious determination. On the whole, it is possible to distinguish a 2 going near determination of talent: the first characterizes talent as man; at the second approach authors are inclined to take this concept rather to descriptions of personality.

Analyzing the row of determinations of different authors, it is possible to notice that talent as a rule is used together with such concepts, as skills [6, 7, 10], competence/of competence [9, 11], potential and effectiveness [4, 5]. Taking into account different approaches and concepts, allowing to expose a term «talent», it is possible to form one most capacious, that in future and will be used by us in the process of current research: talented employees are employees, possessing prominent knowledge, abilities and skills, able to apply them in accordance with the needs of company and introduce a most contribution to creation of value of firm, dismantle the extremely high results of labor, high level of motivation, and also possess high potential to professional development and height.

Presently all more companies realize the necessity of reorientation from a management by a personnel on conception of management by talented employees, because exactly talent is a main factor, which defines success of companies, and ability of organization to attract, develop and retain talents will be a main competitive edge during many years. From the moment of appearance of management conception by talented employees in works of researchers, a considerable change suffered understanding of source of talents in organization.

Most early works turn greater attention on internal talent of employee [10]. In later works, authors underline importance of internal search of talents also [10]. Moreover, researchers, pay attention to underestimated of conception management talented employees in modern organizations.

Many companies add enormous efforts for bringing in of new employees, but at the same time, spend time not enough and facilities on withholding and development

of talents that already work in organization, putting the same under a threat her skilled providing and violating the system of her skilled safety, violating principle, that control system talents must be by part of control system by a personnel, that provides business strategy of any company on all her levels and making system of her skilled safety.

In addition, it should be noted that for the last thirty years began actively to collect popularity in literature [10] conception of absorptive ability of organization (Absorptive Capacity, ACAP), and particular interest of researchers in this area attracts influence of ACAP on the organizational educating, exchange by knowledge, innovativeness and job of firm performances.

First this term was identified by Cohen and Levinthal, which examine absorptive potential as important component of activity of firm and long-term survival. Authors [8] determine absorptive ability as «ability to recognize the value of new information, assimilate, analyze her and apply companies» to the commercial aims.

The determination given by Cohen and Levinthal implies that the obvious and necessary condition of success with absorption of knowledge is mechanisms and structures of firms, sent to that, to spread knowledge through her internal and external borders. It is possible to suppose that absorptive ability «depends on ability of organization to interchange knowledge and to communicate inwardly».

Thus, absorptive ability is a critical factor that embraces all organizations as an absorptive process is opened out. Conception of ACAP, as it was already marked before, possible to attribute to organizational ability to take in and assimilate the knowledge got from outside.

Ability of organization to acquire new knowledge was described both conceptually and empiric by means of strategic management and from the economic point of view, and the factors of absorptive ability were related to the different organizational results (for example, productivity, innovations, management by changes etc.).

Also conception of absorptive ability was studied on the different levels of management, such as state, inter-organizational and organizational. And although basic part of existent research work of conception and ACAP investigated at organizational level, it is possible to mark that a corresponding theory specifies on that organizational ACAP is base on individual ability of employees to take in knowledge, although existent researches after the practical worker of fastening ACAP and processes of УЧР scanty enough.

Only in not many researches the special attention was spared to influence of skills of separate persons on ACAP with support on corresponding preceding knowledge and experience, which is owned by well-informed employees or so-called «gate-keepers». In addition, the level of education and educating of employees, and also conception of administrative cognition, were considered as prevailing factors for developing flair of employees to identify, assimilate and use new knowledge.

If to examine the concept of absorptive ability from the point of view of theory, then

he can be attributed to the area that is very near to the area of management knowledge, by being presently part of general management by human capitals and, in given, case it is needed to mention the classic model of I. Nonaka and H. Takeuchi [8] SECI examining a forestage spiral process of transformation of knowledge from non-obvious (tacit) in obvious (explicit) and back.

It is necessary to mark that hired does not contain direct mention of absorptive ability of company, but the model offered in her is near with the model of ACAP S. Zahra and Jn. George [18]. Already it grounds to us to suppose that conception of absorptive ability is closely related to the theory of management by human capitals in organization

Non-obvious knowledge	**Non-obvious knowledge TO**	**Obvious knowledge**
From	Socialization	Externalization
Obvious knowledge	Internalization	Combination

Fig. 1. Model SECI I. Nonaka and H. Takeuchi [8]

This thesis is confirmed by researches proving, that a level of absorptive ability of organization is in strong dependence on the presence of employees, possessing the set of competences relevant to the business necessities, in this connection it is accepted to consider that human capitals are a main type of resources, forming ACAP.

In addition, because the question is not about the general competences of firm, and about the competences of concrete employees, it will be just to suppose the presence of dependence between practices of management by the talented employees, directly sent to optimization of number of workers, not only possessing necessary knowledge and skills but also able to introduce a most value in organization, and absorptive ability of company. All practices of development of talented employees are base on motion of knowledge into a firm.

If to examine absorptive ability of organization in accordance with the model of S. Zahra and G. George, acquisition of knowledge is related to the search and authentication by new potentially to useful information out of firm. Comparing between conception of absorptive ability and model of SECI I. Nonaka and H. Takeuchi, it is possible to mark that the stage of acquisition of knowledge corresponds to the stage of socialization and partly stage of externalization, because in an order to be purchased, external knowledge must be not simply identified, but also adopted by the employees of company.

Speaking about the programs of development of talented employees, it is possible to assert that to this stage it is possible to take both the programs of the

formal educating, including the external training, and development in investigation of maintenance of contacts with different parties concerned, including suppliers, competitors, partners, clients and external experts.

While in the process of the formal training handed on employees obvious torches (explicit knowledge), ranging and maintenance of business mutual relations allows to get non-obvious knowledge (tacit knowledge) often being more valuable in connection with their obvious practical applicability and high complication of printing-down. On the stage of mastering information must be widespread into organization and also analyzed and treat her employees.

It can be carried out by means of the internal training, thus both formal and informal, and also through communications between the workers of company. This element of absorptive ability in a most degree corresponds to the stage of externalization and partly stage of combination on the model of I. Nonaka and H. Takeuchi. Third stage, transformation, introduction of new knowledge implies in already existent routines and practices of company.

In success of passing of this stage the most essential role is played by development because of receipt of working experience, because exactly due to him the knowledge purchased and mastered by organization become part of individual knowledge. Consequently, this stage unites in itself the stages of combination and internalization of model of SECI. Finally, on the last of peat-time of model of absorptive ability – stage of the use of knowledge – new knowledge are used so that to bring in the return of organization.

In other words, employees study to use knowledge in practice that corresponds to the stage of internalization. In respect of educating, then here most often there is the use of the informal programs of development, implying, mainly, an elemental exchange by experience between employees straight on workplaces.

Nevertheless, it is needed to mark that on given moment there are not academic works that straight study influence of practices of management talented employees on absorptive ability of organization or intercommunication between them. However, it is possible to do supposition about the presence of influence of practices of management by talented employees on absorptive ability of organization.

Working out the totals, it is possible to say, that on the whole management actively develops talented employees presently and first of all contacts with general practices of management human capitals that is sent to the increase of job of firm, her skilled providing and skilled safety performances.

In addition, conception of absorptive ability of organization is examined in this research. The special importance for further research is played by the analysis of pre-conditions of intercommunication of absorptive ability of organization with the practical workers of management talented employees presented further, existing in academic literature.

It was educed as a result of such analysis, that on the real moment there is not direct proof of such influence in literature, however there is a row of theories on the

basis of that it maybe to suppose about his presence, what will be the article of our further researches.

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INFORMATION SECURITY MANAGEMENT OF INDUSTRIAL ENTERPRISES AND ITS FEATURES WHEN USING THE INDUSTRIAL INTERNET OF THINGS

Valentina Ivanova,
Doctor of Sciences (Economics), Professor,
University of Educational Management, Kyiv, Ukraine
Oleg Ivanov,
Ph.D. in Technology, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine

Information is the most valuable resource for a business. The availability and rapid input of reliable and complete information about the state and change in the political, social, economic situation as well as internal business processes enable businesses to quickly respond to any changes in the organizational environment of enterprises, and effectively plan and implement it.

Efficiency of activity and development of enterprises require information security. This guarantees the security of business processes and the stability of their activities.

Information security is the process of organizing a system of input and output information flows of an enterprise, which rapidly provides it with reliable and complete information, guarantees protection against violation of its integrity and unauthorized dissemination.

Information security management is one of the most important processes for managing of an industrial enterprise. That requires a careful choice of strategy and tactical measures for its implementation.

The level of information security depends on how efficiently enterprises can prevent threats and quickly eliminate damage of negative impacts.

Objective negative impacts arise without participation and beyond the will of industrial enterprises. These impacts include the unlawful activities of competitors and individuals involved in industrial espionage or fraud, business partners, previously dismissed employees, as well as offenses of the representatives of regulatory authorities.

Subjective negative impacts arise as a result of inefficient activities of the enterprises or their individual employees. These impacts include the employees' actions or omissions, which are contrary to the interests of industrial enterprises. This may result in the losses, leakage and loss of information resources (including those that are commercial secret or confidential information), the harmed business reputation, the problems in relations with real and potential partners (loss of contracts); conflicts with competitors, controlling and law enforcement bodies.

Information security is achieved by protecting information from unauthorized access, information disclosure, its modification or destruction.

Allianz Global Corporate & Specialty (AGCS) conducted the next annual study of global business risks. It represents the views of 2,415 experts from 86 countries. Cyber risks (e.g. cyber crime, IT failure / outage, data breaches, fines and penalties) were recognized as the key business risks for 2019 and subsequent years (37% of respondents' answers) (Table 1).

Table 1

The 10 top most important business risks in 2019 [1]

Rank	Risks	Percent	2018 rank
1	Business interruption (incl. supply chain disruption)	37%	1 (42%)
2	Cyber incidents (e.g. cyber crime, IT failure/outage, data breaches, fines and penalties)	37%	2 (40%)
3	Natural catastrophes (e.g. storm, flood, earthquake))	28%	3 (30%)
4	Changes in legislation and regulation (e.g. trade wars and tariffs, economic sanctions, protectionism, Brexit, Euro-zone disintegration)	27%	5 (21%)
5	Market developments (e.g. volatility, intensified competition/new entrants, M&A, market stagnation, market fluctuations)	23%	4 (22%)
6	Fire, explosion	19%	6 (20%)
7	New technologies (e.g. impact of increasing interconnectivity, nanotechnology, artificial intelligence, 3D printing, autonomous vehicles, blockchain)	19%	7 (15%)
8	Climate change/increasing volatility of weather	13%	10 (10%)
9	Loss of reputation or brand value	13%	8 (13%)
10	Shortage of skilled workforce	9%	15 (6%)

The highest risk of cyber precedents is characteristic for aviation, aerospace, defense (43%), entertainment & media (40%), financial services (46%), professional services (40%), technology (53%), telecommunications (58%).

International Telecommunication Union ranked countries according to cyber security level (Global Cybersecurity Index). This is an assessment of the computer security of the countries of the world according to the parameters: legal, technical, organizational preparedness, readiness for cooperation, development of the educational and research potential of the country. The UK took the first place in this ranking in 2018 (table 2).

Ukraine took 54th place among 175 countries. Therefore, it needs the more effective system of information security of the country, including of individual enterprises.

Industrial enterprises actively consider the using of the Industrial Internet of Things in their activities.

Table 2

Global Cybersecurity Index 2018 [2]

Member State	Score	Global Rank
United Kingdom	0.931	1
United States of America	0.926	2
France	0.918	3
Lithuania	0.908	4
Estonia	0.905	5
Ukraine	0.661	54

The essence of such a network is that sensors, actuators, controllers and necessary interfaces are initially installed on the equipment. In the future, they provide the information collection. It is the basis for obtaining objective data on the condition of equipment and production processes of the enterprise. The information obtained can be used to prevent unplanned downtime and equipment breakdowns.

The main results of using the Industrial Internet of Things should be an increase in the equipment productivity and a decrease in the production cost. The processes of servicing equipment, logistics, and management as a whole can be change qualitatively.

However, the data received from the devices is not only an opportunity to increase the efficiency of industrial enterprises, but also the threats to their information security.

Already in 2017 attention was drawn to the risks associated with new technologies of the Fourth Industrial Revolution. Among them, the following were named:

- «virtual and augmented realities (next-step interfaces between humans and computers, involving immersive environments)»;

- «ubiquitous linked sensors (also known as the «Internet of Things», the use of networked sensors to remotely connect, track and manage products, systems, and grids») [3].

Global Risks Report 2019 presents the main technological risks and their trends associated with the development of digital computer technologies and the Industrial Internet of Things. They can significantly affect the information security of industrial enterprises:

- cyber dependency that increases vulnerability to outage of critical information infrastructure (e.g. internet, satellites, etc.) and networks, causing widespread disruption

- large-scale cyber-attacks or malware causing large economic damages, geopolitical tensions, or widespread loss of trust in the internet

- wrongful exploitation of private or official data [4].

The goal of achieving information security should be to preserve the value

of information resources for their owner. Immediate measures for protection information are directed not only to information resources, but also to the preservation of certain technologies for their creation, processing, storage, retrieval and provision to users [5].

To organize the protection of information, it is advisable to divide the information into the following groups:

- important information, that is, one that cannot be replaced, the recovery process of which after destruction is impossible or time-consuming and associated with high costs, while its falsification leads to significant losses;
- useful information, that is, it is necessary for the activities of industrial enterprises, but it can be restored without high costs; its modification or destruction leads to relatively small losses;
- confidential information, access to which is undesirable for the part of staff and unauthorized persons, since it can lead to material and moral losses;
- open information, access to which is open to all.

It is logical to find out the threats, from which the information should be protected. Threats mean the actions or inaction of individuals that lead to distortion and destruction of information, the spread of confidential information, the creation of dangerous conditions for information processes and the implementation of information technologies.

Information security threats include the following:

- computer crime and computer terrorism;
- disclosure of information constituting a trade secret;
- an attempt to manipulate public consciousness, in particular, by disseminating false, incomplete or biased information.

Sources of threats to the information security of the industrial enterprises are the following:

- illegal activity of economic entities and individuals in the formation, dissemination and use of information;
- violation of established regulations for the collection, processing and transmission of information;
- intentional actions and unintentional errors of personnel;
- errors in the design of information systems;
- hardware and software failures in information and telecommunication systems, etc. [6].

The main stages of information security management are the following:

- registration of all resources that must be protected;
- analysis and creation of a list of possible threats for each resource;
- assessment of the probability of emergence of each threat;
- implementation of measures for cost-effective information protection [7].

It is possible to create and use such subsystems for effective information protection of the industrial enterprises:

- anti-virus protection subsystem for Internet access, file servers, user workstations, periodic updates of anti-virus databases;

- access control and identification subsystem in the information system;

- firewall subsystem;

- cryptographic protection subsystem, which guarantees the security of information transfer due to data encryption;

- subsystem for ensuring the integrity of information and the software environment through the use of tools for fixing and monitoring the state of the software complex, managing data storage, backup and archiving;

- subsystem of protection against insiders; controlling the actions of violators, implements information security in access control and registration;

- subsystem of protection of database management systems;

- subsystem for detecting the intrusions and attempts of unauthorized access to information resources to implement protective measures, which counter hacker attacks and spam;

- subsystem for protecting mobile devices;

- subsystem for monitoring information security events, which allows detecting timely the threats to the information system and responding promptly to them [8].

Information Security Services are engaged in the following:

- implementation of requirements and rules for the protection of information;

- support the protected state of information systems,

- selection and use of special organizational, technical and mathematical software and measures to protect information systems.

The following approaches are used to ensure the security of computer information systems:

- a selective approach that provides the countering clearly defined threats under certain conditions (specialized anti-virus tools, autonomous encryption tools, etc.);

- an integrated approach that provides the creation of an information processing environment that combines various (legal, organizational, software and technical) measures to counter the maximum number of threats.

For information security, the following measures can be used:

- physical protection of computer systems;

- regulation of technological processes;

- regulation of work with confidential information;

- regulation of reservation procedures;

- regulation of changes;

- regulation of the work of stuff and consumers;

- control and monitoring measures [9].

Information security is an integral part of the overall security of the industrial enterprises. The information security concept should contain the measures related to information technologies (crypto protection, software for administering user rights, their identification and authentication, firewalls to protect network inputs

and outputs, etc.); administrative and technical measures [10].

There are problems in the formation of information security as a system of actions for the creation and management of intellectual property.

The information security system that governs the activities in the field of intellectual property law should be based on the interconnection of economic and legal aspects. It should fully take into account the provisions of international acts.

To sum up, the main aim of the information security system of the industrial enterprises is that it should have a preventive character. The main criteria for assessing its reliability and effectiveness are:

- ensuring the stability of activities, preservation and enhancement of intellectual, financial and material values;
- prevention of crisis situations, including emergency events.

The effectiveness of information security management depends on the joint activities of the team and the heads of industrial enterprises, and requires the managers to develop security strategies and tactics.

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FORMATION OF A LIFELONG LEARNING MANAGEMENT SYSTEM AS FORM OF EDUCATIONAL SPACE PROTECTION

Svitlana Makarenko,
Ph.D. in Pedagogy, Associate Professor,
Preschool Education Department Mariupol State University,
Mariupol, Ukraine
Viktoriia Kalynychenko,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

At present, of course, in order to be competitive in the labour market, higher education applicants no longer need to have a high level of professional training, they must also have new, unusual «properties». Such new properties may be the possession of additional professional qualities and skills that are not provided by training within the standard programs, but which contribute to the expansion of specialists' professional capabilities.

Other, more fundamental reasons, that have determined the need to protect the educational space, including through the formation of a lifelong learning system, have coincided with socio-economic reforms. In order to create a safe working environment for educational institutions, there was a need to reform the education system, make it more flexible, expand the training profile both «horizontally» and «vertically», and as a result, be able to respond effectively to the needs of the domestic and international labour market. Another important point is the search for opportunities to provide young people with alternative ways to get professions. Today, some of them are already being implemented (school-college-higher educational institutions (HEI); college-HEI, lyceum-HEI, school-lyceum-HEI, etc.) [9].

Under the influence of the formation transition to the innovative economy, the formation of the need for lifelong learning as a perspective for the university education transformation becomes relevant. In this regard, one of the new challenges for HEIs is the introduction of lifelong learning ideas and forms into the wide practice of educational institutions, and leadership in the development of lifelong learning systems [1].

The concept of lifelong education appeared at the end of the 20th century, but quickly took one of the key places in the pedagogical and social problems list of a significant number of countries. Actually, this phenomenon can be described as a process of continuous growth of a person's educational potential throughout life,

which provides for both general erudition and professional development of a modern specialist. From an organizational point of view, the functioning of the continuing education institution as a social phenomenon is ensured thanks to the support of the state and society, which together help to maintain the stable activity of educational structures (formal and non-formal, state and private, basic and additional, main and parallel, as well as many others) [5].

In modern transformational environment, where education becomes continuous and covers almost all spheres of human activity, the management of this process in one form or another involves a certain structuring of education and the forms of its provision. In this regard, we can distinguish institutionalized and non-institutionalized forms of the educational process [4].

Institutionalized forms of lifelong learning are forms that are implemented within the framework of institutions operating in society: educational institutions, various registered courses and circles, associations and unions, publicly announced educational programs, etc. A generalized scheme of the institutionalized form of lifelong learning is presented in Fig. 1.

It is quite difficult to isolate and define non-institutionalized forms of lifelong learning, since they are variable, have a weak character of manifestation in the educational space and are associated with a large number of various processes of searching and obtaining information. An example of non-institutionalized forms of education can be, first of all, self-education, which is carried out in a wide variety of forms (from reading fiction –raising the general cultural level, to reading special journals to obtain information that can be used in professional activities).

It is also necessary to highlight a number of objective characteristics inherent in the system of lifelong learning, which determine the possibility of including an applicant in it regardless of the level and / or form of education received:

1. The presence of the necessary network of organizations that are able to carry out educational activities. It should be borne in mind that education refers to licensed activities. Licensing, in turn, assumes that the organization has a normatively defined material base that meets the requirements of educational activities and human resources capable of carrying out such activities. Thus, in the system of lifelong learning should be:

- a sufficient number of organizations to carry out educational activities on a scale necessary for the state development;
- a sufficient number of places for the training of all comers in educational institutions;
- a sufficient number of qualified teachers and other specialists in accordance with the needs of higher education institutions and the desires of educational services consumers [4].

2. The presence of programs, teaching materials, textbooks, training manuals and other necessary informational and methodological resources for the educational activities. Ensuring the learning process for all comers, equipping everyone with

training places in educational organizations, the «range» of educational services must comply with the training technology and the desires of educational services consumers. In the most ideal case, the specified characteristics of the lifelong learning system should correspond to state requirements, which, in turn, should reflect the concept of declared and implemented state policy in the field of lifelong learning [6].

