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# SCIENTIFIC ARTICLES

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## Social and economic problems of Donbas

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### THE ROLE OF THE DONETSK OBLAST CONSTRUCTION SECTOR IN RENOVATION OF THE TERRITORIES

**Problem statement.** In the context of the anti-terrorist operation being held on the territory of Donetsk Oblast (province) looking for ways to restore and rebuild the territory has emerged full blown. The armed conflict in the east of Ukraine caused numerous human casualties and significant material losses. All these drive the need for restoring Donetsk region. Restoration of Donetsk Oblast is seen as the development of the territory which is suited for life while taking into account all special aspects and problems conditioned by its *direct proximity* to the line of confrontation. Erosion of technologically obsolete economy and severance of traditional ties with temporary occupied areas does not only call for the need to form principally new economic complex but also initiates the search for new sources of raw materials and component parts supply and requires questing for new markets for manufactured products. All the facts stated above call for:

- changing the settlement system;
- constructing new roads and utility systems;
- constructing and repairing objects of social infrastructure, in the first place, housing development;
- attracting investment in innovation objects and technologies;
- boosting small and medium business, which will provide jobs to the residents of the territory and supply local communities with necessary goods and services [5].

**Analysis of the latest studies.** It is to be noted that since the beginning of the armed conflict in the eastern part of Ukraine politicians, researchers, public officials, residents, mass media have placed special emphasis on analyzing and monitoring the situation unfolding in Donetsk and Luhansk Oblasts. We now have analytical notes and monographs that have been attempted at evaluating the state of Donetsk Oblast economic growth and giving predictive assessment of further scenarios of restoring the areas affected by the armed conflict. Thus, in the monograph “Donbas and Crimea: return at what price?” the authors (V. Horbulin, O. Vlasiuk, E. Libanova, O. Liashenko) undertook a comprehensive

study of the war at the Donbas and the annexation of Crimea. The research is conducted from the perspective of the National Security of Ukraine. In the monograph reintegration terms and recovery priorities for Donbas are outlined, the ways to overcome social consequences of military aggression are defined and prognoses of development of situation in Donbas are provided.

In the scientific report “Modernization of the economy of Donetsk region: strategic implementation scenarios from the standpoint of sustainable development 2020” by Y. Harazishvili V. Lyashenko, L. Shamileva, Y. Zhyhreva [11] conceptual basis for working out the scenarios of sustainable development with allowance for economic security restrictive guidelines are set forward. The authors defined strategic scenarios for modernization of Donetsk Oblast till 2020 with three 'no change' scenario (pessimistic, realistic and optimistic) and two scenarios of stable development. However, in our opinion in these and other scientific efforts the role and the functions of the construction sector as the basis for the Donetsk region renovation has not been given careful consideration.

**The objective of the article** is to define the role of Donetsk Oblast construction industry in renovation of the territories.

**Presentation of basic material of the research.** The construction engineering sector of Donetsk Oblast is to play the key role in restoring the destroyed industrial and social infrastructure and housing facilities of the region. Table 1 gives certain presentation of the scope of work required for the renovation of the objects damaged in the course of the armed conflict.

It stands to mention that the information on material losses of Donetsk Oblast slightly varies in different information sources. Thus, as of 01 March, 2015 according to the Department of Economy of Donetsk Regional State Administration there are 10,000 facilities which were destroyed or damaged, in particular: 7409 residential houses, 1346 power supply facilities, 62 heating supply facilities, 58 water supply facilities. According to the ReDonbas portal that was created with the sup-

port of UNDP and PO SocialBoost as of June 13, 2016 on the territories of Luhansk and Donetsk Oblasts there are 3029 infrastructure facilities that are destroyed or

damaged; 378 of which require major repairs, 216 are completely destroyed and 2435 are damaged.

Table 1

**Information on destroyed and damaged objects of Donetsk oblast infrastructure as of 19.05.2016 [10]**

Name of facility	Total number of destroyed and damaged objects	**Restored objects		* Remain destroyed and damaged	
		Number	Amount (mln. of UAH)	Number	Amount (mln. of UAH)
Residential houses	8792	1452	35,1	7340	1890,2
Power supply facilities	213	213	256,5	-	-
Heating supply facilities	23	23	2,8	-	-
Water supply facilities	21	20	120,5	1	0,98
Gas supply facilities	100	54	10,4	46	20,3
Water disposal facilities	14	14	36,7	-	-
Health institutions	48	23	15,2	25	26,6
General educational institutions	108	69	27,8	39	57,7
Pre-school educational institutions	74	51	14	23	17,7
Vocational-technical educational institutions	20	10	3	10	20
Higher educational institutions	11	9	0,5	2	1,2
Institutions of physical culture and sports	8	5	0,1	3	13,5
Cultural institutions	42	22	1,7	20	21,2
Objects of road transport infrastructure	48	32	44,6	16	1257
Industrial facilities	51	19	48,2	32	82
Commercial establishments	64	23	0,4	41	2,3
Other facilities and establishments	100	24	6,8	76	56,02
Total	9737	2063	624,3	7674	3466,7

\* Territories controlled by Ukraine.

\*\* Restoration works on most objects were carried out in 2015.

In Anti-Terrorist Operation (ATO) Zone 90 objects of road transport infrastructure, 54 administrative buildings, 39 manufacturing facilities, 34 health institutions, 25 public utility facilities etc. are destroyed or damaged. It is definitely the restoration of destroyed infrastructure facilities and housing stock that becomes the key issue in developing restoration strategies for Donetsk Oblast.

In Donetsk Oblast over 12,000 objects, circa 9,000 of which are residential buildings, have been destroyed. The housing problem does not only concern those persons whose homes have been destroyed but also internally displaced persons (IDPs) from the areas not controlled by Ukraine. As mentioned above Donetsk Oblast has the largest number of IDPs, though their housing problem is not being addressed in orderly manner.

Here arise the questions: "Is the current construction sector able to become the basis for restoration of Donetsk Oblast? What is the region's construction industry capacity?"

It should be noted that before the armed conflict the construction industry in Donetsk region was developing slowly. Construction companies in the area if compared to the other regions operated less efficiently and less effectively took advantage of market opportunities, which

was all conditioned by the socio-economic development of the region. Presently we should agree with the fact that the region requires assistance in creating funding opportunities for modernization. The state of construction industry has deteriorated due to the ATO. That was related to the sector-specific issues of construction companies as they are very susceptible to the factors of the macroeconomic environment. For that reason the main challenge on the way to ensure the effectiveness of the construction industry in the whole is seen as the necessity to minimize the negative impact of the external economic environment through strategic planning and management of construction sector development.

In spite of the strong need of the region under study for housing, the volumes of setting it into operation are the lowest in Ukraine. Over 2015 in Donetsk Oblast 43,400 square meters of housing or 0.4% of total housing stock in Ukraine were put into operation. As a comparison, in Vinnytsia Oblast these indicators are 381,000 m<sup>2</sup> or 3.5%, in Kharkiv Oblast – 384,000 m<sup>2</sup> or 3.3% [6]. According to Donetsk Region Development Strategy until 2020 [10] over the year of 2015 the construction companies of the region carried out construction work on their own in the amount of 2.3 bln UAH.

If compared with 2014 the volume of construction output was reduced by 2.4 times.

The amount of construction works increased in January-September 2015: in Luhansk Oblast by 68.5% and in Donetsk Oblast by 66.2%. The general trend in January-September 2015 in comparison with the corre-

sponding period in 2014 was influenced by the reduction in constructing non-residential buildings by 26.7%, engineering structures by 25.1% and housing by 4.1%. The amount of the construction works completed in January-September 2016 by type of construction is given in Table 2, by cities and districts (raions) – in Table 3.

Table 2

**The amount of the construction work completed in January-September 2016 by type construction products<sup>1</sup> [1]**

	<i>Construction work completed in January-September 2016</i>		
	<i>Thousands of UAH</i>	<i>as a percentage of total amount</i>	<i>as a percentage of the corresponding period in 2015</i>
Construction	1642223	100,0	104,2
Buildings:	290185	17,7	102,9
residential	24733	1,5	57,7
non-residential	265452	16,2	111,5
engineering structures	1352038	82,3	104,7

<sup>1</sup> Without regard to the area of ATO zone.  
Data can be specified.