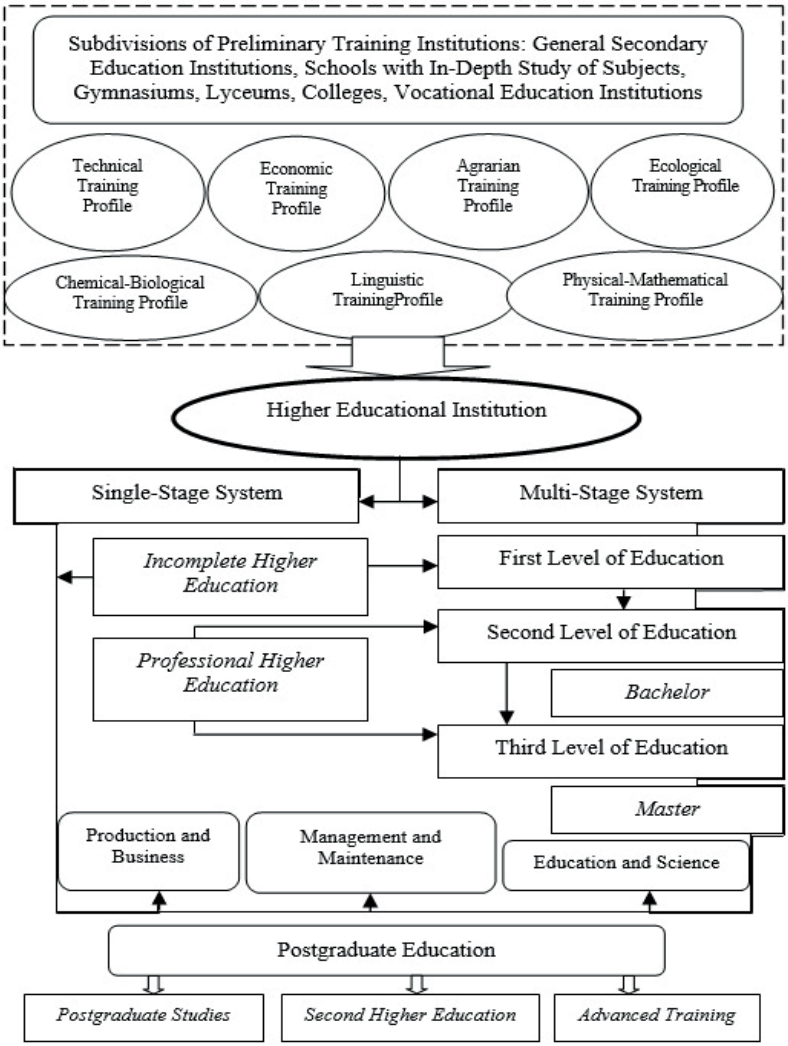

Fig. 1. Scheme of institutionalized form of lifelong learning
[created by the author on the basis of 2, 3, 4]

In the field of lifelong learning, the state, depending on the goals set, can implement such basic policy options:

- lifelong learning is a system that provides staffing for the state economy development. The role and place, and, accordingly, the degree of state regulation and governance are determined by the economic and social development program or other documents of this kind. In this option, lifelong learning is secondary to other economy sectors, and education problems are of interest to the state only to the extent that they contribute to or hinder the solution of priority problems of state development;

- lifelong learning is not a priority task (goal) of the state. The state complies with constitutional guarantees in the field of education and its commitments. Continuity of education (additional education, advanced training) is fully given to educational organizations and employers. The state maintains «neutrality» in relation to the system of lifelong learning and does not distinguish it from other branches of economy;

- lifelong learning is the main priority of the state in its development. All other sectors of the economy and social sphere are secondary to education and are oriented towards the goals of its development. No examples of such an approach have been observed in history; the option most likely should be classified as hypothetical, despite declarative statements about education as the basis for the development of all industries [4, 7, 11].

Such a distribution makes it possible to distinguish two blocks of actions for managing the lifelong learning system: mandatory regulatory actions and management actions, which are determined by the variant of the implemented educational policy.

Actions to regulate lifelong learning can be roughly divided into the following groups:

- the conditions and forms determination for the creation, reorganization and liquidation of organizations in the education system, that is, the procedures for creating an organization, reorganization, liquidation, registration, their presentation in various legal forms, and the like;

- the conditions determination for the functioning of organizations in the system of lifelong learning – types of activities, forms and methods of taxation, obtaining property rights, disposing of it and the like;

- the requirements determination for the processes that are carried out by organizations of the education system;

- the conditions determination of resource support of the education system – the financing procedure, self-sufficiency, their ratio;

- the requirements determination for the results of organizations in the education system: assessment of the organizations performance in other fields of activity;

- the conditions determination for the interaction of educational organizations among themselves and with organizations of other branches [4, 11].

Based on the above, further elaboration of state policy options in the field of lifelong learning policy implementation is possible (Fig. 2).

The main directions of managing the formation of a lifelong learning system can be carried out in two key areas: with the established conditions for the system functioning.

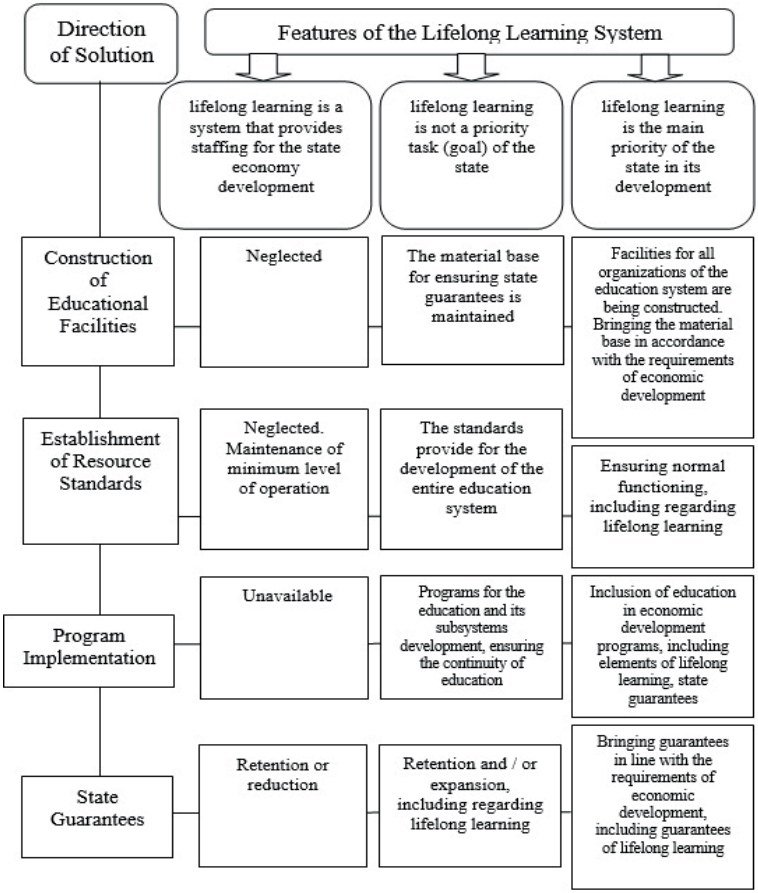

Fig. 2. Features of lifelong learning in the content of decisions
[created by the author on the basis of 4, 11]

1. Determination of the operating conditions of the lifelong learning system units. This direction can be described as state regulation.

2. Management of subjects and units of the lifelong learning system, that is, the implementation of activities to achieve the goals set for the lifelong learning system.

Of course, the real activity regarding the implementation of the functions of

regulation and education management is more complex. As an example, we can cite the necessity of assessing the conformity of the established conditions for the functioning of the education system with the goals set before it and, conversely, determine the conformity of the formed goals.

Summarizing the above, the management of the lifelong learning system can be reduced to the following main actions, presented in Fig. 3.

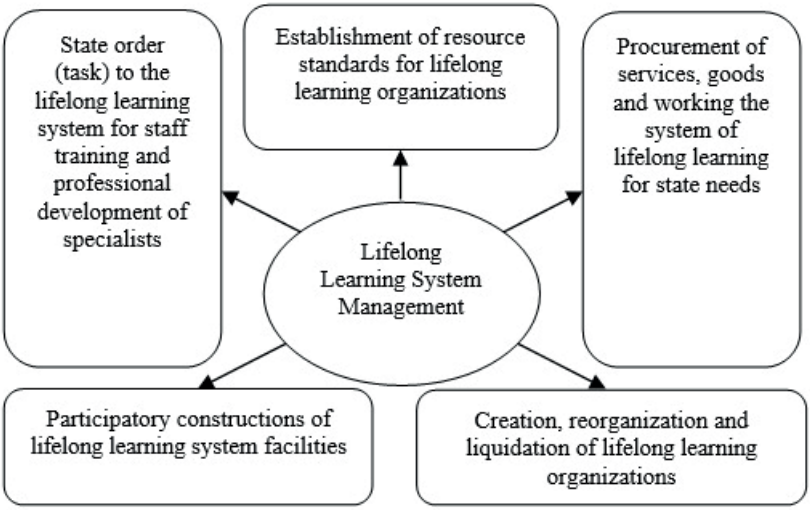

Fig. 3.The main directions of lifelong learning management
[created by the author on the basis of 4, 8]

The detailed content of the management activities mainstreams in the process of formation of the management system of lifelong learning, taking into account the features of this area, is presented in Table 1.

Thus, lifelong learning on the basis of HEI is a model of the future education, this is a new challenge to modern educational institutions. At the centre of education is a person who learns throughout his / her life. Training such a student from the school bench, his / her professional development and retraining throughout his / her entire career, receiving «additional» and «supportive» education throughout his / her life is an ideal model for building lifelong learning based on HEI.

The experience of the world leading countries, that have passed the process of formation of the studied education model, shows that in order to advance the implementation of the model, it is necessary to ensure the fulfilment of a number of conditions, including:

- availability of scientific and methodological support and activities accompaniment for the development of lifelong learning;

- organization of focused activities on the formation of subjects of lifelong learning;

- providing educational applicants and potential entrants with alternative forms of additional education;

Table 1

The main content of educational management decisions [4, 8, 10]

Key management actions	The content of decisions made
1. Development and implementation of targeted educational programs	program development, program approval, inclusion in the budget of expenses for the program implementation, program structure, main goals reflecting the need for lifelong learning
2. Inclusion of education in target programs of other economy sectors	program structure, inclusion in it of the section «education and staff training», decision to include in the budget of expenses for the implementing the section activities
3. Creation of organizations of lifelong learning system	creation (reorganization) of education system organizations, including those that ensure the continuity of education
4. Direct financing of lifelong learning institutions, including infrastructure institutions	inclusion in the budget of expenses for education, retraining and advanced training of employees, for research and development in the education system organizations, as well as in organizations of other industries in the interests of the education system, and for financing additional education
5. Adoption of laws and regulations for the lifelong learning system	development of bills and their main content, development and adoption of normative acts for the lifelong learning system
6. Granting tax benefits to institutions and organizations of lifelong learning system	provision of tax benefits to the education system
7. Providing benefits and preferences to organizations supporting the education system	differentiation and provision of benefits and preferences to organizations supporting the education system
8. State order (task) to the education system for training specialists	development of the regulatory framework of the state order (task) for the training of specialists
9. Procurement of services (goods, work) in the education system for state needs	organization and holding of (closed) tenders for the purchase of goods (works, services) for state needs from the education system organizations
10. Participatory constructions of educational facilities	inclusion of education system objects in the targeted investment program

- creation and development of an innovative model of advanced professional development of scientific and pedagogical staff, including in the field of lifelong

learning;

- strengthening partnerships with the real economy sector, state bodies for the formation of an order for lifelong learning programs, the development of a partner network;
- improving the content and technology of education;
- development of a system for ensuring the educational services quality;
- improving the management efficiency in the education system;
- improvement of economic mechanisms in the education field.

Thus, the main goal of creating a system for managing lifelong learning as a form of protection of the educational space should be to ensure conditions for satisfying the needs of citizens, society and the labour market in quality education by creating new institutional mechanisms for regulating education, updating the structure and content of education, developing fundamental and practical focus of educational programs, the formation of an innovative system of lifelong learning.

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INFORMATION SECURITY OF TEENAGERS ON THE INTERNET

Tatiana Opalyuk,
Doctor of Sciences (Pedagogical), Associate Professor,
Kamianets-Podilskyi National University named after Ivan Ogienko,
Kamianets-Podilskyi, Ukraine

At the present stage of social development, a result of the rapid expansion of new technologies, the Internet and online communities have become a common and integral part of society. They are characterized as an important part of modern social reality. With their help, millions of people every day without any effort have a chance to maintain existing social connections or engage in the search and development of new ones. Cyberspace is a continuation of real life. It is affordable, fast, simple, user-friendly and is complemented with new features and additional services. Possibilities of virtual communication in such circumstances are practically limitless.

Modern information and communication technologies are opening extraordinary prospects for people. Granting access to multiple vectors of information allows you to acquire social knowledge, gain social experience and realize personal potential in the shortest possible time. Simultaneously, the information presents numerous risks and dangers in a person's life. Due to the enormous amounts of data being received, it is becoming more and more difficult for people to navigate the flow of information. Acquiring the necessary material whilst avoiding threat and manipulation of consciousness and behaviour is a challenge [2, p. 23].

Many scientific works touch on various aspects of interpersonal interaction online, including works by such authors as R. Amichai-Hamburger, O. Asmolov, O. Bayme, V. Barnes, V. Bychkov, D. Walter, O. Webb, K. Witty, K. Joinson, A. Zhichkin, O. Kaminskaya, N. Karpitsky, O. Carr, L. Kompantseva, D. Konidzh, I. Korsuntsev, R. McKenna, N. Mankovskaya, A. Orlov, U. Papacharissi, D. Postemes, A. Wright, G. Rapps, R. Tanis, K. Utz, A. Tsvetkov, N. Tsvetkova, and others.

The beginning of the 21st century is characterized by the development of new information and communication technologies, causing the transformation of social reality and leading to changes in society. Special importance is placed on the intensive accumulation of information and its distribution from the Internet. It has become one of the leading means of socializing teenagers in today's social-cultural conditions.

New information technologies increase the opportunities for adolescents to find educational information, cultural self-improvement, acquaintance with traditions of different countries, communication, a platform to discuss their problems and more. Today, the Internet is becoming a social space for teenagers in which they satisfy the needs of independence, self-affirmation, and expansion of social contacts. Along with many benefits, the Internet has a significant amount of risks that teenagers face while operating in the virtual space. They are one of the less protected target groups since teenagers have not fully formed the ability to collect, analyze and compare information comprehensively.

Formation of safe behaviour in the information society is one of the components of the social policy of the state, as evidenced by the Laws of Ukraine: «On the National Program of Informatization» (1998), «On the Protection of Childhood» (2001), «On Protection of Public Morality» (2003), «On Basic Principles of Information Society Development in Ukraine for 2007-2015» (2007), «On Fundamentals of Internet Regulation» (2011). They emphasize the need for the formation of legal and organizational conditions, for the development of information, the creation of free access to the information environment, the use and sharing of information, the protection of society against cybercrime, the dissemination of products that adversely affect users and the development of safe behaviour in them on the Internet [6].

Modern scientific thought expands the concept of security in the following directions: from national security to the security of groups and individuals; from national security to international security; from exclusively military security to non-military security - political; economic, social, etc.

Information security is a state of protection for the individual, society and for the state's needs for information regardless of internal and external threats. With regards to national interests, information security means the state of protection of the person's, society and state information resources, which ensures the implementation and the progressive development of their vital interests. In regards to the possible negative impacts of different types of information threats – it is the protection of information and supporting infrastructure against accidental or intentional natural or artificial influences that could cause harm to their owners or users. Information security also means the level of protection of the information environment and society. This ensures its formation, use and development for the benefit of citizens, organizations and the state as well as the neutralization of the negative consequences of informatization for society [5].

Today, the concept of «security» goes beyond national economies. The concepts of «global security» and «international security» are introduced and studied in the scientific sphere. The relationship of these concepts with national security and the security of the lower levels - regional, local (enterprise security) and individual is analyzed. International security is a part of global security, which reflects the mega-level conditions for the coexistence of institutional structures. Under these conditions, each member of the world community is free to choose and execute his

or her development strategy in accordance with the principles of globalization. The security of the functioning and development of the economic system involves the interconnection of national security (macro-level), regional security (meso-level), local security (micro-level) and individual security (nano-level), where the security of the individual becomes crucial.

Issues of information security of the younger generation are one of the most important in the process of education and training. With the formation of scientific direction, information security is associated with the names of such remarkable scientists as V. Gerasimenko, P. Zegzhda, A. Malyuk, V. Melshkov, V. Khoroshko, V. Yarochkin, and others.

The issue of information security in pedagogical science is a new and poorly researched field of interdisciplinary knowledge. The methods of teaching and training information security at school to non-specialized specialists and teachers of computer science in particular, are developed by M. Abissova, O. Altuf'eva, L. Astakhova, V. Gritsik, I. Kirko, P. Lomasko, V. Polyakov, E. Tatova, and G. Chusavitina. The problem of providing information security students in the conditions of ZNZ is explored by M. Bocharov, T. Malykh, N. Sattarova, O. Fedosov, and others.

The development of information security, namely safe behaviour on the Internet, is an important area of practice in the international and domestic community. In the regulatory framework of Ukraine (Laws of Ukraine «On Education» and «On Promoting the Social Formation and Development of Youth in Ukraine», National Doctrine of Development of Education in Ukraine, Concept of Education of Children and Youth in the National Education System, National Program «Children of Ukraine») the development of safe behavior of the younger generation is identified as leading tasks of state development.

Ukraine endorsed a special session document in the interests of children at the UN General Assembly in 2002 entitled «A Child-Friendly World», which sets out a plan of action for a safe world for children. In 2008, Ukraine joined the celebration of International Safer Internet Day, which aims to bring together government, private and public organizations to raise awareness in society about the safe use of Internet technologies.

In order to develop the cyber network, ensure broad access for citizens and effectively use its opportunities for the development of national science, education and culture, the Decree «On measures for the development of the national component of the global Internet information network and the provision of wide access to this network in Ukraine» was issued. It defines the conditions for use of the Internet, the dissemination of purely objective information, the guarantee of information security and the protection of constitutional rights during activities on the Internet [6].

Communication has become an integral part of people's lives in all areas of activity. Mobile phones, computers and the Internet have expanded communication. Spatial and temporal boundaries have opened up new opportunities for

communication, education, work, leisure and creative self-realization.

Despite the positive role of modern communication tools and the Internet, there are certain risks that come with the use of information technology. The unsafe information space hides a particular danger for teenagers. The Internet may contain aggressive or socially dangerous content. Favouring the virtual world over the real one has a negative impact on the child's psyche and health. It does not only impair vision, posture and sleep, but also causes anxiety, irritability, social maladaptation and dependent behaviour.

The challenge is to teach children how to use the internet properly. Just as we teach children safety on the street and on the road in real life, we need to teach them safe behaviour in virtual life; on the Internet.

In order to evaluate the experience of preparing specialists for the formation of safe behaviour of teenagers on the Internet, M. Snitko analyzed the experience of the activities of the «Noone's Children Foundation» in Poland. The Foundation's activities are aimed at identifying measures to promote safe behaviour of teenagers on the Internet. The Foundation initiated child safety surveys on the Internet, which served as a basis for the implementation of the nationwide information campaign «Child on the Net». The purpose of the information campaign was to provide training courses for experts on the prevention of sexual exploitation of children on the Internet [6].

Thus, it can be argued that the Fund's leading activity is the training of specialists for the formation of safe behaviour on the Internet. This is significantly different from the leading aspects of the International Association of Internet, INHOPE hotline providers and the European Commission Safe Internet Program [6].

Ukrainian researchers studying the experience of international and foreign programs and associations (INHOPE International Association of Hotline Providers, Program of the European Commission «Safe Internet», «No one's Children's Fund», Center for Safe Internet in Russia, League of Safe Internet) identified the main activities in the formation of safe behaviour of teenagers. They are implemented at different levels of users safe behaviour development.

- creating policy at the international level on safe activities on the Internet;
- research on the problem of children's safety on the Internet;
- examining the risks of the Internet that teenagers experience when engaging in virtual space;
- development and supplementation of legislative documents aimed at regulating the processes of receipt information on the Internet network and its safe use;
- coordination of hotlines and advocacy of sending anonymous messages about illegal content on the Internet;
- fight against illegal content and spam and remove such content from the Internet;
- preparation of specialists for the formation of safe behaviour of teenagers on the Internet;

- informing Internet users about the threats and risks of virtual space;
- providing assistance to teens and parents in cases of Internet risk [6].

Analysis of the content of activities of international and foreign associations, foundations and programs show that today there are no clear recommendations for professionals and parents regarding the safe behaviour of teenagers on the Internet. The proposed measures are mostly not implemented in real life but through Internet networks. They do not have a systematic, complex nature, preventing the proper development of safe behaviour in adolescents.

The following organizations are working on the problem of forming safe behaviour of Ukrainian teenagers on the Internet:

- La Strada Ukraine International Women's Rights Center through an electronic hotline on child pornography;
- International public organisation «School of Equal Opportunities»; Microsoft Ukraine through Skarga.ua, Onland - Child Safety on the Internet and the Coalition for Internet Safety; Kyivstar company with the program «Child Safety on the Internet».

Thus, the analysis of international and domestic experience in the formation of safe behaviour of adolescents allows us to determine the similarities in the work of organizations, associations, foundations and programs. It is creating a policy on safe activity in the Internet at the national level, informing users about the features of the activity and risks on the Internet, sending information to «hotlines» about illegal content, training professionals to form a safe behaviours of adolescents on the Internet.

In our opinion, information provided within the framework of activities of non-governmental organizations and general education institutions is one of the components of the development of safe behaviour of adolescents on the Internet. It, provides a sufficient level of awareness to the users about the risks of the virtual activity but does not create a safe behaviour of teenagers as it requires the introduction of intensive work with them, their parents and social educators. We have attempted to highlight a number of measures not currently being implemented by Ukrainian organizations to regulate the activities of Internet users and to promote the safe conduct of adolescents on the Internet:

- coordination of websites and their content;
- creation of a single network of hotlines;
- fight against illegal content and spam;
- providing assistance to teens and parents in cases where they have fallen victim to threat on the Internet;
- development and implementation of comprehensive systematic programs for the formation of safe behaviour of adolescents on the Internet and self-realization of teens in real life, not in virtual space.

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APPLIED ASPECTS OF SOCIOLOGICAL RESEARCH IN THE FORMATION OF STATE INFORMATION SECURITY

Olena Schandrivska,
Ph.D. in Economics, Associate Professor,
Lviv Polytechnic National University, Lviv, Ukraine,
Svitlana Lykholat,
Ph.D. in Economics, Associate Professor,
Lviv Polytechnic National University, Lviv, Ukraine,
Vasyl Skupejko,
Doctor of Sciences (Economics), Associate Professor,
Lviv University of Business and Law, Lviv, Ukraine,
Mariana Vereskla,
Ph.D. in Pedagogic, Associate Professor,
Lviv State University of Internal Affairs, Lviv, Ukraine

Trends in information and technological shifts in the conditions of exacerbation of geopolitical competition have led to a radical transformation of the established world peacekeeping and stability system. An information component of the national country security has an acute relevance, which along with political, economic and military resources is considered as the reputational capital of the state and the basic

resource of domination of the recipient country. Political practice demonstrates that the information component of the national country security in the context of information and psychological confrontation is on the agenda in providing competitive non-military advantages and joined competitive positions of the state.

The understanding of the information national security component is facilitated by concepts whose primary purpose is to reveal a system of views, phenomena and processes. In particular, there is the doctrine of indirect action strategy (Sir Basil Henry Liddell Hart) [1], where preventive violations of the strategic stability of the enemy, including the psychological sphere, lead to disorientation and distortion of the confrontation area; soft power (Joseph Nye), which is realized through communicative influence that is persuasive and perceived by the recipient as an attraction rather than as a suppression (intrusion, violence, coercion), which is carried out by economic and military influence or even pressure (hard force); smart power (J. Nye, R. Armitage) [2] as an ability to turn resources into a strategy that contributes to the expected results, as well as a combination of two concepts of hard and soft forces; the theory of nonviolent action (Gene Sharp) [3] through the use of nonviolent political resistance and psychological methods of struggle in discrediting state regimes using public disobedience; rejection of economic, political and social cooperation; a strategy by J. Stein, R. Shaffransky, and O. Jensen, which confirms that conflict resolution is based on knowledge and information that should be seen as a weapon and purpose pursuing the conflict; the concept of cybernetic warfare by J. Arcville and D. Rondell [4] states that, in times of military conflicts, as well as their preparation, the information is crucial and it is a key to success in information and telecommunication networks. The analysis of concepts allows us to understand more deeply the actions of an enemy in the information sphere, the methods and means of conducting the hybrid war.