The construction companies of the region, which performed construction contracts, and those, which carried out construction work by in-house way, in January-September 2016 completed construction work on their own in the amount of 2.6 bln UAH (without regard to the area of ATO zone). Compared to the period of Jan-

uary-September 2015 the number of construction products increased by 4.2%. In the areas of Donetsk Oblast controlled by Ukrainian government the difference between the most and the least well-off cities (districts) in terms of capital investment per capita was: in cities – by 58.6 times, in raions – by 28.7 times.

Table 3

**The amount of construction work completed in cities and districts over the period January-September 2016<sup>1</sup> [1]**

<i>Inhabited locality</i>	<i>Completed construction work</i>	
	<i>Thousands of UAH</i>	<i>as a percentage of total amount</i>
<b>Donetsk Oblast</b>	<b>1642223</b>	<b>100,0</b>
Donetsk	448863	27,3
Bakhmut	59852	3,6
Dobropillia	35720	2,2
Druzhkivka	301162	18,3
Kostiantynivka	6103	0,4
Kramatorsk	128534	7,8
Makiivka	40366	2,5
Mariupol	388007	23,6
Myrnohrad	15934	1,0
Pokrovsk	94315	5,7
Sloviansk	10100	0,6
Khartsyzk	20730	1,3
Volnovakha Raion	8240	0,5
Marinka Raion	2568	0,2

<sup>1</sup> Without regard to the area of ATO zone.  
Data can be specified.

In 2016 57.600 m<sup>2</sup> of total floor space of residential buildings (including 51.700 m<sup>2</sup> in urban settlements) were put into operation, which is by 32.6% more.

The construction companies of the region, which performed construction contracts, and those, which carried out construction work by in-house way, in January

2017 completed construction work on their own in the amount of 142 mln UAH (without regard to the area of ATO zone). Compared to January 2016 the number of construction products increased by 9.5 %.

The main problem is the lack of funds available for investment in restoration of housing stock and industrial

and social infrastructure. According to experts as early as 2015 not less than 3.5 bln of UAH was required in Donetsk Oblast for restoring the cities and villages affected by the armed conflict. We agree with the opinion of the academician E. Libanova [5] that the lack of resources significantly limits the possibilities of sending budget funds for revival of Donbas, the hopes for foreign investment might not materialize; therefore, it is of vital importance to attract personal funds of the population of the regions. For this purpose it is necessary:

- 1) to reform the taxation system;
- 2) to change the system of income distribution between budgets of different levels;
- 3) to turn to the development budget at the expense of budget allocations, state domestic loans, the resources of specialized financial institutions and government securities with preferences for their acquisition for population's own savings [5].

To attract investment in the economy of the region it is necessary to ensure a congenial investment climate, to increase the investment prospects of enterprises and to facilitate the search for potential investors, as well as, to create enterprises with foreign authorized capital and to determine the priorities of the investment policy of the region, which must be outlined in documents on regional and urban development programs, and thus, legitimate for investors.

The housing problem is the most acute and urgent for all internally displaced persons from the ATO zone and requires a state approach to its solution. Now there are more than 70 000 citizens with housing needs in the region. Of those, 23,000 are young people. In addition, in Donetsk Oblast there live about four thousand ATO participants and 720000 registered IDPs. Restoration of housing stock is one of the most important issues of the Program for the Restoration and Development of Donbas.

The restoration of housing stock in the affected areas may consist of several components, which, depending on the degree of damage to the housing, are implemented in two separate directions: firstly, these are new construction developments in inhabited localities with a high proportion of destroyed housing; secondly, the restoration of the buildings, technical and technological characteristics of which are suitable for further maintenance.

As an intermediate step in the realization of this important task the construction of temporary houses for the groups of returnees, as well as for the "pioneer development squads", can be considered, and it is advisable to engage IDPs who will get the opportunity to participate in reconstruction work. These houses can be of a container type and can be located in support centers in the form of small settlements.

Currently, Ukraine has three basic programs to stimulate the development of housing construction, namely, the State target socioeconomic program on

the construction (acquisition) of affordable housing for 2010-2017 [3], the State Programme for providing youth with housing in 2013-2017 [7] and the State Target Program on Village Development of Ukraine for the period till 2015 [9], as well as a number of regional programs.

Donetsk regional department of the State Fund for the Promotion of Youth Housing Construction has developed a draft regional program to provide certain categories of citizens of Donetsk Oblast with affordable housing. In particular, this program offers preferential long-term loans for the acquisition and construction of housing for combatants, IDPs, civil servants and young families. It is proposed to issue loans with a rate of 0 % to 3% for a period of 20 years or until the recipient enters retirement age. The first installment will be 6% of the standard cost of housing. All programs provide for the creation of appropriate financial and institutional mechanisms so that to ensure the affordability of housing for the population. It is advisable to offer proposals on the priority of financing. Another urgent problem is the lack of necessary interaction and communication between the public-supported volunteer organizations that provide assistance to IDPs and housing organizations and construction companies that are now able to provide affordable housing.

#### **Conclusions and directions for further research.**

Thereby it shall be proposed for the Cabinet of Ministers of Ukraine to adopt an appropriate resolution and guidance documents for the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine on the introduction of changes and corrections to the current state targeted programs in order to stimulate housing construction with a focus on the successful solution of housing problems of IDPs; to create conditions for partnership relations between public organizations and construction developers on the formation and implementation of mechanisms for ensuring housing affordability for IDPs.

As a result of the analysis of the world experience and domestic practice of housing provision for IDPs we have identified the problems and obstacles in this area, as well as provided the following proposals for their solving:

1. to provide an inventory of the housing stock and its use to create temporary housing for IDPs;
2. to ensure the renewal of social housing construction in the region and its use to solve the housing problem of IDPs;
3. to reorient the existing programs for the development of housing construction to address the housing problems of IDPs;
4. to carry out informational and institutional support for the solution of housing problems of IDPs; keep a register of IDPs' housing needs;
5. to ensure the formation of a permanent housing stock for IDPs, who decided to stay in the areas for displacement;



6. to develop the mechanisms for compensation of the cost of the housing lost during actions related to АТО;

7. to develop mechanisms for regulating prices in the rental sector of residential real estate and ensure the expansion of rental housing base.

With a view to further restoration of the region it is required to introduce a special program for the development of the construction sector in the region. In this program two directions should be outlined: 1) new construction developments in inhabited localities with a high proportion of destroyed housing; 2) restoration of the buildings which technically and technologically suitable for further maintenance.

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### **Точонов І. В., Калашнікова Т. С., Гордієнко В. В. Роль будівельної галузі Донецького регіону в питаннях відновлення територій**

Оцінено стан будівельної галузі Донецької області, зокрема проаналізовано пошкоджені об'єкти інфраструктури, які були зруйновані внаслідок воєнних дій на Донбасі. Проаналізовано обсяги виконаних будівельних робіт за видами будівельної продукції по містах та районах Донецької області. Надано пропозиції щодо розвитку будівельної галузі Донецької області в питаннях вирішення житлових проблем населення.

*Ключові слова:* будівництво, Донецька область, інфраструктура, житло, відновлення територій.

### **Точёнов И. В., Калашникова Т. С., Гордиенко В. В. Роль строительной отрасли Донецкого региона в вопросах восстановления территорий**

Оценено состояние строительной отрасли Донецкой области, в частности проанализированы поврежденные объекты инфраструктуры, которые были разрушены в результате военных действий на Донбассе. Проанализированы объемы выполненных строительных работ по видам строительной продукции по городам и районам Донецкой области. Даны предложения по развитию строительной отрасли Донецкой области в вопросах решения жилищных проблем населения.

*Ключевые слова:* строительство, Донецкая область, инфраструктура, жилье, восстановление территории.