Thus, the modern megatrends are informatization and globalization as dominant characteristics of the formation of a single planetary society, which require a clear understanding of the regulations of information security, in general, and particularly in Ukraine. They expect the content transformation of the information war in accordance with the geopolitical situation of certain countries, development of innovative communication technologies and modern methods of conducting hybrid wars.

An activation of information security issues in Ukraine is caused by objective factors as Russian hybrid expansion, which extends to European countries, Great Britain, Central Asia, Mediterranean and Africa, other regions of the world. It is implemented within the strategy of neutralizing the impact of the external security environment, aimed at reducing the negative impact of western sanctions and expanding political support for Russia by countries that support pro-Russian orientation.

Instead, pro-Western orientation of a society is affirmed in Ukraine with its established attributes such as independence from the existing political situation, forming it as an element of political consciousness that is capable of making

significant social, political and economic transformations. Using Ukraine as a base for Russian expansion of its geopolitical ambitions, including a buffer zone of NATO, the Russian Federation is spreading opposition to positive developments in Ukraine, using existing instruments of hybrid warfare as in the military area (for example, annexation of Crimea); military operations in the certain areas of Donetsk and Luhansk regions; sabotage actions; enhanced naval presence and deployment of the information and economic component of the hybrid war by instigating separatist sentiment, energy pressure, pressure to land selling, large-scale informational diversions in the regions, and cyberattacks on critical infrastructure objects and other manifestations of cyber-expansion in the country.

Previously, information security has been seen as a state of interest security for an individual, the society and the state in the information sphere and free access to information [5]. But in the conditions of rapid expansion of Industry 4.0 including computer and telecommunication technologies on the one hand, and undeclared aggression from the Russian Federation against Ukraine (and other states), as well as strategic non-military interests from other states on the other hand, information security should be positioned rather as an information security management system prioritizing preventative measures to identify, prevent or eliminate the harmful influence of the information on interests of state, individual or society as a whole. It means that an emphasis in the protection system of information security shifts in the direction of activation of the recognition and neutralization of information threat subsystem. This allows you to view the information security of an object in the light of protecting it from information threats.

Hybrid expansion of the Russian Federation in the form of hybrid warfare requires a thorough analysis of the information component in order to understand the essence of information policy making and the internal security environment (fig. 1). As it can be seen from Fig. 1, the proposed scheme defines Ukraine's place under conditions of the Ukrainian and Russian confrontation as a subject of geopolitics in the information and communication sphere and as an object of information and communication influence by the pro-Russian and pro-European forces. This scheme outlines the main components of the information environment and identifies information security as a result of state information policy. At the same time, the analytical function of ensuring the information security of the state requires additional interpretation of the factors for the information state environment using SWOT analysis. It is worth noting that it is necessary not only to analyze the factors of the information environment, but also to obtain the results of simulation of possible scenarios for the development of Ukrainian and Russian relations, depending on the management decisions using the foresight methodology, which considers rational (analytical) and irrational (subjective) approaches, the proactive position of the subjects according to their variability (those that depend on management decisions) or invariance (those that do not depend on management decisions) of trends (political, military, economic, social, information ones) [6].

Analyzing information trends, such as the formation of a PR-campaign in Ukraine to resolve the Ukrainian and Russian conflict, is a variant trend, while the speed of obtaining reliable information in this matter is invariant.

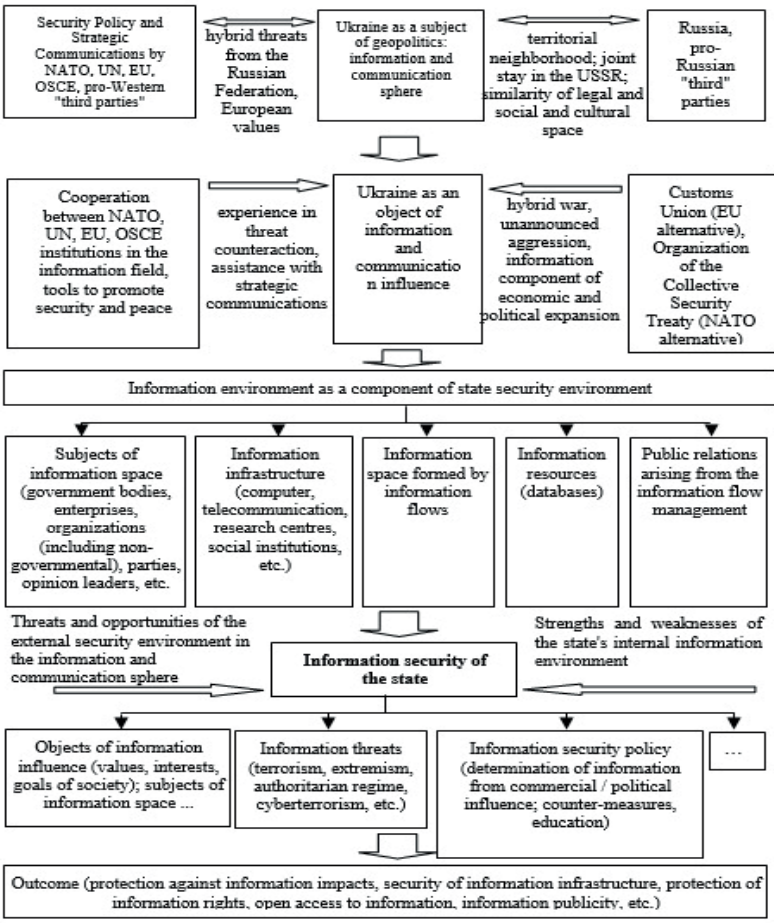

Fig. 1. Conceptual diagram of the essence and components of information security (developed by the authors)

The results of the SWOT analysis of the factors of the state information environment showed [7-10] that the weaknesses of the internal information environment are chaotic, multiple, unpredictable nature of risks and threats to information security. The Internet, as the dominant environment for manipulating public consciousness in the user segment of the next generation Z. Globalization and informatization of society form the sources of cyber-attacks, manipulation, loss

and information distortion. Commercialization and politicization of information policy provide it with a sign of subjectivity. Having closed the foreign language news channel (5 languages) UA.TV, which provided up-to-date information about Ukraine to foreign audiences. High dependence of information security on the country's military and political environment. The strengths are consolidation of Ukrainian society in the fight against the information component of hybrid expansion from the Russian Federation. The positioning of the hybrid war by the Russian Federation against Ukraine as an attack (direct military aggression) attracts the attention of the international community, the authorities and the civil society on the problem of its emergence and solution. Active development of the civil society institute, which forms a demand for social and political programs on TV and on the Internet. Effective policy of confrontation against the information propaganda policy by the Russian Federation is in the internal and external information market.

It is identified threats to the external security environment such as rising costs of cyber-attacks and protection in industrialized developed countries. Lobbying Russian interests in Western Europe to remove sanctions and recognize annexation of Crimea. Ukraine is shown as an important geopolitical point of the logistic system of the Black Sea region in the process of expansion of the Russian Federation on the European continent. Russian provocation of instability of the external security environment (in Eastern Europe; in the Middle East, South Asia, among NATO countries) causes fluctuations in political, economic and information conditions in Ukraine. Multidimensional active information maintenance of the Russian Federation's implementation of the hybrid warfare strategy with the domination of soft power over hard power. Russian pressure on Ukraine is to prevent its joining to NATO and the EU. The manipulation of public consciousness is carried out by the Russian Federation and its supporters. Export of alternative values of the Russian Federation and the spread of anti-liberal ideology. Acquisition of Ukrainian television space to promote pro-Russian information and psychological operations. Opportunities for the external security environment are to form a strategic communication system by creating a system of identification and assessment of information threats. Development of a TV foreign language system to support Ukraine's positive positioning among the international community. Purposeful behavior management of all target pro-Ukrainian audiences of potential information influence by the Russian Federation (based on applied behavior analysis, behavioral sciences, Big Data analysis and cognitive computations). Activation of Ukraine's participation in world geopolitical processes in order to protect the internal information space.

Conducting a SWOT analysis, we have found that the goal of activating the mass media and Internet resources is considered as a powerful information tool for the consolidation of society in the process of ensuring its information security. While the sociological survey was aimed at revealing a public opinion on the problem aggravation of Ukrainian and Russian relations, the priority media used

by respondents to obtain information, and also provided for segmentation of respondents by signs of involvement in Ukrainian and Russian relations. Sampling parameters were used for the research, such as sample type – simple random; type of indicator – average number; the general population (n, people) – finite. The sample size (n, people) is calculated by the formula 1:

$$n = (t2 * S2 * N) / (\Delta 2 * N + t2 * \sigma 2)$$

where t is the table value of the Student's distribution (for probability P = 0.95, t = 1.96); S is the variation found for the sample (=0.5); S2 is the variance of a random variable; Δ is the permissible margin of precision at 5% (Δ = 0.05).

The general population of Lviv region as of May 1, 2019 was 2516780 people [11]. Taking into account the part of the population aged 15-64 (69%) and 65 years and older (15%), the general population will be: 2516780*0.84 = 2114095 people (the survey was conducted in the period 01.01-17.01.2020).

The sample size of the research is:

n=(1,962*0,52*2114095)/(0,052*2114095+1,962*0,52)=384

It should be noted that the information obtained from the survey facilitates to understand the changes in Ukrainian and Russian relations and gain hypothetical knowledge of the situation in Ukraine using certain indicators, as well as obtaining a certain amount of information as a percentage of the analysis results. At the same time, a lot of reliable data and information concerning the Ukrainian and Russian relations on information security formation are generally missing or only available to a limited number of experts [12].

Google Trends service analyzes the keywords that respondents use in the process of interpreting Ukrainian and Russian relations, which include Russian aggression, hybrid warfare, information security, and social networks as the most common ones. The survey is selected as a tool for the research, the survey tool is questionnaire, the distribution channel is Google Forms.

As a result of the survey, the question «How much are you interested in the problems of the development of Ukrainian and Russian relations?» received the following answers and the largest proportion of respondents (48.5 %) said that encountering some information about Ukrainian and Russian relations, their attention was drawn to them, 31.7 % were sometimes interested in developing relations between the Russian Federation and Ukraine, 12.9 % are constantly searching for information and only 6.9 % of the information is ignored.

As the main event that led to the deepening of the crisis in Ukrainian and Russian relations, the dominant number of respondents (42.6 %) associate with the annexation of the Crimea by the Russian Federation (2014); 22.8 % – with the Ukrainian preparation of Association Agreement with the EU (2013); 16,8 % – with military actions in Donbass; 8.9 % – with nuclear disarmament of Ukraine

in accordance with the Budapest Memorandum (1994); 4.7 % as a conflict over the division of the Black Sea Fleet based in Crimea (1991); 4.2 % cannot answer.

The top three sources where respondents most often get information on relations between Ukraine and Russia are TV (49.5 %); online publications in Internet web applications (21.6 %); social networks (14.3 %); newspapers, magazines, radio broadcasts, in-service messages etc. (14.6 %).

Among the television channels covering Ukrainian and Russian relations, the most frequently viewed by the respondents are Priamyi (Direct channel) 38.3 %; 112 Ukraine 26.8 %; ZIK 14.0 %; NewsOne 8.9 %; ICTV 4.7 %; other channels 7.3 %.

Among the social and political programs that report Ukrainian and Russian relations, the respondents trust such talk shows and analytical programs as talk show «Echo of Ukraine» with M. Ganapolsky on Priamyi channel 19%; talk show «Live» (hosted by S.Orlovska and M.Veresen) on Priamyi channel 14.8 %; the talk show «Veresen + 1» with M. Veresen on Priamyi channel 10.9 %; talk show «HARD from Vlashenko» on ZIK channel 15,9 %; talk show «Pulse» on 112 Ukraine channel 11.5 %; talk show «Evening Prime» on 112 Ukraine channel 11.2 %; talk-show «Right to Power» (hosted by Natalia Vasylchuk) on 1+1 channel 8.9 %; talk show «Details on Priamyi» with V. Frolova and O. Blyznyuk 3.9 %; other channels 3.9 %.

Respondents found extremely low activity in listening to radio programs. The distribution of respondents who listen to news from radio stations is as follows: Radio NV 13 %; Ukrainian FM-format of radio stations 11,2 %; UA: Ukrainian Radio 7.3 %; Radio Ukraine International 3.9%; Public Radio 3.9 %; The first channel. Ukrainian Radio 7.8 %; Radio Svoboda 8.9 %; others 4.7 %; and 39.3 % don't listen to radio broadcasting.

The distribution of respondents visiting social networks is established in order to receive news about Ukrainian and Russian relations. 27,6 % of them use Facebook; 10.7 % – Instagram; 16.9 % – Telegram; 8.6 % – Twitter; 31.3 % – YouTube; 4.9 % – others.

On the question «What information site do you use to read news about Ukrainian and Russian relations», respondents answered that 14.8 % from korespondent.net; znaj.ua 7.0 %; ua.news 18.2 %; UKR.net 21.9 %; 24TV.ua 14.8 %; other 11.2 %; 12.1 % do not seek information on this topic.

74.2 % of the respondents believe that the leadership of Ukraine does not make enough efforts to return Crimea.

Concerning the consequences that may occur as a result of the adoption of the Law of Ukraine on the special order of local self-government in certain districts of Donetsk and Luhansk regions (2019), the respondents' opinions were capitulation of Ukraine with further annexation of territories in certain districts of Donetsk and Luhansk regions under the scenario of Crimea annexation 50 %; autonomy of regions in Ukraine 14.8 %; maintaining the international sanction regime for the purpose of secession of Crimea 7 %; deployment of peacekeeping operations in certain districts of Donetsk and Luhansk regions to control state borders and the

territory of Ukraine 3.9 %; completion of military operations in Donbas 18.2 %; the others 6.1 %.

The distribution of respondents concerning professional performance of their responsibilities within the Donbas hostilities is the following: 9.9 % as volunteers; 11.7 % as combatants; 17.4 % as activists of certain social groups; 10.4 % as public or political figures; 50.6 % are not related to the military action in Donbass.

On the question «Do you review foreign-language channels of foreign countries for the purpose of obtaining information of alternative interpretation regarding Ukrainian and Russian relations», 58.3 % of the respondents constantly review; 27.4 % review in case of threats in Ukrainian and Russian relations; 14.3 % do not view at all.

Thus, considering the basic concepts of conducting information wars, it is established their practical application and effectiveness in the process of propagation of undeclared aggression by the Russian Federation. The analysis of the information and psychological component in the Ukrainian and Russian confrontations confirmed the deepening of information dysfunctions of civil society.

The expansion of Industry 4.0 and the presence of misinformation and psychological influence by the Russian Federation on Ukrainian information security requires increased attention to preventive measures for identifying threats by creating a subsystem for their recognition and neutralization.

The proposed conceptual scheme of the essence and components of information security defines the place of Ukraine in the conditions of Ukrainian and Russian confrontation and promotes a deeper understanding of the actions that take place.

In the direction of determining the applied aspects of the impact of sociological research on the formation of information state security, it is shown that the rapid development of global political and geopolitical competition requires the formation of a system of information state security, where a strategic national resource should be information resources, network infrastructure and communication technologies.

According to the results of the conducted SWOT analysis of the factors of the information state environment, it is established that the tendency of globalization and informatization of the society forms the basis for the emergence of risks in the information environment.

It is thought that enhancing the activity of mass media and Internet resources should be a powerful information tool for the consolidation of society in the process of ensuring its information security. It is proposed to identify destructive transformations of national values in the information sphere by conducting sociological surveys and public opinion analysis. Support for the representativeness of the statement is provided by the identified trend that the Internet environment is dominant in the field of manipulation of public consciousness, especially in the user segment of the new generation Z.

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INFLUENCING FACTORS OF SECURITY MEASURES ON THE FORMATION OF PERSONNEL POLICY IN LOCAL SELF-GOVERNMENT BODIES

Mykola Syomych,
Doctor of Sciences (Economics), Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine,
Oleh Demydkin,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

In the context of numerous reforms that are taking place in our country we can face the lack of legal, economic, political, managerial, social, humanitarian, psychological and pedagogical awareness, which is of high importance for regulatory, organizational, administrative, consultative and advisory support to the effective work of governmental institutions. The number of officials in local self-government bodies, who have received education not aimed at pursuing their professional activity, is still significant. The turnover of staff is increasing.

All stated above necessitates the urgent need for specialists in public management and administration, highly qualified managers and local governmental officials. They should be trained in modernized authorities, have the systematic theoretical knowledge; possess practical skills and abilities to solve current problems and priority tasks of territorial communities and the country in general. They also have to be able to provide effective targeting management in marketing conditions, adhere to the European level of public services and ensure their quality.

In the light of recent events in Ukraine, the issue of establishing and improving the Institute of Public Services becomes especially urgent. As it is a determining factor in the realization of citizens' rights.

Nowadays, the level of public trust in government structures is extremely low. Taking into account that Ukraine is positioning itself as a democratic country, an important factor in raising the level of confidence is the improvement of mechanisms of relations between the state and citizens. The absence of democratic traditions in the relationship between the state and the citizens, institutional standards of professional activity of local self-government bodies and civil servants, the actual unpreparedness of local public officials and civil servants to develop and implement effective policies adversely affect the public's confidence in the public authorities and appreciation of the state [8].

Therefore, sensing the pressure of society, legislators pass a number of laws, including anti-corruption laws, which force the authorities to be «closer» to the people, allow to analyze the work of public authorities and influence the situation in territorial communities [11].

At this stage, the concept of e-government is emerging. It plays an important

role in the way of establishing democracy and transparency of the state not only to its citizens, but also to the world community [9].

The emergence of e-government is associated with the changes in government models, that were taking place in the late XX century in many developed countries. These changes in government models have been carried out to make the management system relevant to the economic, social and informational transnational challenges of the times. The main shortcomings that have necessitated the reform of the whole system of public administration are the crisis phenomena in public administration (bureaucracy, excessive centralization, unjustified hierarchy), unification of management and administration, as well as the costly nature of public administration [2].

Today, there are several competing approaches to defining «e-government», none of which has yet been granted official status.

It is suggested to take as a basis one of the most widespread concepts of «e-government». It is formulated by the Institute of Modern Development jointly with the Institute for the Development of the Information Society.

«E-government is a system interacting public authorities with the population. They are based on widespread use of information technologies. The Internet is included as well, in order to increase the accessibility and quality of public services, reduce the time of their provision, and reduce the administrative burden on citizens and the organization conditioned on their receipt» [10].

E-government is the only infrastructure for interdepartmental automated interaction between public authorities and local governments among themselves, with citizens and businesses. The introduction of e-government involves the implementation of a comprehensive and individualized approach to the provision of public services to users while their removal from direct contact with public officials. E-government is one of the determining factors and catalyst for administrative reform. It can serve as transformation in the activities of state and local self-government bodies, their interaction with users and private structures.

In general e-government has its components – the spheres or industries within which there are a certain interaction and the systems of service delivery. In addition to e-Government, these include e-Parliament, e-Justice, e-Business, e-Learning, e-Health [7].

E-Parliament is a new form of participation of citizens and civil society organizations in law-making processes. It also involves organizing the activity and interaction of the subjects of legislative initiative and other participants of the legislative process on the basis of using ICT at all stages of law-making. They start from identifying the needs for the legal regulation of certain public relations, planning the drafting and developing of the bill prior to its submission and consideration in the legislative (representative) body, signing and publishing the law.

E-Justice, in its broad context, is understood not only as e-justice, but also as a combination of all related processes, including the organization of court activities

not related to the administration of justice (fig. 1).

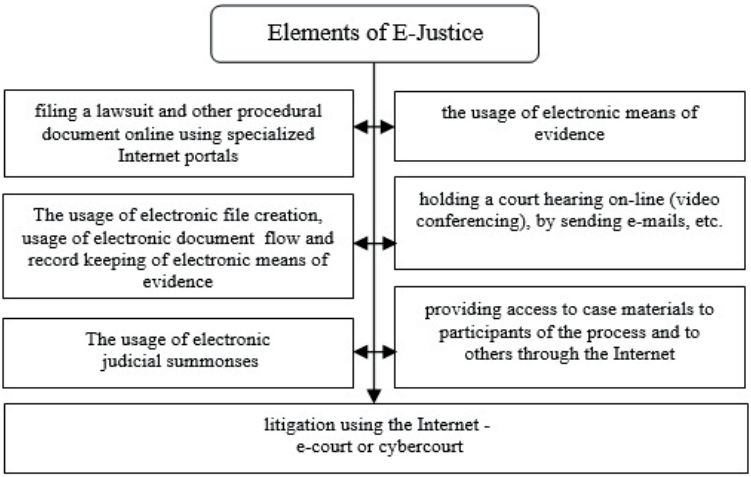

Fig. 1. Elements of e-justice [created by the author on the basis of 4, 6, 10]

E-Business is any business activity (elaboration and production of products, integrated production management, energetic, material, financial, labor or risk management, sales, etc.), which is carried out using ICT.

The most important component of e-business is e-commerce – any form of agreement whereby parties interact with the use of ICT, systems and networks.

The main types of commercial activity include trading platforms (online exchanges, auctions, catalogs of goods and services), electronic procurement management, financial services (online payment systems, exchange offices, online banking, online trading), investment funds, internet- shops, information brokerage, online information business (periodicals, news sites, etc.), communications and communication services, web-mastering (web-site creation, web-programming, web-design), internet franchising, and internet leasing and more.

E-Education is a comprehensive system for providing all education services at national or regional level. Such services include obtaining ICT education, providing information on educational institutions and training organization, nationwide certification (testing), organization of admission to educational institutions, etc. An important component of e-Education is distance learning – a learning process in electronic form via the Internet.

E-Health is a system of management of state and regional medicine, It is based on ICT and regulatory and methodological base, which allows to realize the whole complex of providing medical care to the population. Its component is telemedicine – a set of organizational, technological and financial measures that provide the activity of a system of remote consultative and diagnostic medical service. With

this service the patient or the doctor who directly exemines or treats the patient, receives remote consultation of a medical specialist using modern ICTs [3, C. 85].

The aim of implementing e-government in Ukraine is to achieve European quality standards of electronic public services, openness and transparency of the authorities for all the people, citizens, non-governmental organizations and business structures.