### **Tochonov I., Kalashnikova T., Hordiienko V. The role of the Donetsk oblast construction sector in renovation of the territories**

The state of the construction industry in Donetsk Oblast is assessed, in particular, the damage to infrastructure facilities that were destroyed as a result of armed conflict in Donbas are analyzed. The amounts of completed construction work by types of construction products in the cities and districts (raions) of Donetsk Oblast are analyzed. Proposals on the development of the construction industry in Donetsk Oblast in the issues of solving the housing problems of the population are given.

*Keywords:* construction industry, Donetsk Oblast, infrastructure, housing, restoration of territories.

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## SOCIO-ECONOMIC CONSEQUENCES OF MILITARY CONFLICTS IN THE DONETSK REGION AND PRIORITY AREAS OF THE REGIONAL RENEWAL

**Formulation of the problem.** Socio-economic development is the process of continuous change of the material basis of production and also of the whole set of diverse relationships between economic entities and social groups of the population. Socio-economic development is the difficult contradictory process, in which interact positive and negative facts and periods of progress change into periods of regress. Political and military upheavals, social conflicts, ecological disasters can halt the economic development of any country, reject it for several decades, and sometimes lead to ultimate destruction. Thus, Donetsk region before the beginning of the conflict was a powerful natural resource potential of the country. But the war significantly changed the existing situation. Therefore, at present the renewal of the territory of these areas is a matter and the task number one of the Ukrainian authorities.

**Analysis of recent researches.** Problems of socio-economic development of the Donetsk region and the issues of the renewal of territories are solved by such researchers as O. Amosha, V. Antonyuk, L. Bezzubko, V. Gorbulin, S. Ilyin, A. Lavriv, E. Libanova, O. Lyashenko, V. Lyashenko, O. Novikova, S. Pirozhkov, G. Popova, O. Vlasyuk etc.

**The purpose of the article** is to analyze the socio-economic status of the Donbas as a result of military conflicts and to develop priority areas for the renewal of the territory.

**Presentation of the main research material.** Before the military conflict in the Donetsk region was concentrated coal mining, coke, chemical, machinery industry, that employed a large number of highly skilled workers. Favorable geographical position, proximity of sources of raw materials and sales markets, developed network of transport communications, high population density, distinguished Donbas among other economic regions of Ukraine.

The Donetsk economic region was one of the most powerful district in the economic complex of Ukraine. The economy of the Donetsk economic region is a complicated complex, which combines a powerful industry with the predominance of heavy industry with diversified agriculture. In the total gross output of the economy, the industry accounts 89%, agriculture amounts 11%. Branches of specialization are: fuel and energy industry, metallurgical, chemical, machine building in-

dustry and construction materials industry. The analysis of the branch structure of the economy based on gross added value shows the preference of the service sector. This situation is typical both for the Donetsk region and for whole Ukraine [1].

During 2014-2015, due to the conflict and hostilities, densely populated and unique in terms of urbanization of the Donetsk and Luhansk regions (correspondingly, 90.7% and 86.7% of citizens, as compared to 69.0% in Ukraine) sustained the greatest casualties of urban settlements on the background of disorganization of the life of the population and provision of social services, full or partial destruction of the housing stock and strategically important infrastructure objects.

The state of the structural elements of damaged houses and apartments is rapidly degrading, that increases the cost of their restoration; damage of walls, roofs and windows leads to heat losses and makes houses unsuitable for living in the winter period.

Due to the conflicts in the Lugansk and Donetsk regions, the destruction of transport and energy infrastructure, a lot of enterprises had to pause or stop production processes. Machine building, heavy and mining industry, especially coal industry as a significant part of its enterprises is located in the ATO zone, were significantly affected. Destruction and damage were experienced by the main enterprises of the industries that form the budget of the region, the activity of the significant number of city-forming enterprises was stopped [3].

In Donbas the significant capacities of the metallurgical industry of Ukraine are concentrated – even without taking into account part of the ATO zone, the part of the Donetsk region in the volume of sales of metallurgical products in 2014 amounted to 34.6% (in the total volume of industrial production sold in the region was 42.4%). The conflict led to a significant deterioration of the main financial and economic indices of the industry.