All the above is not about trivial informatization of the existing system of public administration, but about the use of ICT opportunities to become a state that is oriented to meet the needs of the individual and the citizen (fig. 2).

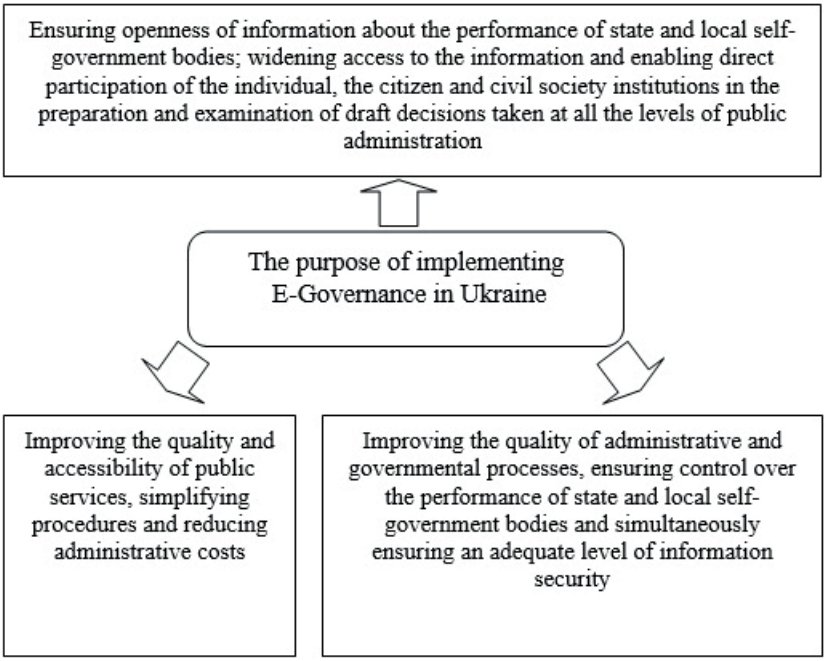

Fig. 2. The purpose of e-Governance in Ukraine [formed on the basis of 7, 10]

E-governance in classical understanding consists of several basic models or interrelated spheres. They reflect the relationships and the interaction between the subjects of public life. Models of e-governance by types of stakeholder interactions are listed in table 1.

In the context of Ukraine's integration aspirations, the introduction of European norms and standards for the implementation of state information policy, the use of domestic and foreign experience are of particular importance. The implementation of the e-government system allows the authorities to adjust administrative processes in a certain direction, to improve the organizational, legal and resource mechanisms of public administration [1].

Table 1

E-governance models by stakeholder engagement types

Models of e-government and their designations		The subjects of the interaction
G4G	government for government	Public authorities and levels of government
G4B	government for business	Public authorities and enterprises (businesses)
G4C	government for citizens	Public authorities and citizens
G4E	government for employers	Public authorities and civil servants

Legal support is one of the prerequisites for the creation and proper functioning of e-government. It aims at regulating relations in the sphere of informatization in terms of providing information needs of the society, protecting the rights of consumers of e-services and establishing competence. It also coordinates the activities of state bodies in terms of functioning e-government.

There is a need for a range of documents that will set out the general frameworks, strategies and specific standards for e-government and the sphere of creation and use of information and communication technologies in public administration, between governmental entities and citizens. A perfect legal framework will help to eliminate the backlog of legislation in this area from the needs of society and the nature of public relations. It will also assist in creating a coherent legal system that is in harmony with generally recognized norms and principles of international law [8].

Therefore, based on the above, it is safe to say that the state has made a huge legislative step towards the approach of public authorities and their transparency to citizens. However, it is worth noting here that with all the aspirations of most heads of local governments to comply with the above laws, there is a number of compelling circumstances.

The first and most important of these is the lack of skilled workers who will enforce the laws in the sphere of providing public services. This problem is particularly acute in rural areas. Of course, such services can be «purchased» by entering into an appropriate agreement. However, financial resource constraints make the above difficult.

Therefore, the heads of local governments literally declare hunting for skilled workers. They promote their staff development in every way or carry out retraining of employees and apply incentive payments in order to increase the motivation for highly professional, effective and quality work within the payroll.

Thus, the quality of personnel policy pursued by the heads of public authorities directly affects the performance of its employees. Consequently it affects the performance of their government functions and powers to meet needs of citizens, development of territorial communities and the state as a whole.

Democratic restoration and reconstruction of Ukrainian statehood leads to the search for a new model of local self-government. It should be based on the

concept of effective / open / democratic governance that has become part of the European administrative space. Thus, in 2001, the European Commission approved the White Paper on European Governance, which identified five basic principles of good governance, namely openness, citizen participation, accountability, efficiency and coherence. Each principle is essential for establishing effective democratic governance. Such principles are not only the basis for the functioning of the public administration system in the EU Member States, but also are applied at all levels of government – international (European), national, regional and local.

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FORMATION OF SCHOOL HEADMASTERS' MANAGERIAL COMPETENCE TO ENSURE THE INTERNAL SYSTEM FOR EDUCATION QUALITY ASSURANCE

Ostap Bodyk,
Ph.D. in Philology, Associate Professor,
Associate Professor of English Philology Department,
Mariupol State University, Mariupol, Ukraine,
Viktoriya Lykhopiy,
Head of the Postgraduate and Doctoral Studies Department,
Senior Lecturer of Finance and Credit Department,
Poltava State Agrarian Academy, Poltava, Ukraine

A modern approach to substantiating the education structure and content is being carried out today in the context of decentralized management, expanding the powers of comprehensive secondary schools (CSS), developing education variability and differentiation, individualizing instruction, increasing the role of research activities, expanding range of educational services taking into account social partnership. In general, these processes are aimed at Ukraine's integration into a single European educational space, but, unfortunately, at present they have some negative consequences: the emergence of an imbalance in the education content and integration, pupils' overload, the decline in the quality of the educational process and the level of graduates training.

The burst of innovative activity in education in recent years indicates that Ukrainian education has been actively involved in the search for answers to the questions posed by the current situation in the international educational services market. It is primarily about modernizing the education content, changing training models, approaches to forming the management structure. In the educational process, ideas of humanization and humanitarianization are becoming more and more embodied.

Currently it should be noted that as a result of reducing administrative pressure

on educational institutions the intensity of teachers' activity in the field of innovation has increased, while the results achieved are not fully consistent with the goals set, therefore, it is impossible to talk about diagnostic goal setting [7]. In general, updating education is often unsystematic. Due to the thoughtlessness and haste in the implementation of many of the useful undertakings, far from increasing the education quality has even decreased.

The reasons are insufficient consideration of the laws development, logical connections, internal orientation of educational systems, insufficient study of theoretical and methodological foundations in the education management. The materials of our theoretical study confirm that in the intraschool management theory the issues of a rational combination of functional-linear and program-targeted quality management structures are not completely resolved (Ye. Hrykov, M. Kirichenko, V. Pikelna, T. Sorochan, G. Yelnikova and others). This also applies to issues of distribution and correlation of the main management functions between the management subjects. Existing achievements do not yet determine the formation of such a promising area of pedagogy as the education quality management, but sufficiently create theoretical prerequisites for this, they are an important source of transformation of existing knowledge into higher order knowledge. The content analysis of literary sources, the real practice of managing the educational process quality in the system of general secondary education made it possible to formulate the main contradictions explaining the relevance of the study between: a) the increased demands of all spheres of Ukrainian society for the education quality and the slow development of the modern system of general secondary education, the dominance of traditional ways and approaches in it; b) the need for continuous monitoring of the quality of various elements of the educational process and the lack of common assessment methods and procedures, as well as generally accepted methodology for measuring the quality parameters of objects and processes.

It should be noted that the problem of quality assurance in the activities of educational institutions received a regulatory basis for the first time in the Law of Ukraine «On Higher Education», which entered into force in 2014 (Article 16) [8]. But it was only about higher education institutions. And only in the Law of Ukraine «On Education» [7], adopted in September 2017, the definition of the essence of the concepts «quality of education» and «quality of educational activity» was first recorded, and the approval of the system of education quality assurance as an education system integral component was codified generally.

In the scientific and pedagogical literature there are many different definitions of quality in education, which indicates the complexity and versatility of this concept. Therefore, the vision of education quality is not a unitary concept, but provides for multidimensional perspectives based on the recognition of the fact that education has not only an instrumental narrow practical goal.

The classic definition of educational quality was given by Philip H. Coombs: «Qualitative dimensions means much more than the quality of education as

customarily defined and judged by student learning achievements, in terms of the traditional curriculum and standards. Quality, as viewed here, also pertains to the relevance of what is taught and learned – to how well it fits the present and future learning needs of the particular learners in question, given their particular circumstances and prospects. It also refers to significant changes in the educational system or subsystem itself, in the nature of its inputs (students, teachers, facilities, equipment, and supplies); its objectives, curriculum, and educational technologies; and its socioeconomic, cultural, and political environment» [3, p.105].

According to some authors, the education quality can be determined in terms of the goals that are achieved through education. And some authors (Hans F. M. Crombag) propose to use the term «educational efficiency» instead of the term «quality of education» [4].

Del Goddard and Marilyn Leask defined quality as simply satisfying client requirements. The list of education clients includes pupils, parents, teachers, employers, and the government. Of course, each client has a different view of the quality characteristics [6].

VVOB (Flemish Association for Development Cooperation and Technical Assistance) defines quality education as one that provides all pupils with the opportunities, they need, to become economically productive, develop sustainable livelihoods, contribute to the development of peaceful and democratic societies, and enhance the individual well-being [5].

The Law of Ukraine «On Education» defines «the quality of education» as «compliance of the learning outcomes with the requirements established by law, the relevant standard of education and / or the agreement on the provision of educational services», and «the quality of educational activities» as «the level of organization, provision and implementation of educational process, ensures that individuals receive a quality education and meets the requirements established by law and / or an agreement on the provision of education services» (Article 1, Part 1, paragraphs 29 and 30) [7]. Therefore, the quality of education is considered in the indissoluble unity of the process (activity) quality and the result quality [10, p. 44]. The quality of the educational process (activity) is an integral component of the education quality, which depends on the educational environment quality, includes the qualitative and quantitative characteristics of the educational process, the quality of teachers' professional competence, the quality of organizational and managerial competence [2].

It is important to note that quality management is based on the principles of comprehensive quality management (Total Quality Management) and involves the use of science, effective technologies for the goods and services production. Quality management is proven for decades and the world-wide-recognized ideology of ensuring the continuous improvement of product quality, gaining advantages in a competitive environment as a fundamental principle for the production and the market development and self-organization, in particular in the education field.

To date, the implementation of quality management and its technologies as a means of modern effective management of comprehensive secondary school (CSS):

• is a requirement of education law;

• provides for a shift of emphasis from external management to internal management;

• requires the establishment and functioning in all CSS of an internal system for education quality assurance.

In our opinion, the heads of CSS should take into account that the concepts and quality management procedures are defined by international and national standards in the field of quality management, the main of which are:

• State Standard of Ukraine. 2008. ISO 10005:2007: Guidelines for quality plans (ISO 10005:2005, IDT).

• State Standard of Ukraine. 2013. ISO 9004:2012: Managing for the sustained success of an organization. A quality management approach (ISO 9004:2009, IDT).

• State Standard of Ukraine. 2016. ISO 9000:2015: Quality management systems. Fundamentals and vocabulary (ISO 9000:2015, IDT).

• State Standard of Ukraine. 2016. ISO 9001:2015: Quality management systems. Requirements (ISO 9001:2015, IDT).

It is obvious that as a result of studying these and other documents and materials on quality assurance issues, heads of CSS should form a holistic and uncontroversial view of quality management as a new ideology of managerial activity, as an «axis» on which all their managerial actions should now be «strung». This view consists of the following important points:

1. State Standards of Ukraine in the field of quality management [11 - 14] are applicable to all organizations, regardless of their size, complexity and business model. The goal is to increase the awareness of organizations seeking to achieve sustainable success through the implementation of a quality management system regarding themselves, their responsibilities and obligations to clients, stakeholder expectations, and also to achieve satisfaction with their services.

2. These standards do not in any way require:

• uniformity of structure of different quality management systems;

• harmonization of documentation with the structure of these standards sections;

• use of these standards' specific terminology within the organization;

• their use for the purpose of monitoring, since they are not regulations.

Instead, these standards provide important guidelines for achieving sustainable success by any organization in a constantly and rapidly changing environment, and subject to the growing influence of service clients and all stakeholders on the organization itself and its further history.

The potential benefits to CSS of implementing quality management include:

• the ability to provide an educational service that meets the personal educational needs of clients, and also meets applicable requirements;

• creating opportunities to increase satisfaction of educational services clients;

• taking into account the risks and opportunities associated with the environment and goals of the educational institution;

• ability to demonstrate compliance with established requirements for the internal system for education quality assurance.

The need to introduce the internal system for education quality assurance in CSS is a requirement of the legislation (Article 41, Parts 2, 3 of the Law of Ukraine «On Education») [7]. The purpose of establishing and functioning of the system for education quality assurance in Ukraine is defined as «guaranteeing the quality of education; … continuous and consistent improvement of the education quality» (Article 41, Part 1) [7]. In addition, the education recipients have the right to «quality educational services» (Article 53, Part 1), and the head of the educational institution within the limits of the authority granted to him «ensures the functioning of the internal system for education quality assurance» (Article 26, Part 3) [7].

In the field of general secondary education, there is no established systematic practice of using quality management, and the norms of modern legislation on education and the results of pedagogical research on issues of education quality assurance are not harmonious with international and national standards in the field of quality management. This circumstance objectively determines the risks to the creation and functioning of the internal system for education quality assurance in CSS, necessitates an adoption of compromise solutions and replace the real systems with their models at the initial stages of implementing the internal system for education quality assurance. It also determines the need for scientific research and continuous improvement of already implemented internal systems for education quality assurance.

The development and use of an internal system for education quality assurance in CSS without implementing quality management in it is meaningless and will not guarantee high results, since it will be the use of a new tool in the old conditions and without an understanding of the ideology and technologies of modern management.

Attempts to use quality management and internal system for education quality assurance in an educational institution without regard to the achievements of pedagogical science and successful practice are conservation of the past and have no future prospects.

The internal system for quality assurance of CSS performs the following functions:

• covers the actions by which an institution identifies its goals and determines a set of processes and resources needed to achieve the desired educational quality outcomes;

• manages the quality assurance processes and resources that are needed to meet the personalized educational needs of educational service clients and obtain outcomes for stakeholders;

• optimizes the use of resources;

• provides means of identifying actions to address unforeseen consequences in

the provision of educational services.

Regardless of the CSS specifics, the development and implementation of an internal system for education quality assurance is a direct and undeniable duty and vocation of the director of the educational institution as the first manager of the organization, and this matter should not be delegated to either deputy heads or other pedagogical workers or structural units, employee associations and the like.

That is why the director of the educational institution should be the first and very thoroughly to study, in addition to the legislation on education, the State Standards of Ukraine «Quality Management Systems» [12 - 14], to learn from the specialized literature on quality management issues, to review the experience on the establishment and ensuring the functioning of quality management systems of different organizations and educational institutions in particular. In this work assistants will be methodological recommendations [1; 9] and a large number of officially published materials on the quality of products, services and processes on the Internet.

However, studying the State Standards of Ukraine «Quality Management Systems» is not an easy, since the directors of educational institutions lack experience and skills in working with such documents, and the provisions of these documents are general, need to be «detailed» taking into account the peculiarities of such a service provider as modern CSS, achievements of pedagogical science and practice.

The results will be significantly higher if the director of the educational institution undergoes special training in the educational (certification) program on quality management. Constant consultation with specialists, for example, quality experts, will also be useful.

However, the lack of specialized training or constant consultation with a quality expert is not critical, since the stated goals can be achieved through self-education.

The result of this should be the «acceptance» by the director of the educational institution of the values of quality management and the awareness of the need to implement an internal system for education quality assurance, as well as the existence of a holistic primary understanding of management activities in the field of education quality.

The introduction of an internal system for quality assurance is the school's strategic decision that can help improve its overall effectiveness and provide a solid basis for initiatives to ensure its effective and sustainable development.

Therefore, in place of the ideology of «standards management», which was widely used in the second half of the twentieth century and was not focused on the individual needs of service clients, comes the ideology of «quality management». This ideology in the field of education is capable of satisfying the personalized educational needs of educational service clients and the expectations of the stakeholders, involves compliance with national standards in the field of quality management, harmonized with international ISO standards, using the scientific

achievements and the best international experience.

Thus, the internal system for education quality assurance of WESA is the main quality management tool that can ensure a constant increase in the level of the quality of education (educational services) and significantly improve the quality of educational activities (business excellence) of an educational institution.

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GAME-THEORETIC MODELING OF NEGOTIATIONS BETWEEN UKRAINE AND RUSSIA IN A HYBRID INFORMATION WAR

Anatolii Shyian,
Ph.D. in Physics and Mathematics, Professor,
Vinnytsia National Technical University, Vinnytsia, Ukraine,
Anzhelika Azarova,
Ph.D. in Technical Sciences, Professor,
Vinnytsia National Technical University, Vinnytsia, Ukraine,
Liliia Nikiforova,
Ph.D. in Economics, Associate Professor,
Vinnytsia National Technical University, Vinnytsia, Ukraine,
Veronika Azarova,
Member of Small Academy of Science,
Vinnytsia National Technical University, Vinnytsia, Ukraine

Today the real plans of the government to return Crimea and normalize the situation in Donetsk and Lugansk regions are unknown to the people. This makes it impossible to attract a wide range of scientists, analysts and experts to discuss the situation and to the formation of public opinion. It seems that the government focuses only on foreign sanctions and has very little effect on changing the situation for the better. This position is especially evident in relation to Crimea: for the public of Ukraine, the government offers nothing but slogans such as «Crimea will be Ukrainian».

At the same time, the situation around Crimea and the Donetsk and Lugansk regions is becoming increasingly aggravated. As a result, continued disregard by the government of current problems, hiding from the public plans to reduce tension leads to increased tension among the population of Ukraine.

Thus, the development of approaches to the project of returning the Crimea and normalizing the situation in Donetsk and Lugansk regions is an urgent scientific problem and its practical value for Ukraine is to ensure national security and further economic and social development

The collapse of the USSR has led to the fact that the system of agreements on collective inviolability of the borders of the countries which was formed during the Cold War [1] has lost its validity. Initially, new independent Baltic countries –Estonia, Latvia and Lithuania were created. Other countries of the former USSR gained independence as a result of its destruction as a sovereign state. German unification happened. The disintegration of Yugoslavia and the creation of independent countries in its territory. This was accompanied by direct hostilities. Finally the peaceful breakup of Czechoslovakia into two new separate countries – the Czech Republic and Slovakia – was happened.

Thus, from the early 1990s to the present day, Europe's political map has been changing almost constantly.

The Russian Federation has also created several situations that have led to the creation in the independent countries – Moldova and Georgia – the separate regions outside the legal field of these countries. However, the Russian Federation used direct military aggression only in Georgia. In Moldova, the situation is similar to the situation in Ukraine for certain regions of Donetsk and Lugansk regions.

Thus today Ukraine doesn't governed by international legal law. This right allows for direct military aggression which is aimed at:

1) annexation of the territory that previously belonged to another country (Crimea);

2) the division of a previously independent country into separate independents legally (Yugoslavia) or in fact (Georgia);

3) the creation of non-controlled territories in the previously independent countries (Prydnistrovie in Moldova, Kosovo in Serbia, Abkhazia and South Ossetia in Georgia, and now Donetsk and Lugansk «independent republics»).

This compels Ukraine to find the new opportunities that can be based on both multilateral international treaties and bilateral international treaties.

Today the only multilateral agreement which Ukraine can use is the Budapest agreement. It was signed in 1994 by governments of nuclear power countries and had guaranteed the territorial integrity of Ukraine. One of the signatories of this agreement was the Russian Federation. Opportunities and prospects for Ukraine's activities in this direction were offered in detail in [2].

The so-called «Minsk Agreements» as the course of events over 2 years has shown are legally inoperative. As experience has shown in the implementation of these agreements, Germany and France are unable to enforce them. Now there is no mechanism for compliance the Minsk Agreements: neither to verify their implementation nor to be held responsible for their failure.

Economic and political sanctions imposed by a number of countries (for

example, for Russia) have also proved ineffective. Moreover, today they are too burdensome for the economies of a number of countries, especially Europe. And today the European Union is abandoning political sanctions. For example, the PACE lifted the Russian Federation's exclusion from the organization.

A number of European countries are actively using direct agreements with the Russian Federation, despite the economic and political sanctions imposed on the European Union against Russia. For example, Germany continues its economic cooperation with Russia in the construction of the «Nord Stream 2» pipeline.

Thus, bilateral agreements today are a very effective means of reconciling the interests of states.

The purpose of the article is to build a game-theoretic model for analyzing the possibilities of bilateral agreements between Ukraine and Russia regarding the regions of Donetsk and Lugansk regions or Crimea that are not under control of Ukraine.

Theoretical and game model. Let's consider the situation for Ukraine and Russia regarding Donetsk and Lugansk regions or Crimea as a dynamic game.

The first step has to do the Ukraine because the current situation satisfies only Russia.

Ukraine may offer negotiations regarding Crimea and «Donetsk and Lugansk People's Republics» in a single package or separate on each of them.

The further presentation will be focused on negotiations on the Crimean region since negotiations on the Donetsk and Lugansk regions are already taking place. However, they are not bilateral, but multilateral, within the Minsk Agreements and the so-called «Norman Format» as part of Ukraine, Russia, France and Germany. A more detailed discussion will be made below.

We will not consider the format of negotiations or their structure. We will build a game-theoretic model to identify the strategy for which the interests of Ukraine and the Russian Federation will be agreed.

So it has been over 5 years since Crimea was annexed by Russia. During this time, a real program for the return of Crimea, apart from the hope of sanctions from foreign states, was not offered by the state authorities and the administration of Ukraine. At the same time the negative situations around Crimea that arise due to the necessity of functioning of the state of Ukraine (economic activity, relocation of military units, etc.) are only accumulating. The lack of mechanisms to resolve them not only leads to significant economic losses but also damages Ukraine's reputation and, in some cases, increases political tensions in Europe.

It should also be noted that no functionary of state authorities and government of Russia for many years in the future will even raise the issue of «return of the Crimea»: this would mean «political suicide» for him. And it is not only because of *V*. Putin or *D*. Medvedev. Their "successors" will also adhere to the current policy of belonging to the Crimea: public opinion «will not forgive» even statements about «return».

In general, there are three possible strategies for Ukraine (they will be referred

to as U).

Strategy U_1. To continue its present activities without offering any negotiations or steps on Crimea.

Strategy U_2. Propose approaches to resolving the conflict over Crimea and the Donetsk and Lugansk People's Republics by a single package.

Strategy U_3. To propose approaches to resolving conflict issues between Ukraine and Russia only in relation to Crimea.

There are such strategies for Russia (they will be referred to as R).

In response to Ukraine's strategy, U_1

Strategy R_1. To continue its present activities without offering any negotiations or steps on Crimea.

Strategy R_2. To propose their approaches to resolving conflict issues between Ukraine and Russia only in relation to Crimea.

We do not even consider the strategy of offering a «single package» for Russia, as Russia denies its involvement in the situation in the Donetsk and Lugansk regions.

In response to Ukraine's U_2 strategy.

Strategy R_1. Russia's refusal to negotiate.

Strategy R_2. Agreement by a single package "Crimea + Donetsk and Lugansk People's Republics".

Strategy R_3. Offer your own version of the agreement to resolve conflict issues between Ukraine and Russia only in Crimea.

In response to Ukraine's strategy, U_3.

Strategy R_1. Refusal of negotiations.

Strategy R_2. Agreement by a single package "Crimea + Donetsk and Lugansk People's Republics".

Strategy R_3. Consent to the Crimea agreement and negotiation to obtain a result.

Thus, the dynamic game can be represented by fig. 1.

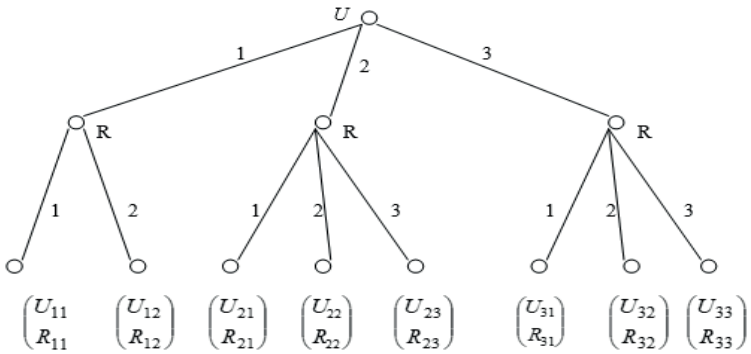

Fig.1. Dynamic game of Ukraine and Russia in the situation regarding Crimea, Donetsk and Lugansk People's Republics

The winnings of Ukraine and Russia are presented by the first letter of t he country. The indices determine the scenario selected by Ukraine (first index) and the scenario selected by Russia in response (second index).

Let's find the Nash equilibrium for this dynamic game [3], that is, choosing the strategies that are best for both parties in the sense that when one side chooses them, it is not advantageous for the other side to choose the other.

We find it by the inverse induction method [3], that is, from the end of the game tree to its apex. Thus, Russia's gains should be compared with each other, but only those that belong to one vertex. In our case, only those that have the same first index.

Comparing Russia's R_{11} and R_{12}'s gains, we can conclude that Russia can win if it first proposes its project to resolve conflicts over Crimea (of course, those who are primarily interested in it). That is, the R_{12} strategy will be a win for her. This will allow her to gain a reputation as a country trying to resolve the conflict. In doing so, Ukraine will suffer reputational losses, looking like a country that is exacerbating tensions in Europe.

Let's compare the gains of Russia R_{21}, R_{22} and R_{23}. Russia will have the greatest benefit when it proposes to separate negotiations on Crimea (this will be a strategy of R_{23}). Russia's motivation may be, for example, that Crimea, unlike the Donetsk and Lugansk People's Republics, is part of the territorial composition of Russia. An additional goodwill will also be that Russia, unlike Ukraine, will show its readiness to negotiate and, as a result, show its willingness to work to reduce tensions in Europe.

Consider the winnings of R_{31}, R_{32} and R_{33}. Similar to the previous review, the R_{33} strategy will be a winning for Russia.

Thus, Ukraine will choose the largest gain among the U_{12}, U_{23} and U_{33} as shown in fig. 2.

Comparing the winnings with each other, we get the U33 winnings as the best in Ukraine.

Thus, the equilibrium of Nash in this game, which will suit both sides, will be such: for Ukraine it is most advantageous to offer Russia an agreement of resolving the situation with the Crimea, and then it will remain most advantageous for Russia to agree to such negotiations.

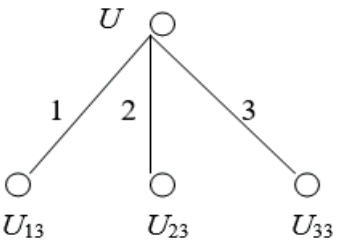

Fig. 2. Ukraine's winnings after the choice made by Russia

It should be emphasized that the game-theoretic model shows that the country which is the first to propose to sign the agreement of the Crimea will have significant advantages over the other.

Conditions for the implementation of the game-theoretic model. In Ukraine for over 5 years, public opinion has emerged that negotiations with Russia are unacceptable. Like, until Russia «returns» Crimea to Ukraine, there is nothing to talk about the Crimean topic with it. For 5 years, the media and representatives of public authorities and government have reiterated that foreign sanctions are enough for Russia to return Crimea. By contrast, the Minsk Agreement was presented as an alternative by the Ukrainian government and authorities.

So it is advisable in Ukraine to organize a wide discussion with the public about possible steps by Ukraine in relation to the problem of Crimea and the non-controlled regions of Donetsk and Lugansk regions. At the same time it is necessary to rely solely on your own, Ukrainian capabilities. A wide range of experts and analysts need to be involved in spreading the public opinion that Ukraine needs. It should be emphasized that these arrangements are temporary. And that they will continue until the conditions change both international and domestic in Ukraine and Russia. First of all, Ukraine must raise the standard of living of its population to a level higher than Russia has. This is the main condition for the return of both Crimea and uncontrolled territories in Donetsk and Lugansk regions.

Adequate public opinion activities can be effectively implemented within e-democracy and e-governance.

It is also important to inform the Russian society about Ukraine's initiatives regarding the future of Crimea and the Donetsk and Lugansk regions. Ukraine's approach can be favorably received by Russian society, and this is an important factor that the Russian authorities must always take into account.

It should be noted that the international community will very much take steps in this direction as they can reduce the level of tension in Europe. These steps will also contribute to the economic development of not only Ukraine and Russia, but also EU countries.

Multilateral or bilateral agreements. Neither country is planning negotiations on a bilateral agreement between Ukraine and Russia today. There are no proposals for this yet. However, as the results show, bilateral agreements can be a powerful mechanism for reducing tensions between Ukraine and Russia. And the existence of an agreement between the countries will create the conditions for the end of the active phase of the hybrid war on the part of Russia.

The situation of the temporarily occupied regions of Donetsk and Lugansk regions, at first glance, has formal differences with the situation with Crimea. Negotiations have been underway for several years in the «Norman format», with the participation of Ukraine, Russia, France and Germany. The highest officials of these countries take part in them. During this time, the so-called «Minsk agreements» were formed to resolve the situation in Donetsk and Lugansk regions.

The history of the Minsk Agreements is detailed in [4]. The text of the Protocol of the Presidents of Ukraine and Russia is given in [5]. The text of the Declaration of the Presidents of Ukraine, Russia, France and the Chancellor of Germany is given in [6]. The text of the Complex of measures for the implementation of the Minsk Agreements is given in [7]. The Steinmeier formula for the implementation of the Minsk Agreements is given in [8].

It is interesting that the Minsk agreements are not signed by the leaders of the Norman countries. They were signed by representatives of these countries. The «presidents» of Donetsk and Lugansk People's Republics also signed these agreements.

The Minsk Agreements do not provide any guarantees or mechanisms for their implementation. At the time of their signing, the Government of Ukraine informed citizens that France, Germany and other EU countries and structures would be the guarantors. However, neither in the Minsk Agreements nor in certain international agreements is this fixed.

Moreover, sanctions against Russia are not formally attached to the implementation of the Minsk Agreements. They are governed by other documents and are the «goodwill» of the countries that introduce them. The magnitude and duration of these sanctions are also not regulated. For example, EU sanctions have duration of six months and have to be continued.

Today, Ukraine has agreed to implement the Minsk Agreements. In doing so, it provided an opportunity for foreign countries to waive sanctions (or substantially mitigate them) in the event of promotion of the Minsk Agreements. Actually, this is a risk for Ukraine, and it will increase over time.

Unfortunately almost immediately after their signing, the partners of Ukraine on the Minsk Agreements began to refuse support from Ukraine. For example, Germany actively cooperated with Russia on the construction of the «Nord Stream 2» gas pipeline. Such cooperation was carried out on the basis of bilateral agreement which was not broken during the sanctions.

Sanctions against Russia are economically burdensome for the EU and developed countries. An increasing number of these countries are seeking an opportunity to waive these sanctions.

Thus, multilateral negotiations and agreements on the situation with Crimea and Donetsk and Lugansk regions have proved ineffective. At the same time, bilateral agreements continued to be effectively enforced, even during sanctions.

Therefore, bilateral negotiations between Ukraine and Russia on the normalization of the situation in the regions of Donetsk, Lugansk and Crimea may be a more effective step compared to multilateral agreements between countries, some of which are interested in continuing and developing cooperation with Russia.

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CYBERSECURITY AS A CONDITION FOR SUSTAINABLE FUNCTIONING OF THE INFORMATION SOCIETY

Tetiana Gavrilko,
Ph.D. in Economics, Associate Professor,
National Aviation University, Kyiv, Ukraine

The rapid growth of information and communication technologies at the current stage of the civilized world development acts as a great benefit for improving efficiency of activity of subjects at all levels – the state, enterprises, individuals. However, the processes of computerization, increasing accessibility to global information networks create a favorable climate for initiation of criminal activity.

Cybercrime has become one of the major problems in the development of information societies in modern global information space. According to Allianz and WEF information cyber risks rank second place among all business threats and are among the top ten threats to humanity. Every day nearly 400 companies all over the world bear losses caused by criminal acts; according to the FBI's Internet Crime Complaint Center within the last five years the worldwide losses caused by cyber criminals have made up $ 12 trillion [1].

Three countries: the USA, China and Germany account for the largest number of cybercrimes from year to year. However, the countries such as Russia, North Korea, Iran and, oddly enough, China are considered to be the largest cybercrime centers. The experts concluded that China owns the first place in cyber espionage, and the rest of above mentioned countries show a primary interest in the activities of financial institutions. In addition, the cybercrime wave is rising from the countries like Brazil, India and Vietnam.

In Ukraine an alarming situation of increased cybercrimes is forming – within the last five years their number has more than twice increased; the crime reached its pick in 2017-1795 criminal cases were opened, in 2018-1023, only in the first half of 2019-1005 [2].

The attention to various aspects of cybersecurity has been paid by many scientists: V. Y. Ahibalov, N. M. Akhtyrska, Y. M. Bartashevska, P. D. Bilenchuk, V. M. Butuzov, A. A. Vasyliev, V. D. Havlovskyi, M. S. Hadzhiiev, V. O. Holubiev, D. V. Dubov, E. V. Zozulia, M. A. Zuban, O. L. Kobylianskyi, A. V. Kofanov, M. I. Malii, P. I. Pushkarenko, H. V. Semenov, T. L. Tropina. At the same time still there is a necessity in further investigation of this problem to determine the conditions for ensuring sustainable development of the information society and the digital communication environment.

For a long time the governments of developed countries have been focusing on cybercrime protection issues and it is reflected in a number of regulatory documents, the development of a cybersecurity strategy for realization of which a number of structures have been created, the experience of their functioning is the ground for

creating the cybersecurity concept by the countries that are only beginners on this way (table 1).

Table 1

Features of implementation of cybersecurity strategies by European countries

№	Country name	Authorized structures for implementation of cybersecurity measures
1	Austria	1.National Computer Emergency Response Team CERT.at. 2.Public and Private Partnership Initiatives: - Centre for Secure Information Technology Austria/A-SIT; – Kuratorium Sicheres Österreich. 3. A joint initiative of CERT.at and the Austrian Government – Austrian Trust Circles. 4. “Hotline” stopline.at.
2	France	1. The National Cyber Security Agency ANSSI. 2. Emergency Computer Response Team – CERT-FR. 3. “Hotline” pointdecontact.net.
3	Netherlands	1. National Cyber Security Center - a national CERT with additional authorities. 2. ISACs analytical and information centers - responsible for security of critical information infrastructure by sectors. 3. “Hotline” meldpunt-kinderporno.nl.
4	Spain	1. National Center for Critical Infrastructure Protection CNPIC. 2. INTECO-CERT and CCN-CERT. 3. Pre-registered “Hotline” (www.alia2.org/alerta2/english.php).
5	United Kingdom	1. National Infrastructure Protection Center. 2. CERT-UK Critical Infrastructure Protection. 3. GovCertUK on cooperation with state institutions. 4. Office of Cyber Security and Information Assurance). 5. “Hotline” Internet Watch Foundation
6	Estonia	1. CERT Estonia. 2. “Hotline” vihjeliin.ee.

Source: compiled by authors based on [3]

For many countries the Cybercrime Convention of the European Council (Budapest Convention) from 23.11.2001 [4] is the basis for the development of a cybersecurity strategy. The Convention was ratified not only by the EU member states – 55 countries in total, including the United States, Canada, Japan, Mexico, Australia. Russia and China are strongly opposed to signing the Convention.

Ukraine was one of the first signatories to this document, but ratification of the Convention was carried out only on March 10, 2006 and not all its provisions have been reflected in the national legislation by now, while its full implementation requires significant changes in the Code of Criminal Procedure.

In 2016, the European Parliament adopted the first part of a single for EU cybersecurity legislation – the NIS Directive. It is clear that for non-EU Ukraine

this document is not mandatory, but some of its provisions, though not all of them, have been used.

In Ukraine the Cyber Security Strategy was developed in accordance with the National Security Strategy of Ukraine from 2015 and was put into effect on 27.01.2016 [5]. To specific features of this Strategy shall be referred its focus on the European approach to provision of cybersecurity, which assumes shared responsibility of all major stakeholders. It is important to take into account the EU and NATO standards, separation from priority protection of the national segment of the Internet, that is a key position in the cybersecurity field of countries such as Russia and China.

An important milestone in the development of the national cybersecurity system to counteract the phenomena being not only national but also a global nature - military cyber threats, cyber espionage, cyber terrorism, cybercrime, became the Law of Ukraine «On Basic Principles of Ensuring Cyber Security of Ukraine" that was put in effect dated 09.05.2018 [6].

This legislative act regulates relations in the sphere of the Ukrainian cyberspace protection, defined the foundations of legal and organizational support for protection of national interests of Ukraine in cyberspace, first established a significant number of concepts in the field of cybersecurity, which have become new for the Ukrainian legal field. It also specifies the authorities and responsibilities of the relevant structures, which are key ones in terms of counteracting the challenges and threats to information security and defines the conditions for coordinating their activities.

Further improvement of the legislative regulation in the field of cybersecurity experts is associated with the adoption of the Law of Ukraine «On Critical Infrastructure and its Protection», which shall eliminate the current differences referring to classification of infrastructure objects as «critical» or «non-critical». Legal conditions must be created to prevent any corruptive action to resolve the issue of including definite objects in the list of «critical infrastructure» and to establish an appropriate supervisory and control mechanism based on appropriate requirements for the level of protection and sustainability.

It is urgent to adopt a new Cybersecurity Strategy for the period 2020-2025 and its development has already been announced; it is obvious that the process of its formation shall be based on an objective assessment of provisions of the previous strategy and the degree of real implementation of the annual plans of measures on implementation of the Cybersecurity Strategy of Ukraine, which were developed within 2016-2018 by the State Service of Special Communication and Information Security of Ukraine (SSSCIP) and approved by the Cabinet of Ministers of Ukraine [7-9].

As for the plan of measures on implementation of the Cybersecurity Strategy for 2019, despite the fact that the suggestions regarding this plan were submitted by the ministries, other central executive bodies, the Security Service of Ukraine, the Foreign Intelligence Service of Ukraine and the National Bank before September 1, 2018, the State Service of Special Communication and Information Security of

Ukraine started the process of its approval only at the end of the tenth month of 2019.

Analyzing the positive shifts that occurred over the last period in the domestic regulatory field referring to solution of cybersecurity issues it remains necessary to take the following important steps that will help to meet the current requirements of national interests and security of Ukraine in cyberspace:

1. Bring the legislative framework to compliance with international cybersecurity standards. First of all, it concerns the adoption of a more comprehensive cybersecurity law, which will take into account existing best practices of other countries, and in the development of which cyber security practitioners and professionals shall be involved; the Law that is current today can be considered as a roadmap for establishing a cybersecurity regulatory framework.

2. Harmonize the terminology in various national cybersecurity legislation acts, as well as with the applicable terms in international practices.

3. Specify the authority of institutions responsible for cybersecurity by evaluation of real efficiency of their activities and develop a rational mechanism of their interaction in the case of threats in cyberspace.

4. Develop a Regulation and possibly a Law on Public and Private Partnership taking into account existing differences in understanding between the state and the private sector of the essence of this concept and the ways of its implementation.

5. Introduce a system of objective assessment of appropriateness of financing national cybersecurity projects, some of which have nowadays become a chronic means of diversion public funds and they are in fact pseudo-effective.

6. Study the work experience of the EU cyber rapid response forces, which included countries such as Lithuania, Estonia, Croatia, the Netherlands, Romania, France, Spain, Poland, Finland (Belgium, Greece, Slovenia and Germany, expressed their wish to join the project as observers). Determine the possible area of application of this experience by Ukraine in the field of counteraction to cyber threats and terrorism.

It is obvious that taking into account permanent renewal of crimes in cyberspace, the issues of security and elimination of real and potential threats shall be a matter of interest not only for the state, but also for specific businesses and institutions. However, many businesses do not fully realize the potential consequences of violation of their information environment integrity and do not make relative conclusions regarding its security.

According to the data provided by company “Octava Cyber Security” even after a third of Ukraine’s economy suffered from virus Petya, only 20% of Ukrainian corporations got seriously engaged in cyber defense, about 30% of companies are only discussing cyber defense and a half of the companies have not made any significant steps to minimize potential risks [10].

If cyber-attacks are not large-scale and affect only some definite companies or institutions, in many cases they prefer not to contact the relevant authorities for conducting investigations, by what high latency of cybercrime is caused.

The factors that encourage the concealment of cybercrime may be: worsening of a company's image and, as a result, loss of trust on the customer's side; lack of transparency of financial activities and the possibility of detecting violations in this area during investigations; probability of detecting a lack of professionalism of some people responsible for cyber defense; lack of confidence in possible identification of persons who committed the crime and, in the case of a positive investigation, compensation of full volume of the damage caused.

In order to create a secure cyberenvironment it is advisable for enterprises not to use local actions focused on protection from specific threats, but apply a comprehensive approach based on organizational, moral, ethical, legal, software and technical methods of protection and counteracting of any emerging threats. Enterprises paying sufficient attention to information security issues create information security coordination centers that include technical equipment specialists, programmers, personnel responsible for preparation, input, storage and processing of information, physical equipment security specialists, user representatives.

Unfortunately, cybercrime is constantly evolving and although the majority of cybercrime in cyberspace is committed by people who do not belong to any groups, organized crime has become threatening today. As an example – as a result of Europol's activities in 2018 was revealed a criminal group consisting of several sectors, each with own «specialization»: some members of the group created malware, others – sent phishing letters addressed to bank employees, withdrew money from automatic cash terminals, bought cryptocurrency for these funds and transferred it into special crypto wallets. Forty countries were covered by the criminal acts and caused a loss of 1 billion Euros.

Thus, we can conclude that not only changes in the legislation are directed to ensure cybersecurity, but business representatives should be aware that preventing attacks on their own information environment by creating a reliable and constantly updated security system will not only save money (expenses on eliminatiing effects of cyberattacks are always higher than the cost of preventive measures), but, in general, reduce the risks of life activity in today's dynamic environment.

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QUALITY MANAGEMENT OF STUDENTS 'PROFESSIONAL TRAINING AND SECURITY OF THE EDUCATIONAL PROCESS OF HIGHER EDUCATION

Oleksandr Chernenko,
Ph.D. in Pedagogics,
Kirovohrad Institute for Human Development, Kropyvnytskyi, Ukraine

The level of the intellectual potential of the state is determined by the quality of higher education in the country and becomes the most important factor not only of economic and social development, but also a factor of political independence of the state, the basis of its development.

The quality of higher education has traditionally been associated with the didactic content and the form of organization of the learning process, which is

based on the qualifications and experience of teachers. However, the rapid nature of changes, that are happening in the world, particularly in the education domain and employment markets, forces educators to rethink established views. In this regard, scientific-pedagogics workers should adapt the methodology and teaching material to the new conditions. New perceptions about the quality of education will have to do not with the «fragmentary adaptation» of higher education institutions to new conditions, programs or reforms, but with the need for a deep restructuring of the foundations of students' vocational training, that is, to change the content and organization of the educational process.

The concept of quality of education is based on the modern concept of quality management of products and services.

Note that the concept of «quality» for education is more complex than for traditional products or services, which is related to the structure of consumption of educational services, consumers of the results of the educational process are advocated by students themselves, and their families, businesses, which they will work for and, ultimately, society and the state as a whole, that will use their potential effectively (or ineffectively).

Let's look at recent research and publications on this issue.

The basic principles of the management of quality of education were considered in the workds of such domestic and foreign scientists as: V. S. Zahorskyi [16], A. Papantium and M. Darr [11], O. V. Perchuk [12], I. V. Raspotniuk [13], D. Khouston [6], P. S. Yaremenko [15] and others.

The application of the quality system in higher education on the basis of the ISO 9001 standard was considered in the works of domestic and foreign scientists: B. Ye. Bodnar and O. O. Matusevych [1], M. Dzh. Manatos, S. S. Sarriko and M. Dzh. Roza [8] and others.

The presented works only describe general requirements to the quality, the system of control of higher education and some aspects of management of the organization of the educational process, which needs further study of this problem.

The peculiarities of financial-economic security of educational institutions were studied in their works: V. V. Hirniak, N. I. Kozmiuk and O. V. Lukianska [5], I. S. Stetsiv [14], V. V. Kovrehin [7].

However, further studying of the measures of the safety of the higher education institution's educational process are warranted.

The purpose of the study is to develop a model for managing the quality of students' vocational training, and to characterize measures to improve the safety of the educational process in higher education institutions.

The problem of the quality of education in Ukraine has not had such important social, economic and technical significance yet as it is today. The highlighting of this problem is due to the objective factors: firstly, the level of development of the country and its economic competitiveness depends on the quality of human resources ; secondly, the quality of education is becoming increasingly important in ensuring

the competitiveness of high school graduates in the employment market [16].

The Law of Ukraine «About Higher Education» [9] provides an interpretation of the quality of higher education and the quality of educational activity.

The quality of higher education is a set of qualities of a person with higher education, which reflects his professional competence, value orientation, social orientation and determines the ability to satisfy both personal spiritual and material needs, as well as the needs of society [9].

The quality of educational activity – a set of characteristics of the higher education system and its components, which determines its ability to meet the identified and anticipated needs of an individual or (and) society [9].

If to take into consideration the mentioned above, the quality of education can be defined as: «a set of properties, content of studying and characteristics of the educational process, which make it possible to meet the existing or potential needs for knowledge and skills of individuals, enterprises and organizations, society and state.»

The quality management of the educational process in the professional training of students (in all specialties) should be based on the quality management model of the international standard ISO 9001: 2015 «Quality Management System» [3], as well as pedagogy of high school.

The system is based on higher education standards, curricula and studying plans – as a set of content requirements and educational outcomes for each higher education level within each specialty.

The following approaches can be used in assessing the professional skills of students that are offered by: V. M. Onyschenko, M. O. Yancheva, O.O. Shevchenko [10].

The main purpose of the functioning of the quality management system of a higher education institution should be:

1. High level support and constant improvement of the system of quality assurance of educational activity and quality of higher education;

2. The most complete satisfaction of the requirements and expectations of service providers and other stakeholders in the field of education and research;

3. Fulfillment of the requirements of the current legislation of Ukraine, decisions and orders of the state authorities concerning the sphere of activity of the institution of higher education.

According to the international standard ISO 9001: 2015 [3], the quality system means: the set of organizational structure, methods, processes and resources required for quality management.

In order to solve the problems of implementing the policy in the field of quality of education in higher education institutions it is advisable to create an independent from the rector (director) department «Quality Management of Specialists» («QMS»).

The tasks of the «QMS» department should be:

- quality management of the educational process and continuous improvement

of the quality management system of training of future specialists;

- collecting information and creating an automated database of student performance indicators;

- organizing and conducting socio-psychological studies of professional reliability, providing psychological support to teachers and students;

- systematic verification of student learning results in all specialties;

- introduction of innovative teaching methods, best practices;

- cooperation with other institutions, practice bases;

- preparation for certification ISO 9000 series.

Based on the analysis of works [1; 3; 4; 6; 7; 9; 11] we build a model of quality management education in universities, which is based on the quality management system of international standard ISO 9001: 2015 «Quality Management System. Requirements» and elements of pedagogy of high school (fig. 1).

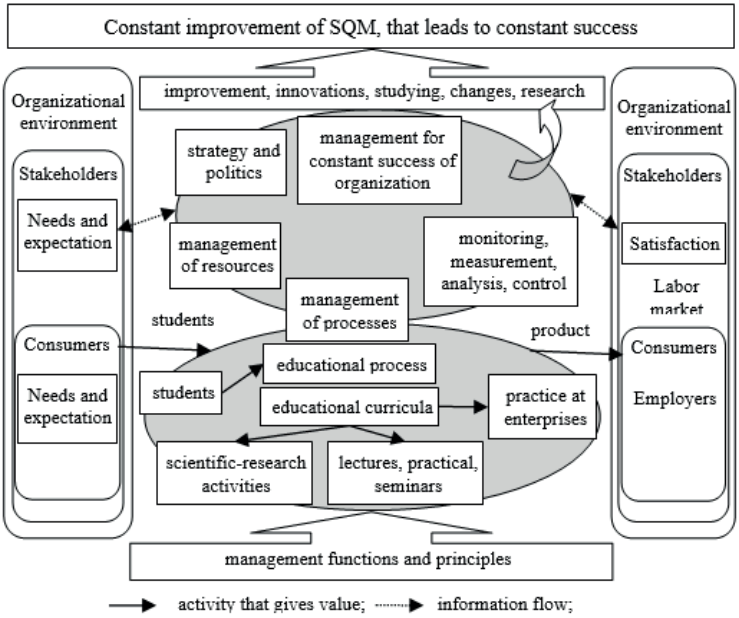

Fig. 1. Model of quality management system in Higher Educational Establishments

Despite the efforts to reform it on the European models, the national educational system basically looks only European, but not the essence. One of the major reasons for this is the unsatisfactory state of the education economy and its security [5, p.1038].

Researchers V. V. Hirniak, N. I. Kozmiuk and O. V. Lukianska point out such security threats to higher educational institutions:

- inefficient management of the educational institution, low level of educational

process;

- reducing the number of students by decreasing the level of attractiveness of the educational institution;
- ineffective work with potential and actual sponsors;
- insecurity of trade secrets;
- reducing the quality level of the teaching staff;
- corruption among the part of teaching staff, etc. [5, p. 1041].

The scientist I. S. Stetsiv [14] identifies the following components of a university's financial and economic security:

- financial component – is considered to be the leading and decisive, because in market conditions, finance is the basis of any economic system. The financial component is the relationship in the field of finance that arises in the course of financial and economic activities of higher educational institutions;
- intellectual and personnel components: cover interrelated and at the same time independent directions of activity of higher educational establishments – technical component: availability of auditoriums in accordance with established norms, provision of educational process with necessary equipment, which corresponds to modern world analogues (equipping computer, laboratory auditoriums with handy materials for conducting classes);
- technological component: providing of classes with observance of requirements for teaching of disciplines (individual plans of teachers, training programs, work programs, calendar plans, etc.);
- regulatory-legal component: provision of materials of the current legislation of Ukraine, on the one hand, as a subject of the private sector of the economy, on the other – as an educational institution regulating the activities of universities;
- information component: use of information of two environments – internal and external [14].

The system of economic security of a higher education institution, using a certain set of tools, must provide the necessary accounting and internal control of the formation and movement of financial flows at all stages of the implementation of educational activities [7, p. 83].

In order to ensure the individual and collective security of the higher education institution, V.V. Kovrehin [7] emphasizes that the following measures are necessary:

- familiarization with job descriptions, which clearly define the rights and duties of staff and make the organization and order in the nature of its activities;
- physical protection of employees, property through the use of access control in the building, technical means of observation and other means;
- raising the educational level of employees, periodic professional certification in order to assess their competence;
- promoting a healthy lifestyle;
- carrying out fire-fighting and anti-terrorist

actions, improving the system of compliance with labor protection [7, p. 83].

The practical significance of the results of the research is that due to the introduction of quality management system in higher education institutions it is possible to significantly improve the educational activities and professional training of students; high quality of educational services is achieved.

The economic security system in general should provide the necessary accounting and internal control of the formation and movement of financial flows at all stages of the implementation of educational activities [7, p. 83].

One of the effective methods that will allow the higher education institution to stand in the fierce competition in the higher education services market is to develop and implement effective quality management systems in accordance with the requirements of the international standard ISO 9001: 2015 «Quality Management System. Requirements».

The system of economic security of an educational institution should ensure the accounting and internal control of the formation and movement of financial and information flows.

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PECULIARITIES OF COMMUNICATION PROCESSES IN MODERN ORGANIZATIONS

Iryna Shulzhenko,
Ph.D. in Economics, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine,
Oleksandr Pomaz,
Ph.D. in Economics, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine,
Julia Pomaz,
Ph.D. in Historical Sciences, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine

The efficiency level of the organization production and business operation depends on the management system, which perfection is determined by a number of factors, such as the degree of the communication system development. The effectiveness of communications depends on the level of technical support of information exchange, quality of the information and human factors.

Communication has become one of the most important components in the company management. Poorly established communication impedes the information exchange between the departments that need it for making any decision, as a result the misunderstandings happen. If the company is not able to respond promptly to the internal and external changes, it can cause the reduction of management quality.

Communication is a pervasive and complex process that relies on the information exchange between the organization employees, i. e. it is the communication through words, letters, symbols, gestures, and it is the way to express the employee's attitude to the knowledge and abilities of each other and to achieve trust and perception of views and beliefs of each other [1, p. 195].

The information exchange accompanies all management actions, provides the formation and implementation of management functions and methods, decisions making, choice and usage of management styles and models. Managers at different levels spend a lot of their time on communications, sharing information to execute their role in interpersonal relationships and company management.

Establishing of proper communication evokes many questions, such as the good will of partners to establish communication, identification and elimination of possible obstacles, including the choice of communication methods, the right combination of verbal, visual and written forms of communication, etc. On practice, the communication effectiveness is reducing if the message is formed incorrectly, mistranslated or fuzzy interpreted, or if there are the loss of information in the process of its transfer or storage, insufficient time for adaptation, premature evaluation, fear, lack of mapping, etc. [2, p. 7].

Peculiarities of communication process in modern management conditions are

the usage of information systems for the information transfer, storage and processing.

To build-up the communication system on the information technologies basis is based on the combination of all management functions of both executive personnel and individual workplaces. The modern manager needs to process the information as prompt as possible for making quick and thorough decisions, which determines the competitiveness of the company in the market.

Therefore, one of the main criteria for the communication system effectiveness is the speed of information signals processing. To reduce the time for information processing, a wide range of modern technical means is used, starting with computer technology, computer networks and finishing with complex software such as neural networks and intelligent systems. It should be emphasized that the condition of information technology development in most organizations is inadequate. In particular, the quantity and structure of computers, network equipment, hardware and software do not meet current needs [3, p. 168].

Scientists point out that full exchange of information should be done in four stages, which form a complete communication cycle [4, p. 24-31].

The first stage of the communication cycle involves the information entry into the management system, i.e. collection and processing of the necessary information, which should be relevant to the performance of general management functions. For example, communication processes, aimed at transferring input information to the organization planning units from other units or from the external environment, are implemented on the first stage of production planning.

The external information flows have different intense in the context of communications directions and separate elements of the system, each of them has unique characteristics, which are suggested to be evaluated by means of special and integral indicators. Communication must be ensured by input resources, technologies and interactions of internal elements.

The received information should be evaluated by certain criteria. The main criteria are: accuracy, sufficiency, timeliness, cost. The information, recognized as valuable, transfers to the next stage of communication.

It should be mentioned that the level of expenses on data intelligence and company information activities depends on the amount of communication elements, and researchers prove that a significant proportion of communications (approximately 33 %) are ineffective or unnecessary [5].

On the second stage of the communication cycle, the information is collected from the received data, which is available in the certain unit, with its further verification and validation. The information, that experts consider to be reliable, becomes the basis for alternative production plans creating or making appropriate management decisions.

During the production organization, departments' managers must receive information about available resources (human, financial, material, information asset) and estimate their expenses or revenues. The external environment provides

regulatory information (mainly about legal restrictions on resource usage, operational and workplace safety, etc.). Receiving the necessary data, department managers select the top-priority information and check it. In fact, the only evaluation criterion is compliance with the approved plan.

It is advisable to create several variants of each plan (at least two of them – «optimistic» and «pessimistic»). The evaluation of plans should be based on certain internal and external factors [6, p.19-20]. Internal factors include staff competence, funding amount, automation degree of computers, time, management experience, and so on. External factors include external pressure of stakeholders such as partners and competitors, suppliers and consumers, etc.

The third stage accompanies by the adoption of appropriate management decisions, as well as creating of certain types of plans. It can be production plan, sales plan, marketing, technical training, budget, etc. In any case, the plan must be submitted to the relevant company departments for its implementation or its possible primary coordination, improvement or adaptation.

The fourth stage creates the subject of management communication, which transfers the decision to the employees, i.e. transfers the management information to the executive subsystem. Different factors need to be considered in order to communicate effectively, i.e. to convey some messages in the form of guidelines, instructions, orders, reports, etc. These factors are words selection, when messages creating, mood, well-being, needs of addressees, etc. That is why the problem of the communication effectiveness improvement has various aspects: formal-logical, value-based, semantic (refers to the meaning of the words), socio-psychological, text-logical, organizational, and technical ones [7, p. 95].

Dividing communication into cycles within specific management functions helps to single out the unproductive, redundant, and duplicative communications and it is reasonable to eliminate them or level their negative impact.

Analysis of communications, that accompany the implementation of specific management functions, is the basis for evaluating the effectiveness of certain communications, their cycles, and the communication system of the organization.

The above-mentioned stages of the communication process help us to distinguish those peculiarities, which are typical for the modern organizations.

These peculiarities are the following: [8, p. 38-41].

- to distinguish the specific management functions that create the management process;
- to distinguish the elementary communications that accompany the implementation of specific management functions;
- to set the goals of communication evaluation;
- to create the system of communication evaluation indicators;
- to set the standards that should be met by the specified indicators;
- to distinguish the indicators of the organization activity efficient by certain business processes or management functions;

- to link the communication evaluation with the key indicators of the company activity;

- to establish the effectiveness criteria for the company communications system;

- to evaluate the effectiveness of the communication system.

Above-mentioned peculiarities will allow managers of all levels to choose priority areas of communication development, such as: upgrading of the communications technical infrastructure, improving the social environment of communications, making the information support better, and optimizing the implementation of management functions.

Summarizing the above-written information, it is necessary to mention that all possible resources and channels must be used to build up the effective communication system in the company. HR Department should keep employees timely informed about all news, mission, strategy and company goals. Effective communication must be characterized by clarity, simplicity, reliability, that in general will facilitate their adequate understanding.

Modern managers often neglect to establish effective communication flows within the company due to the tough schedule, their own negative attitude to communication interaction, and it affects the image of the leader and the process of management negatively. Some foreign top-managers consider the communication interaction to be one of the most complexes in the company, and inefficient communication is a major obstacle to the company success [9, p. 36-40].

It is necessary to understand that the chosen way for communications will influence employees' views, motivation, understanding and support of management and its policies. It can also help to reduce the employees' resistance to any changes. The quantity of conflicts within the company depends on the quality, completeness and reliability of the information [10, p. 199-205].

The effective functioning of the company communication system is not possible without proper management.

It is necessary to define clearly needs of information for each structural department and each workplace in order to improve communication in the company management process and to regulate information flows according to the tasks that should be solved. It is highly important to pay attention to the developing of the interaction between managers and subordinates, organizing of the effective feedback system, implementing of the system for suggestions collection, transferring of information messages from the company management to subordinates and using of modern information technologies. Top-level managers should constantly provide more structural company management activities, improve planning of organizational development: meetings, events, meetings with subordinates, general managers of other companies.

It should be noted that the coordinated interaction between information flows and communication processes contributes to the creating of effective employees' motivation, which aim is to create stable, consciously disciplined

and competitive teams.

Knowledge and ability to create a proper system of information receiving and usage of all communication methods helps the manager to get closer to the solution of one of the main management tasks – to get profit.

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STAFF DEVELOPMENT AS AN ELEMENT OF COMPANY'S SOCIAL SECURITY

Tetiana Sazonova,
Ph.D. in Economics, Associate Professor,
Poltava State Agrarian Academy, Poltava, Ukraine,
Alina Oliinyk,
Ph.D. in Economics,
Poltava State Agrarian Academy, Poltava, Ukraine,
Yevgen Oliinyk,
Ph.D. in Economics,
Poltava State Agrarian Academy, Poltava, Ukraine

Today the issue of national security is a priority for the state. There are four main spheres of public life: political, economic, social, and spiritual-moral (values), and respectively, there are four subunits of national security: political security, economic security, social security, and spiritual security. The first two are in the focus of the state's concern, but there are significant gaps in providing and strengthening the latter two.

In the article, we will focus on providing social security at the organization/ company level. Using the data in table 1, we will analyze some of the approaches to the concept of social security definition.

Table 1

Approaches to intepreting the essence of the concept of social security in the Ukrainian realities

Social security is ...	Source
guaranteed legal and institutional protection of the vital social interests of the individual and society from internal and external threats	Declaration of State Sovereignty of Ukraine [1]
guarantee of legal and institutional protection of vital social interests of the person, society and the state from external and internal threats	I. Gnibidenko, A. Kolot, O. Novikov [2, c. 17]
one of the most important internal components of national security, characterizing the degree of social stability of society	V. Andrushchenko [3, c. 62]
conditions in society that provide normal reproduction of the society as a demographic population, people, and nation.	A. Prijatelchuk, O. Ishchenko [4, c. 24]

The analysis of the sources shows that the concept of social security has not been sufficiently elucidated in the scientific literature and did not find its proper development in the system of social policy and national security of Ukraine.

We support the conception that social security comprises the comfortable life conditions of humans and society, characterized by an advanced social system of ensuring the proper conditions for the human activity, social protection from the influence of social risks.

The provision of social security at the level of the organization is realized via its social policy. We assume that the social activity of an enterprise creates the basis for the development of the socially-oriented economy of Ukraine as a whole. Thus, the strategic course of the state depends on the the social policy effectiveness of every individual economic entity [5, p. 199].

The main goal of the enterprise's social policy is to actualize the concept of worthy work and improve the quality of working life [6, p. 240].

Areas covered by the social policy of the organization: staff development; culture and staff recreation opportunities; system of material and moral motivation; safety of working conditions; health care of personnel; work with young people; pension insurance; protection and provision of working conditions for workers with disabilities and special needs; providing services of various kinds for personnel (preferential loans, rehabilitation of children, etc.); social responsibility of the organization (not only to the employees but also to society).

We will focus on staff development in more detail. After all, it is this aspect that ensures the competitiveness of the staff of the organization, and therefore its competitive advantage in the market. Currently, this component of social policy in most organizations, especially the agricultural sector, lacks sufficient attention, though an effective staff development strategy is the key to future success.

Staff development policy should be a logical continuation of the organization's development strategy. Only in this case, it will be an integral part of it, but not a separate activity. Furthermore, there are significant differences in management development and staff development policies. After all, managers are «versatile soldiers», and they have to develop permanently in three dimensions: managerial, functional and productive sectors. It is not enough to be aware of the management processes only, it is necessary to understand the production processes as well.

The emphasis should be laid on the competencies and skills when developing a management development program. The World Economic Forum in Davos in 2016 identified the top skills needed for a successful career in 2020: complex problem solving, critical thinking, creativity, people management, co-ordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, cognitive flexibility [7]. It is strategically important to take into account not only the tendencies of the individual company's development but also the environmental requirements since it is an open system.

Quick searching, processing, and analyzing large amounts of information is the competence needed by all categories of the staff. It is not a problem to find almost any information with modern facilities, but where to search for it, and how to differentiate what you need is a key skill of our time.

Managers should pay much attention to the development of the skills of flexibility, adaptability, the ability to apply constantly new knowledge and tools, a spirit of inquiry, communicative competence in their staff members (and in themselves). Every educated and successful person knows that to be successful, you ought to be engaged in self-education: to read, to be well-informed, to seek for novelties.

Table2

Differences in the vital values and features of generations

1943 – 1963 The Baby Boomers	1963 – 1983 GenX	1983 – 2003 Gen Y(Millennials)	2003 – 2023 Gen Z
The number of people in organization			
A small number	Majority	About 35%	Few
Features			
- team orientation; - recognition and status are important (diplomas, award letters, etc.); - high level of involvement; - they value stability; - they ask a lot of questions	- rely only on themselves; - individualists; - learn throughout life; - pragmatic; - advocate equality; - they are easy to cheat; - accustomed to authoritarianism, respect authorities; - love discipline; - committed to the company and expect the same from colleagues	- communicative; - confident; - love changes; - demand immediate reward for the result; - a pro in engineering; - not only money, but also corporate culture, social responsibility of business are important for them; - seek to work on a flexible schedule; - learn quickly; - do not recognize the authorities; - impulsive; - optimistic and progressive; - wish everything at once; - value their own time and their own space	- capable of analyzing large amounts of information; - focus only on what interests them; - respect law and order; - show respect for the position and status; - patient; - live in gadgets and the Internet; - individualists
Vital Values			
idealism, optimism, youth, health, work engagement, image, personal status and remuneration, nostalgia, family, focus on team work, diploma, medal.	work, stability, survival, moral values, lifelong learning, equality, freedom, consumption	live for today, diversity, subordination, morality, civic consciousness, achievement, naivety, creativity, life – is a holiday	loyalty, law and order, honor, patience, frugality, focus on future, security, comfort, freedom

Rules of cooperation			
- listen attentively to their proposals, conclusions, etc ; - have patience because they like to talk for a long time and do not like being interrupted; - arguments must be provided to convince them	- do not interrupt them; - communicate in a neutral tone; - ask clear and specific questions; - do not accept «no», «impossible» «can not»; - when difficult situations arise, it is important to offer them specific solutions	- the task should be set quickly and clearly; - demand clear settings where to find the information you need; - need to communicate with them kindly; - sense of humor in communication is welcomed; - they have to feel you love them and you are happy to see them; - everything must be fair; - like introduce elements of gamification into the workflow	- give them work that brings pleasure, earnings, drive and does not take much time; - use images in communications; - talk to them as adults, even on global topics; - involve them in solving social problems; - develop their interests
Ways/types of learning			
Individual, independent format, sometimes - interactive (in groups, at seminars)	interactive format (in groups, seminars), practical techniques, memorization	visual format (courses, presentations, infographics), emotional examples, asking is easier than teaching	e-learning (online courses, skype consultations), multimodal examples; researchers: understand and try yourself.
The best way to interact			
hierarchy, subordination	hierarchy, active leader	cooperation	team-based creativity

Source: author's own systematization based on [8]

And do it continuously. Managers can nurture this desire among their employees via corporate culture, their own example, and an effective motivation system. Then the rule will work - the more the employee develops himself, the stronger the desire to learn something new will become. In the conditions of total digitalization, it's getting easier and easier to find quality content on the Internet in almost every field.

Before designing a development program that takes into account the needs of the organization and the environment, it is nevertheless advisable to evaluate the staff objectively (to determine the importance of the employee and his/her weak points). Only then, individual development programs can be developed.

In our opinion, it is advisable to use generational theory in the workplace when developing social programs, staff development programs, and managing them. Americans William Strauss and Neil Howe laid the groundwork for the generational theory in 1991. They independently studied the conflict of generations, and both came to the conclusion that every 20 years new system of values is formed. The values are universal for the whole generation[9]. The data in table 2 clarify the differences in the vital values and features of generations.

Differences and features of generations must be taken into account when communicating in the formats: «employer – employee», «manager – manager», «employee – employee», «employee – manager». In this way, the staff of the organization will reinforce the business and promote its development. It is also important to initiate an open corporate culture based on respect for each other.

Therefore, the social security of the organization should spring from providing sufficient conditions for every staff member to increase his/her competitiveness via personal development. The system of personnel development can be a component of an enterprise's motivational social package. Such a system simultaneously serves as a mechanism for social protection and support from the side of an organization. After all, the acquired knowledge, skills, competencies remain forever with the employee, regardless of whether he works in the organization or not.

The effectiveness of an organization's social protection system must be monitored regularly through employee surveys to understand whether the existing system meets staff expectations. Social protection ensures the competitiveness of the organization and enables it to keep competent employees from moving to another company, thus motivating them to long-term cooperation. Moreover, ensuring the stability of the organization, the employer can not indefinitely increase salaries, but the social benefits package allows being expanded and filled with new content, stimulating an increase in productivity and optimizing costs for personnel management.

Hereupon, a competitive staff is an integral part of the company's security system. Such personnel needs constant and individualized development, strategically oriented both to the needs of the organization and the needs of the environment, including the needs of the individual. Such personnel also need effective motivation that can be achieved by combining their development, social protection, effective interaction, and the availability of an attractive motivating social package. We recommend to actualize all of the above-suggested provisions with the focus on the theory of generations. This approach provides clues to the harmonization of both professional and personal relations in the organization.

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HIGHER EDUCATION: CURRENT CHALLENGES

Nataliia Ivanova,
Ph.D. in Economics, Associate Professor,
National University of Kyiv-Mohyla Academy, Kyiv, Ukraine,
Tetyana Kuznetsova,
Ph.D. in Economics, Associate Professor,
Institute of the Personnel Training of the State Employment Service of Ukraine, Kyiv, Ukraine

The changes taking place in the economic development of countries raise the question of the role of higher education in shaping innovative and creative economies. In order to provide an answer to this question, it is necessary to examine two major aspects of the functioning of modern higher education establishments. According to the authors, these include:

- higher education is a public or private benefit [1];
- financing of higher education [2].

Let us look into these aspects in detail.

Economic thought determines public goods as being non-exclusive and non-competitive. Non-exclusivity means that such goods cannot be provided exclusively to someone and cannot be excluded from consumption. Non-competition means that the consumption of goods by some people does not reduce its consumption by others. Public goods create a large number of externalities. They are accessible to everyone alike; the marginal utility is equal, and the marginal costs for the production of the public good are zero. It is also a commodity of collective consumption. Economists

share public goods that strictly satisfy all of the above conditions as pure public goods, and other public goods that do not necessarily fully satisfy all the conditions, are treated as semi-or quasi-public goods [9]. Moreover, if the benefits of public goods are geographically limited, they are called local public goods, and public goods, the benefits of which are aimed at the whole world, are called global or international public goods. Private goods are different; they do not satisfy any of these conditions.

Some scholars argue that higher education cannot be regarded as a public good, since it does not satisfy one of the first two demands, namely, non-exclusivity and non-competitiveness [4, p. 452].

J. Stiglitz argued that knowledge is a public good since higher education and research fulfill all characteristics of the public good. For example, the theorem is non-exclusive, since as soon as it is published, no one can be excluded from reading and using it, and non-competitive, since the use of the theorem will not affect the use of it by others. It is impossible for the knowledge to become a commodity, because the seller does not lose it by selling it [7, p. 308-309]. However, such an argument is based on a mistaken perception of the nature of property. Ownership is not a thing, but rather a set of rights, a social institution. Moreover, in the modern era, it makes no sense to speak of property as a social institution, not to mention the legislative nature of the nation-states. In the modern sense, there is no property without nation-states [8, p. 402]. It is worth noting that access to many scientific treasures is limited by copyright and patent laws, a free product accessible to everyone becomes something expensive or inaccessible because of geographic location, providing rent for copyright owners or patents [16, p. 137].

Traditionally, the functions of higher education constitute the basis of life of the societies. First and foremost - higher education helps in creation, improvement, absorption and dissemination of knowledge through research and education. It has been established long ago that universities are a cradle of ideas, innovations and development, and gradually they become a reserve of knowledge. Secondly, higher education promotes the rapid industrialization of the economy by providing human resources with professional, technical and managerial skills. In the context of transforming society into knowledge society, higher education provides not only skilled workers but also workers prepared for the new knowledge that is necessary for the rapid growth of the economy. The supporters of the theories of endogenous economic growth argue that the groups of well-educated people who work together are more productive rather then if they all worked individually with less educated people. E-mail and the Internet are an example of this. Knowledge, which is free to access, has a great influence on overall productivity [11]. Thirdly, universities are institutions that help shape the person's character and morals; they embody ethical and moral values, formulate well-behaved habits and make possible changes in the views that are necessary for the socialization of individuals, encourage the modernization and general transformation of society through protection and strengthening of public

values. Fourthly, higher education also helps in the formation of a strong nation-state, promotes the development of democracy by educating active citizens who participate in the civil, political, social, cultural and economic activities of a society that understands, interprets, preserves, strengthens and promotes national, regional, international culture and history, in the context of cultural pluralism and diversity. It also has the potential to produce high-level social and political leaders. At the very end, recent studies have revealed many non-monetary benefits from higher education: longer life expectancy; reducing alcohol and tobacco consumption; less probability of obesity; more likely to be involved in prophylactic health care; better mental health; better general health; greater satisfaction with life; less crime; greater propensity to vote, volunteering, trust, and tolerance. Almost all of these provides wider social and individual benefits [15, p. 9].

However, the study of the essence of higher education showed that there is a rapid change in the paradigm of higher education. Even in economically prosperous countries, higher education systems are in a state of strong financial constraints: on the one hand, an increasing number of students, and a chronic lack of public funds on the other. In recent years, in most countries, this has led to serious consequences, caused by the reduction of the state allocation of higher educational institutions, respectively, and the cost per student [4, p. 456].

Externally, universities are increasingly approaching private governance models and public sector corporations.

Proponents of education modification movement argue that this process will transform higher education into a more flexible and efficient institute. Expansion of the market in the audience will provide better value and quality, and the university sector will become more efficient and more responsive to the needs of society, economy, students and parents. The political direction of creating a market for higher education is fundamentally ideological. However, the transformation of education into goods does not necessarily lead to the creation of a market for the sale and purchase of academic education. Indeed, it is not always clear what is being bought and sold. In this way, conditions are created for the institutions to compete for resources and funding. It is important to understand that the transformation of education into goods is equally a political, ideological process as an economic phenomenon. For example, governments often contribute to a well-defined policy through a market economy. This tendency is not a triumph of a free market economy. Indeed, it can be argued that the market-based trade in education has led not to a decrease but to increased interference and micro-management of university life. Governments are desperately mobilizing students and their parents to choose a university under pressure from the market and marketing tools. According to the logic of the market, the customer is always right, so universities are guided by the interests of students, and not the academic community.

Another important factor contributing to a radical change in thinking about the nature and role of higher education is the use of neoliberal economic policies

for stabilization, structural adjustment and globalization associated with the International Monetary Fund and the World Bank.

Many governments of exporting countries have encouraged higher education negotiations under the GATS and WTO, since trade in higher education is essentially seen as an important source of income for universities, thus reducing the obligation for governments to allocate most of their resources. For example, even some of the best universities in the world, such as Oxford and Cambridge, seen as the gold standard in higher education, are involved in business, trading and selling their degrees to students abroad [4, p. 457]. Creating the General Agreement on Trade in Services (GATS) reflects the formalization of the market processes, driven by the growing need for independence of public institutions and the procedures for international trade in services. The GATS covers all international services, including education. Within the education sector, GATS covers the following categories of education services: primary, secondary, higher, adult and «other». GATS education trade takes place in four modes: cross-border supply of services (where consumers remain within their own country); consumption abroad (where consumers cross the border); the commercial presence of a provider in another country (institutional mobility); the presence of persons in another country (staff mobility) [5, p. 9]. The GATS considers public goods as commercial goods and even global public goods as global commodities intended for trade and profit. It is equitable to fear that the nature of the benefits of general consumption will be revised and that public education will be a commodity for which GATS will provide a political and legal basis for deregulation and privatization [5, p. 58]. The transformation of education into commodities leads to a mass privatization of education that increases tuition fees and growing inequality because of the access restrictions. Moreover, as the driving forces of the national state and state control over higher education are reduced, the ability to plan the education sector for national needs will completely disappear, as education will be formed in the markets to meet the needs of the market, and international trade will prepare people to meet the requirements of the labor markets of the developed countries [5, p. 62]. Entry to the domestic market of foreign private institutions may also have a negative impact on domestic government institutions, especially in developing countries, which are not necessarily competitive and not fully oriented to the needs of the market and often serve the national interests of more influential countries [5, p. 65].

Individuals with average and higher incomes are more likely to profit from the state financing of higher education rather than low-income groups, thereby exacerbating uneven distribution. Although this argument is true to a certain extent, the situation in developing countries is changing rapidly: access to higher education is no longer limited to middle-level groups, and the level of engagement of poor social and economic groups is increasing, albeit slowly. On the other hand, the adoption of neoliberal arguments on state funding for higher education and the withdrawal of state will reduce the participation of socio-economically weak sectors of society

in higher education and will further emphasize their inequality in accessing higher education services [4, p. 459]. The transformation of education into goods and its internationalization leads to the brain drain and a serious shortage of skilled labor in developing countries. Higher tuition fees paid by foreign students, relatively low wages in their home countries, and better job markets in developed countries will even more potentially contribute to the brain drain [5, p. 65].

With regard to academic research at universities, there is a steady increase in private interests. Knowledge, which is essentially non-exclusive and non-competitive, has been privatized. An argument for the privatization of codified knowledge is the possibility of obtaining high benefits, which in the future encourages more investment in research and creativity [16, p. 139].

Thus, it remains ambiguous whether higher education is a public good or a commodity. Studying at high school is usually a combination of both. Public goods include individual non-market benefits and acquired knowledge that is not excluded or non-competitive. However, when studying creates additional value, it acquires a new feature, which is competition. Apart from that, admission to higher educational institutions with high demand is exclusive. This creates prerequisites for higher education market emergence. The transformation of higher education into goods is caused by the need for institutional independence of universities, as a consequence of neoliberal policies, trade agreements, and bolstered up competition.

As it has already been noted, the second major factor in the functioning of higher education is its funding.

As studies have shown, requirements and expectations to universities and, in particular, to the process of teaching and research, are growing rapidly. However, public investment in higher education is still small, and the costs associated with university activities are increasing, thus, ensuring financial sustainability is a major challenge for universities. The first step for universities in responding to these challenges is to determine the real cost of their activities.

The financing of higher education in Europe, as in the rest of the world, has undergone significant changes over the past decade [14, p. 1]. These trends vary both in different countries and within each country and constitute the context for the current widespread financial rigidity of higher education, as well as new policy decisions that, although constantly changing both between the countries and within them, are nevertheless, very clear and similar [6, p. 4].

The first trend is the increase of the cost of training per one student. The fundamental financial problem of higher education worldwide and the reason that even rich institutions may need to save money begins with the fact that universities face annual cost increases [6, p. 4]. Such a trend of increasing costs per student over inflation is the production function of higher education, more specifically, its natural resistance to continuous replacement of labor by capital, which is the main source of productivity and growth in the general economy. The increase in the cost of higher education is also caused by the creation of new programs and the initiation

of new research, accompanied by enormous technological costs.

The second trend is the fluctuation of the state, namely tax revenues.

Governments around the world are more often struggling with an increase in the tax burden on social insurance and rising costs for primary and secondary education, healthcare, public infrastructure, security and other social security costs.

In Ukraine, during 2017-2019 the GDP spending on education is being reduced. Namely, a decrease in financing from 5.9 % of the GDP in 2018 and 6.2 % in 2019 to 5.6 % of the GDP in 2020.

The third factor affecting the financing of higher education in almost all countries is an increase in the share of world production, especially in developed countries, whose main economic sector is services, or the so-called knowledge economy based on cutting-edge technologies, design, finance and governance. The result of the knowledge economy is the increase of value for both the country and for individuals, or at least for some forms of higher education (especially management, finance, law, mathematics, technology and technology). The financial outcomes of this knowledge-based economy for higher education are manifested through new educational programs and the redistribution of faculties and students among these new programs. These two effects contribute not only to further accelerating growth, but also to the growth of training costs. This creates the basis for increasing investment by both students (or parents) and, where possible, governments [4, p. 7-8].

Strengthening globalization phenomena is the next reason for changes in education.

Decentralization, devolution, and deregulation are the final trends or set of related trends in most countries and reflect state's movement towards reducing the public sector, decentralizing government, privatizing agencies, and encouraging private organizations to provide services that were previously provided by certain government agencies. Although the large public sector and tax redistribution are preserved in many countries, such as the Scandinavian countries, new effective state governance replaces state ownership of all means of production and the domination of the state bureaucracy [6, p. 9].

At long last, the impact of decentralization, devolution and deregulation on the financing of higher education is to encourage the development of private higher education and the privatization of state higher education. Universities around the world, both state and private, move from the status of state institutions to the status of state-owned corporations and carry out all the functions inherent in private ownership, regardless of the legal direction of their missions or their constant dependence on government revenues [3, p. 2].

In Ukraine, state form of ownership of universities is prevailing. In 2014, there was a decrease in the number of both public and private universities. As of the 2017/2018 academic years, the number of private higher education establishments amounted to 157, i.e. 23.7 %. In general, the number of universities of both forms of ownership has somewhat declined.

With consideration for the global trends in higher education, universities have taken measures on costs and incomes. Cost decisions often raise questions about whether they affect the quality of education; income decisions often mean an unprecedented burden for households, that is, the families of students. Simple short-term solutions in regard with costs are increasing the size of groups and training load, differentiating the load on the faculty by hiring part-time workers and reducing low priority programs. Universities can freeze salaries or scholarships for students; reduce wage costs, maintenance and repairs. [6, p. 11]. The decision of the financial economy of higher education, which involves reducing costs, appeals to many political and economic rights. Reducing costs does not mean increased efficiency or productivity. In many countries, there is still the idea that much more fundamental changes are needed, if not necessarily for all institutions, then at least for some institutions or some higher education systems. These more fundamental, radical and systemic changes, for example, may include: a more radical diversification of the industry, mergers, technically equipped training, e-learning and virtual universities.

There is more radical diversification of the industry, especially in those countries (e.g. Italy, Spain and other Southern European countries), where the classical research university still dominates with its leading faculties, and where practically all faculties are more focused on research and disciplines, and not really on university and students, is quite complicated to implement. The sector's diversification or relative change in the short-term is less expensive, less selective, more professional-oriented, and involves more hierarchically driven universities whose faculties are focused on learning rather than on research, often considered as a partial solution for the needs of higher education institutions [6, p. 14].

A merger, at least theoretically, can reduce the prime costs by increasing the scale of operations and obtaining cost savings for such departments as libraries and administration. But for real reduction of expenses it is necessary to reduce faculties and employees, including the highest management, additional services, elimination of some academic programs and the rejection of precious institutional identities – measures that universities resist both institutionally and politically. If the merger is only nominal, that is, most programs and faculties are preserved, and simply the president or rector and several other top-level administrators are eliminated, the result will be more difficult and less effective management, demoralized faculties (both institutions) and the inability to realize significant savings as a real merger, and the complete closure of one of the supposedly «united» institutions. At the same time, institutional mergers may be both necessary and feasible and have actually taken place in countries where many universities are developing on a narrow scale [6, p. 14-15].

Technically equipped training, e-learning and virtual universities are the third option of a radical change in the University's cost cutting strategy. In most countries, there is an explosion in technological and remote learning, although the most successful programs were mostly outside of higher education and not in the direction of radical transformation of existing universities. New virtual universities

sometimes attract a lot of interest, which eventually abates, as students of traditional higher education still want to get more complete experience within the university. Yet, there is definitely a great deal of interest from existing universities in all types of educational technologies, mainly as an addition to traditional teaching methods, as well as to provide a real e-learning. In developing and low-income countries, the potential may be greater than those who study in remote locations where the main costs of higher education are out-of-home spending (although lack of personal computers and good Internet connectivity may continue to be the main obstacle).

Despite the fact that innovation in teaching technology can ease the sense of financial constraints, the experience of more affluent industrialized countries suggests that educational technologies can enrich training, but significantly increase, at least in the short-run, the cost of training of a single student. If the goal is to give students access to curricula, remote learning can bring significant savings compared to alternative student placement in classrooms. However, for a single institution or even a national system that seeks to cope with disparate cost and income trajectory, most remote learning programs can enrich learning, but will in fact cost more than traditional training in case of creating an independent platform [6, p. 15].

Measures for increasing income include raising tuition fees, encouraging philanthropy, democratizing knowledge and access, relying more on the market, the private sector, and encouraging entrepreneurship in the faculties. Another opportunity for boosting cash inflow of universities is the establishment of a foreign campus or the encouragement of foreign students. It is believed that an increase in income is a better method than relying on a tuition fee that may fluctuate over time. High tuition fee involves certain contribution from parents. It is often difficult to determine paternal readiness to contribute to higher education [6, p. 43]. High tuition fees may sometimes hold back low-income students, especially in countries with underdeveloped crediting system. In some countries philanthropy has made a significant contribution to education. The tradition of charity may be stronger in some cultures than in others. For example, in the United States, philanthropy has been very helpful in providing grants and helping low-income families [6, p.13]. In the UK, philanthropy accounts for 10 percent of university profits. In Europe, there are still psychological obstacles to raising funds with which charity is associated.

Traditionally, universities had the key to knowledge both in the physical and philosophical sense. University libraries, faculties and research institutes, where knowledge was created, store and share it. Now knowledge is open to anyone who has a device and a connection, which makes it possible not just to receive facts and figures, but also to conduct analysis, interpret knowledge. Back in 2007 OECD proposed the «Open Educational Resources» program. The OER project aims to promote access to learning for all, as well as for unconventional student groups, and, consequently, to expand participation in higher education. This can be an effective way to promote life-long learning for both individuals and the government, helping to bridge the gap between informal and formal education. Although there

are no statistics yet, there is a rapid expansion of the number of OER projects, as well as the number of people involved and the amount of available resources. In January 2007, the OECD identified over 3,000 open academic programs from 300 universities around the world. Although English is the dominant language to date, translation of resources in combination with the growing number of non-English OER projects will have the potential to increase global use. The benefits of open educational resources include the following: education is available to anyone; access free of charge, ideally; students can try the course before registration; flexible study periods not related to weekly schedules or calendar semesters; students work at their own pace; access from anywhere in the world; access to a huge amount of training materials; Intellectual capital is available for repeated use.

The PPP is the next method of increasing university profits. The PPP can be defined as an agreement that the state concludes with a private service provider for certain services in order to purchase a specific service at a specified amount and quality at an agreed price for a certain period. This definition covers several different types of contracts that allow you to purchase various services and vary in their complexity. These services comprise educational services (management, maintenance and support, such as transport), maintenance services and infrastructure. There are 4 main types of contracts: vouchers, subsidies, private management and operations and private financial initiatives. The ultimate goal of the PPP is to increase the number of enrolled students and to improve the educational outcomes, in particular, the number of students from low-income families [11, p.17-18].

Online education, which still remains to be cutting-edge among social technologies, has been used to improve distance learning by adding various enhancements, changes or blending of new pedagogical approaches and technologies. Technologies used for distance learning and online learning include: correspondence classes, postal and printed publications; telephone and / or sound recordings; television and / or video recordings; computer auxiliary instruction; group communications (asynchronous and synchronous); web and multimedia materials; simulation and games; coeducation; asynchronous learning networks (ALN); common knowledge systems; immersed simulation; and wireless and portable devices. Most modern distance courses include one or more of these technologies or methodologies. Technology itself has not radically changed the basic concepts of distance learning or university education from the point of view of the basic social function of education. However, there is a substitution process that can modify higher education. Gradually higher education is driven by direct communication with the use of teacher-oriented pedagogy offered by dozens of local, regional and national universities to online and hybrid digital technology courses to support constructivist, joint, student-centered pedagogy offered by several «mega universities» working in global scale. [13, p. 59-60]. Digital technologies will not cause the disappearance of the traditional university. Campuses will continue to exist as places of teaching and learning, research, community involvement and diverse

forms of student activity. But digital technology transforms the way education is provided and maintained, for example, through real-time feedback programs and education in remote areas, both in developed and in developing countries.

Digital technologies also fundamentally transform the way of creating value within higher education and related industries [7, p. 9]. At present, the two most common types of distance learning are provided online: MOOCs and SPOCs, which differ, first and foremost, in the number of students they provide services to. MOOC is an online open access course (i.e. without a special limitation of participation), which allows you to participate without restrictions, that is massively. Many MOOCs provide interactive elements to encourage interaction between students and between students and teachers, although the latter is not a mandatory attribute. The MOOC, with the exception of unlimited size, traditionally includes students, separated by both space and time, which allows students to study independently at their own pace without being required to adhere to a particular schedule [13, p. 6]. SPOC is an online course that offers only limited number of seats and, therefore, requires some form of enrollment. SPOCs often have a competitive admission and can charge a tuition fee. Despite the fact that the creation of MOOC is not cheap, it can bring significant savings, for example, for courses taught in several specialties in parallel throughout the year or in different places. The last approach applies to institutions with university campuses in different regions. The MOOC can also help to ensure a sufficient level of audience coverage by in-service lecturers, whose work sometimes costs more than the work of the freelancers. In addition, the introduction of the MOOC may also create a potential for new revenues, for example, in case of fees charged for obtaining a certificate or, if other institutions use MOOC, for your own training. Branding is important not only for the sale of consumer goods, but also for the sale of education. Universities today find themselves in an increasingly competitive environment and in a constant struggle to attract the brightest students, the best teachers and cash. MOOC can help to create the right positioning and distinguish the university from others, like a viral marketing campaign or effective advertising.

The need to study the efficiency of public funding for universities is becoming increasingly important for a number of reasons. The growth of social demand for higher education, the globalization and the internationalization of higher education, the recognition of the need to improve the quality of research coincides with the financial aspects of the activities of higher educational institutions. Financing of the system of higher educational institutions is one of the most important elements that determines the whole system of higher education - both institutional and qualitative, its accessibility and other parameters [10, p. 336]. In accordance with the interaction of funding sources and the impact of funding recipients on the system of higher education, bureaucratic, collegiate and market financial models can be distinguished [10, p. 336].

The basic principle of the bureaucratic financial model of higher education is the full financing of the budgets of higher educational institutions from public

resources. In this case, the state directly influences all spheres of activity of the higher educational institution through legal and financial instruments, which accordingly determines the structure of the higher education institution, in particular the number of departments, employees and the number of students enrolled, the need for certain branches of study and research. Government institutions control the use of financial resources. Higher educational institutions do not have the authority to manage their long-term tangible assets and, in essence, carry out state orders. The state can delegate certain functions to different supervisory bodies, where members of the academic community usually take part [10, p. 337].

One of the main advantages of this model is that in this way, the state can fully satisfy its needs by training and controlling the required number of specialists. The state also obtains opportunities and mechanisms for ensuring the qualitative research provided by legal acts. However, this model has more disadvantages than advantages. First, strict and centralized financing (usually accompanied by an elaborate regulation by the state) almost completely limits the real institutional autonomy and academic freedom of higher education institutions in solving issues related to the activities of the university. The system of higher education, too, becomes dependent on political power and can often become a hostage to various questionable political decisions. As a rule, educational institutions, where such a model of financing is implemented, is not allowed to dispose of financial resources on its own. Resources are allocated on the basis of data of the previous year, which, in turn, contributes to the ill-considered use of them, ignoring the daily needs of the university, which may change in the course of annual financial activity. It is also problematic to introduce changes that require rapid decision-making, as the decision-making process is usually regulated in detail, followed by numerous bureaucratic procedures. Despite the fact that the quality of education is regulated by the state, this reveals the weakness of such a model, because the quality assessment system should be legitimized and carefully described by both internal and external regulatory standards [10, p. 338].

A collegiate model usually envisages state-funded activities of higher education institutions and retains the right of universities to raise funds for individuals (through tuition fees, remuneration for services provided in projects, for research, for the funding of certain programs or scholarships) it also includes the right of academic institutions to freely dispose of their resources. Such system of financing requires an appropriate management system for each particular model that can be described as a professional management model, where professionals, selected staff and students of the university manage the higher education institution. Such financing models and management models have their advantages and disadvantages. When the resources at the disposal of the university coincide with the academic needs, there is a high quality of academic services and strong academic solidarity. The prerequisite for this model is that higher education institutions have the right to full institutional autonomy, especially in the processes of management and distribution of resources,

which undoubtedly positively affects academic freedom, higher education quality and optimal use of financial resources [10, p. 339-340].

Notwithstanding all the benefits, the use of a collegiate model of higher education funding may inevitably have some negative consequences. One of the most frequent negative aspects (also inherent in the bureaucratic model) is that the state budget is redistributed to the system of higher education from all members of society, but only for representatives of a certain social status, which are socially meaningful and financially privileged [10, p. 340].

The third model of financing higher education, the so-called market model, is becoming more prevalent. It is characterized not only by its ability to attract alternative financial resources, but also by its commitment to cooperate and coordinate the work of all participants in the system of higher education institutions, in particular those providing academic services (lecturers and scholars), using services (students and their employers) and a state representing the interests of society, the governing bodies of universities, which are responsible for the efficient, high-quality functioning of the institution. The plurality of interests and financial resources, as well as the mechanism of their distribution, creates favorable conditions for expanding activities that are in the interests of different groups of society. It is believed that such a model of financing may not be the main contractor of higher education services, which, by regulation, will determine priorities. Universities are looking for and attracting more and more diverse funding sources that will ensure a high-quality and efficient functioning of an institution that meets the needs of the market. At the same time, the market-based financing model requires higher education institutions to provide sufficient information about their activities and foresees maximum financial and high-quality accountability, as investors (state, enterprises, private organizations, etc.) are interested in co-operating with clearly defined academic and managerial processes [10, p. 343].

This model emphasizes the balance between public and private funding, where the latter is a priority. One of the main benefits of this model is the competition between higher education institutions for private sector resources, which will allow universities to lower tuition fees, seek better quality, respond in a timely manner to market demand. The weakness of a market model is that, as a rule, rapid academic and scientific results are required, which may be incompatible with academic freedom [10, p. 344].

The analytical assessment of various university funding models and the analysis of the state-funding model for higher education institutions in Ukraine suggests that Ukraine has already moved away from the bureaucratic financial model of higher education, but has not yet fully implemented a collegiate model. Currently, the national funding model for higher education is now being sought. The proposal of the CEDOS analytical center on the replacement of the mechanism of public procurement model of state funding of higher education institutions by performance (based on performance) is interesting [12].

Thus, the conducted research proves that higher education is becoming increasingly commercialized and acquiring signs of a private good. And this requires dramatic changes in the policy of public financing of higher education.

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ANALYSIS OF MODERN TECHNOLOGIES OF MANAGEMENT OF PERSONNEL SAFETY OF THE ENTERPRISES

Volodymdr Tkachenko,
Postgraduate student,
Poltava State Agrarian Academy, Poltava, Ukraine

In today's conditions, domestic enterprises have to operate in unstable market conditions, unpredictable political, economic and social processes, which on the one hand creates a dynamic and unstable environment for work on the other. All this encourages managers of enterprises to find and implement effective technologies and measures to solve economic, technological, information and other problems that arise from the outside, and to adapt the enterprise to work in these conditions.

The theoretical foundations of the technography of personnel safety management of enterprises were considered by such authors as I. L. Dobrotvorsky, V. G. Kozachenko, N. Kozachuk, O. E .Kuzmin, S. G. Pirogov, O. V. Sakharova, I. M. Sochinsk-Sibirtseva, etc. However, the theoretical aspects of HRM require more detailed consideration and generalization.

Personnel security is one of the main components of economic security of any enterprise, because it means people who are the most important and at the same time the most complex resource of the enterprise.

Specificity of the human factor in comparison with other factors of economic development is that, firstly, people not only create, but also consume material and spiritual values; secondly, the multifaceted nature of human life is not limited to work activity, and therefore, in order to use human labor effectively, one must always take into account the needs of the individual as a person; thirdly, scientific and technological progress and social orientation of social life are rapidly increasing the economic role of knowledge, morality, intellectual potential and other personal qualities of workers, who are formed for years and generations, and are revealed by man only under favorable conditions [9].

In today's sense, enterprises should be considered in the aspect of interrelated elements. This system can only reproduce its inherent properties based on its own system-creating resources. An important factor is the ability to influence and manage these resources.

The processes that occur when making certain managerial decisions can be called the technologicalization of management activities. The technologicalization of

management is a natural consequence of technological revolution, computerization of almost all activities. Today, it is a hallmark of enterprise management. It determines the search for those management tools that can be used effectively in the management of the enterprise.

Management technology contributes to its rationalization, eliminates those jobs and actions of executives and specialists, which are not necessary to achieve the expected result of management activities, formalizes the implementation of management functions [2].

Technology (from the Greek – art, skill, ability) in the general sense of the word – a set of organizational measures, operations and methods aimed at the manufacture, maintenance, operation of the product with nominal quality and optimal costs, which are due to the current level of development of science, technology and society as a whole [5].

Management technology is a sequence of actions that results in a guaranteed result. It consists of information, computing, organizational operations, which are performed by managers and specialists of different profiles by defined algorithm. Under the technology of personnel management we mean a set of techniques, methods of influencing personnel in the process of hiring, using, developing and releasing them in order to obtain effective end results of work [8].

Management technologies provide an opportunity, according to the chosen approach to enterprise management, to implement management principles, to use its methods, to organize management processes.

Management technology reflects its content, processes of movement and processing of information, determines the composition and procedure of management work, during which information is transformed and creates grounds for influencing a managed object in order to translate it to the desired state, allows to ensure the rational interaction of structural units and individual performers in the management process [2].

In the general form of management technologies are considered as a set of knowledge about the ways and forms of application of elements of the enterprise management system in management processes, covering all the processes occurring at the enterprise, as well as between the enterprise and the external environment [1, p. 34]. More accurate is the interpretation of management technology as a set of management information processing methods for the development, adoption and implementation of management decisions [10], and the most appropriate is the recognition of technology management system operations and procedures performed by executives, specialists and technical executors in a specific sequence using the necessary methods and techniques [11].

In today's context, we can see a close connection of all components of technology with each other. This is clearly visible both within the personnel management system and with external factors.

In modern management the most widespread management technologies are:

- linear control technology;
- management of deviations;
- results management;
- management by purpose;
- situation management.

Let's look at each of these technologies separately.

Linear technology is a strict sequence of individual works and operations performed in accordance with a pre-planned plan [7]. The biggest disadvantage of this technology is the very slow response to dramatic changes in the environment.

Deviation management is done by fixing deviations from planned actions and implementing measures to eliminate undesirable effects. The effect of this technology is manifested in the concentration of time in more important areas in the field of management, filtering and distribution of information for making management decisions, increasing the validity of the decisions made and reducing their number, increasing the productivity of staff and the interaction of functional units [8].

The main purpose of results management is to make management decisions, depending on what level of previous goals have been achieved. This technology requires constant monitoring and monitoring at the enterprise as it is based on the individual responsibility of the employees.

Goal management can be described as an approach that aims to set goals and find ways to achieve the best results.

The term «goal management» was first introduced into the theory and practice of Peter Drucker management and meant the anticipation of possible results of activities and planning of appropriate ways of their achievement [6].

O. E. Kuzmin defines: – «Goals management is an approach whereby every organization leader must have clear goals that will ensure that the goals of senior executives are achieved» [4]. This technology allows to monitor the effectiveness of employees.

Situation management is the operational management that is implemented in addition to the strategic and perspective. The content of this technology is to make management decisions in the course of problems in accordance with the situation in the enterprise. The use of situation management technology is carried out in several stages: analysis of the situation in which the enterprise was; evaluation of the properties of existing management models; selection of an acceptable effective model in a particular situation [8].

Management technologies have certain characteristics that can be evaluated. The characteristics of management technology and how to evaluate them have not yet been fully explored, and this question still needs to be addressed. But such characteristics include, for example, the cost-effectiveness of the technology (the cost of developing or adapting and applying the technology should be comparable to the magnitude of the losses resulting from errors in management decisions, their delay or poor implementation), the flexibility of the technology (the technology

should be applicable when some change in the conditions for which it was originally developed), the reliability of technology (obtaining when using the technology of a given result) [2].

The main task of personnel management technology is to optimize and improve the efficiency of the management system. This can be achieved by choosing the most rational management decision-making methods, which will have the most effective impact on the company's staff.

Management technology is a major component of the management process. The management process, in turn, is the basis for the overall management system. The formation of personnel management technology allows us to find out which categories are most necessary for this process, which can be attributed to the principles, methods and functions of influencing workers.

The objective need to develop methodological recommendations for the implementation of HRM is supported by the results of the following studies. Organizational development consultants of manufacturing enterprises estimate that only 10 % of employees can clearly state the goals of their own activity at the enterprise and only half of them are in line with management's view [3].

Clear and understandable goals that are set before the staff are a necessary part of a successful business. Otherwise, when workers do not understand the ultimate, ineffective methods of achieving strategic goals begin to be used, the efficiency of using all available resources, labor, material, information and financial resources is reduced. Each HRM technology selected has a significant impact on performance through the methods and sequence of actions implemented. The use of management technologies is appropriate if it is often enough to have similar situations that require the use of similar actions, situations for which standard management algorithms are first created. This allows you not to waste time developing management techniques, you need to identify a specific management situation and get a ready solution based on a typical scheme.

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THE MISSION OF THE MODERN RESEARCH UNIVERSITY IN UKRAINE

Oksana Zhylinska,
Vice-Rector (Science work), Doctor of Sciences (Economics), Professor,
Taras Shevchenko National University of Kyiv, Kyiv, Ukraine,
Anastasia Kozlenko,
Postgraduate student,
Taras Shevchenko National University of Kyiv, Kyiv, Ukraine,
Iryna Novikova,
Ph.D. in Economics, Senior Researcher,
Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

A clear understanding of the mission of the research university is an important factor in its strategic management efficiency. The clearly-determined mission of research universities provides ground to define the main goals of the university's activity, to describe the top-priority directions of this activity, to distinguish the individual features of the research university and is decisive in the adoption of the development strategy of the research university. The mission of the research university must be transformed and adapted to the current realities, primarily taking into account the peculiarities and stages of the university development.

A great number of prominent scientists investigated the issue under discussion and made a significant contribution to the substantiation and verification of the features of a research university management system. Among them F. Altbakh, L. Antoniuk, V. Andrushchenko, O. Auzan, V. Bakirov, V. Bakhrushin, N. Demianenko, G. Etzkovitts, O. Zhilinska, V. Zhuravliov, M. Zgurovsky,

A. Karpov, B. Clark, M. Kolotylo, G. Mayer, J. Salmi, V. Satsyk, M. Sytnytsky, J. Scott, V. Supian, S. Tulchinskaya. The issues of universities' mission are in the focus of numerous scientific works by such scientists as I. Zakharov, T. Zhyzhko, V. Zhuravliov, M. Kvek, S.Kvit, K.Kerr, N. Kozlov, E. Kolesnykov, S. Kurbatov, N. Makarkin, O. Ohienko, H. Ortega-i-Gasset, N. Plaksin, V. Povzun, S. Proleiev, V. Rodachyn, A. Sbruiev, L. Shevchenko, N. Yasynska and others. Although a considerable amount of the theoretical and practical studies have been devoted to the issues of the university mission, the problem of the applied principles for the formation of a research university mission is not fully disclosed and therefore is still urgent.

In their majority, scientists and the heads of the higher education institutions equal the mission of a university with its idea. There are several approaches to the definition of the university mission. Among them the following ones:

- mission of a university – a clear vision of the values, goals, and the university development space [1, c. 43];
- university mission is a perspective vision of the university image, the principles, and the ways of promoting the ideal [2, p. 10].
- mission of a university is clear grounding for university functioning [3, p. 31].
- mission of a university answers the principal question of what an individual's needs the organization satisfies [3, p. 32].

A distinguishing feature of a research university is the factor that its staff carries out intensive research work there. In 1809, the first educational institution was opened in Berlin. It falls into a category of a research university now. It was this new-type university that taught a small number of students and was primarily a place of active research.

The motto of the newly created V. von Humboldt University was Aptitude for the Sciences, and the basic principles were academic freedom, the priority of scientific research, and the elite scientific personnel training [4, p. 31].

The fundamental provisions of the Humboldt University support the idea of learning via research, while the university mission realization is possible only in terms of university autonomy suggested by the philosopher and focused on three main principles.

1. Interpreting knowledge as a means of achieving goals which are external to the carrier of that knowledge.
2. Preventing the domination of experimental or empirical studies opposing the fundamental theoretical knowledge.
3. Laying importance on humanitarian education.

It was Humboldt who described the idea of the humanistic mission of education in his research and regarded learning and research as the essential components of a university mission that organically unite in the educational activity of this institution. Universities, reaching their goals, promote the government goals, expanding «views horizons».

S. O. Tuchynska argues that «university is a place of free scientific search, where the student gets acquainted with the basic principles of research» [2, p. 323-324].

J. Newman did not support W. Humboldt's principles, emphasizing the educational function of the university.

He believed that university should spread and promote knowledge but not concentrate only on the current knowledge acquisition [5, p. 85]. In his view, a university is a place where universal knowledge is taught.

Jose Ortega-i-Gasset considered three basic functions of university education [6, p. 36]:

1) transfering cultural values;

2) training in a profession;

3) scientific research and teaching science to new scholars.

Currently, in the educational space there are four basic models of universities, historically formed in Western Europe and the United States (by T. Husen):

1. «Humboldt Research University» relies on the model where the scientific and learning activities are treated as complementary components from the very beginning of the university course; students must gain experience in communicating with the advanced science in the continuous process of seeking new scientific knowledge in order to become pioneers in the relevant professional fields in the future.

2. The British boarding model (the «Oxbridge model») is based on a private informal communication between students and teachers. This communication takes the form of tutorials and is considered no less important for the student development than attending lectures and seminars.

3. The French model of «big schools» has become a symbol of a state-led meritocratic society, where highly educated professionals fall into a category of the superelite. These schools, which do not involve research intellectually and socially, are highly selective.

4. The Chicago model (by T. Hutchins) is a comprehensive program with a pronounced humanitarian bias. In terms of this model, the main goal is «to acquaint the student with the views of leading scholars in the field of humanities, natural and social sciences, to develop in him the desire and need for further self-education, independence, and critical thinking» [7].

An essential element of the research university activity content is the integration of the educational process and fundamental scientific research, while the main objectives of this activity are determined as knowledge acquisition, knowledge accumulation, and knowledge preservation. In general, the structural features of a research university correspond to the classic university model. However, the research university focuses more on the system of identification and promotion of the talented students (training programs abroad, grants, and awards for young scientists).

E. Mikhailova is convinced, that despite the differences in the approaches to the issues of university education «the main tasks of the university remain unchanged,

which at all times have implied enriching scientific knowledge, involvement in culture, forming the intellectual elite of the state and society, and support of the academic and scientific traditions» [8, c. 81].

The analysis of the official web-sites of Ukrainian research universities and the University Development Strategies made it possible to shed light on the missions of the Ukrainian research universities. In particular, the study has revealed that the university mission is not clearly spelled out and defined in most leading Ukrainian universities.

Many research universities identify their mission in terms of the goals, motto, and slogans of the university. The study has revealed that the clarification of the mission in most universities' programs is too wordy, while in the business environment, it is customary to describe the mission of a company in a single sentence. Comparative analysis of the missions of the research universities gives grounds to conclude that all universities follow the basic principles of learning and teaching, but the main goal, described as the missions of all Ukrainian research universities, is still not the research aspect but educational one. The acquisition and dissemination of knowledge, formation of the creative, highly-educated, and intellectual personality are the top-priority tasks in the strategic policies of the national universities. Some research universities add the issues of training, formation, and development of an individual or nation. Taras Shevchenko Kyiv National University lays emphasis on the «educational, research and innovative activity» [9]; V.N.Karazin Kharkiv National university on the «formation of the intellectual elite of the nation, training of highly professional, spiritually rich, and patriotic specialists and citizens» [10]; Igor Sikorsky Kyiv Polytechnic Institute seeks «to create conditions for the comprehensive professional, intellectual, social, and creative development of the individual at the highest levels of excellence in the educational and scientific environment» [11]; the National University of Kyiv-Mohyla Academy states that «Mohyla is a community that forms a highly-educated, nationally-conscious, honest, caring, creative personality, able to think independently and responsibly in accordance with the principles of the good and justice, for the sake of developing an open and democratic society» [12]; National University of Life and Environmental Sciences defines its mission as «to train specialists at the European and world level of the intellectual and personal development» [13], while the Vadym Hetman Kyiv National Economic University sees it as «training competitive professionals and creative personalities» [15]; National Technical University «Kharkiv Polytechnic Institute» aims its policy at «promoting the harmonious development of the individual and ensuring the preparation of a new generation of professionals capable of integrating research, design, and entrepreneurship via deep mastering of basic knowledge, studying engineering, mastering engineering creativity and enterprising art» [16] and Ivan Franko Lviv National University seeks «to raise the personality as the bearer of intellectual and innovative ideas potential» [17].

The key findings of the study argue that the missions of only six research

universities, namely the Igor Sikorsky Kyiv Polytechnic University, the National Aviation University, the Vadym Hetman Kiev National Economic University, the National Technical University Kharkiv Polytechnic Institute, the National Mining University of Ukraine and the Volodymyr Dahl East Ukrainian University focus on the creation of new knowledge and development of the society through the creation and implementation of innovations. The following excerpts are provided to support and illustrate the above statement.

1) «Make a significant contribution to the sustainable development of society via the internationalization and integration of education, the latest research and innovative achievements» (Igor Sikorsky Kyiv Polytechnic University) [11];

2) «the mission is to respond to the current challenges of the global aerospace market by providing high quality education and scientific services to the Ukrainian citizens» (the National Aviation University) [14];

3) «making a significant contribution to social development via research and generation of new knowledge» (Vadym Hetman Kiev National Economic University) [15];

4) «carry out fundamental and applied scientific researches, integrating their results in the educational process, satisfy the needs of enterprises and institutions via effective technology of cooperation and at the expense of the continuity of the research traditions and schools» (National Technical University Kharkiv Polytechnic Institute) [16];

5) «generate the changes that the region, country and the world need» (the National Mining University of Ukraine)[18];

6) Volodymyr Dahl East Ukrainian University summarized the functions of the University in its mission, defining their main areas of development, namely «the mission is implemented by the university through the main areas of its development, which include socio-educational, educational, innovative, research, international, financial, production and economic activity» [20], however, in the Strategy of Volodymyr Dahl East Ukrainian University Development, the emphasis is laid on the dynamic influence on the socio-economic development of the country [21].

Therefore, the educational and research functions of universities are fundamental and indispensable for the development of any university. In his study, T.Zhyzhko states that "the interdependence of education and science today is not only the truth obvious to everyone, not only a demand of the time but also the only promising path for university development. If we accept the constant that university has always been different from other educational institutions and in terms of its goals will be different in the future, then the approach «education via science» is the only promising way of modern university prospering. We can claim without exaggeration that «the future of human progress depends greatly on the unity of science and education, which can promote sustainable social development» [22, p. 36-37].

F. Altbach is convinced that in any country it is the research university that creates and generates not only a large amount of new knowledge and analytics,

which in turn leads to the development of technology, but also contributes to the development of culture, society, technology, and international institutions which are an integral part of global intellectual and scientific trends [23, p. 11].

Quite interesting is the opinion of the Hong Kong University of Education, which was founded in 1994 as the Hong Kong Institute on Education, is one of the eight subsidized universities under the Hong Kong University Grants Committee, and the only one dealing with pedagogical education. It describes its own mission as promoting educational innovations, supporting the strategic development of teaching technologies, equipping prospective teachers with the knowledge in their majors and the skills they require to perform their tasks effectively, preparing highly-qualified and morally responsible teachers, motivated for lifelong

learning [24]. We share the opinion that lifelong learning is a fundamental issue in personality development. P.Drucker argues that education in the «knowledge-oriented society» requires continuity, advanced learning, and an integrated approach. He states: «As we live in the era of innovation, the practical education model must prepare a person for a job that does not yet exist and cannot be clearly defined» [25].

Therefore, the mission of a research university should be inspiring, aimed at expounding the main goal of its research activity and integrating efforts of the students, teachers, and all the staff of a research university to implement the corporate idea. The main criteria for formulating the mission of a research university are logic, clarity, meaningful content, and conciseness (1-2 sentences). The university mission should comprise the main goal of the university activity, its impact on society improvement, and the features that differentiate it among other universities.

Summing up the above provisions and findings of this study, we can assume that the universal mission of research universities is to create breakthrough innovations and technologies, to generate breakthrough scientific knowledge, and to train not just highly qualified and educated professionals ready to translate and transfer existing knowledge, but more proactive individuals in comparison with the current practice. It is the development of the strict advanced requirements to the graduate's qualification with a focus on his/her proactiveness, the involvement of students in the development of new scientific research of the university, and their participation in project teams that will promote new skills and enrich students' knowledge. In turn, the university has a synergistic effect from the collaboration between students, teachers, and academics. Since the students are generators of new ideas, this cooperation will increase the competitiveness of the university. This approach will provide scientists and practitioners with the mechanisms to address the problems and needs of society quickly and promptly, taking into account the rapid changes in the economic sphere.

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