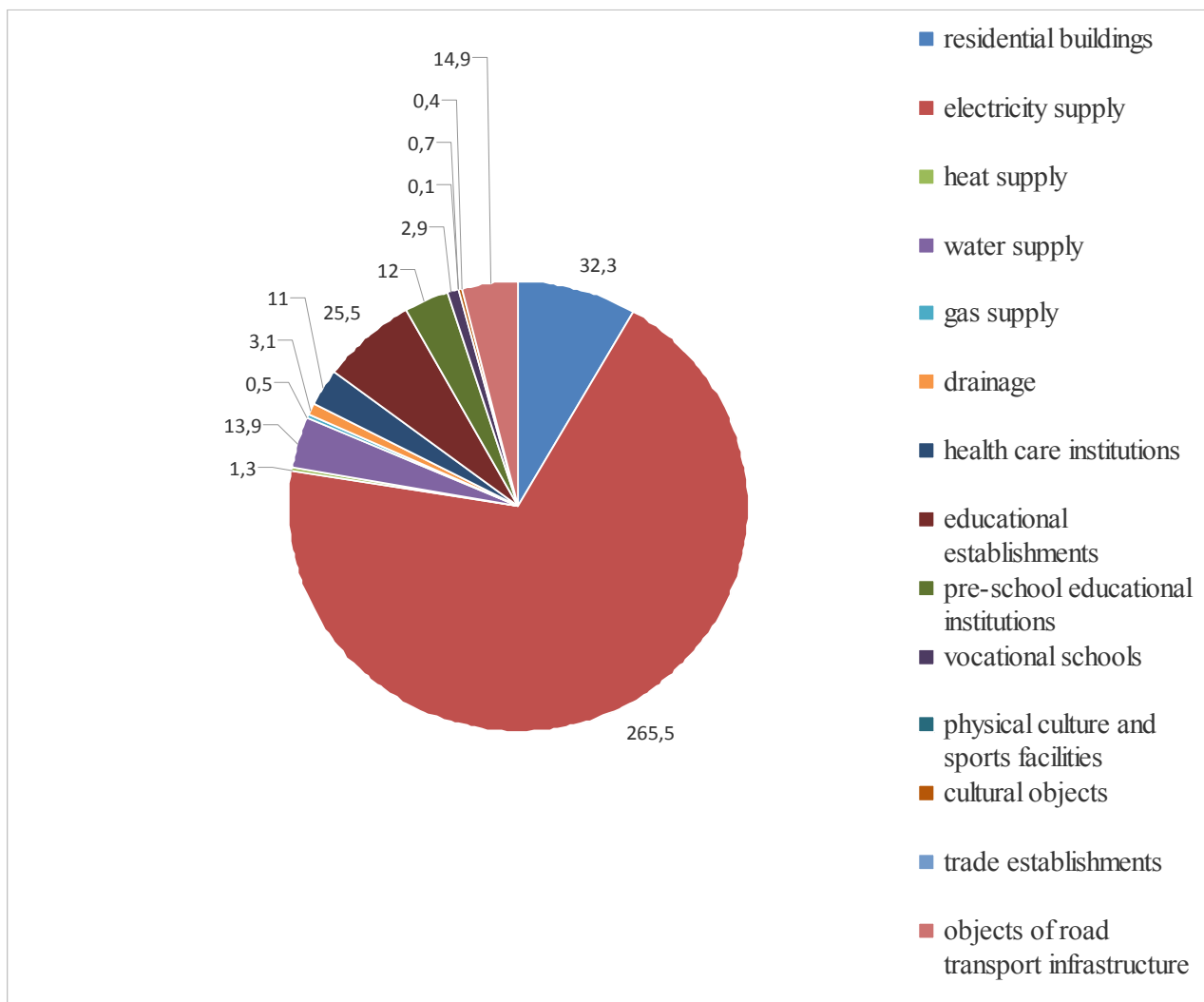
In 2014, as a result of hostilities in the region, the majority of chemical enterprises suspended the production process and shipment of finished products due to man-caused threats. The industrial infrastructure of some enterprises was damaged (Donetsk State Chemical Plant), a significant part of the enterprises (including PJSC Concern Stirok in Horlivka) remained in the occupied territory. As a result the production potential of the

chemical industry of the region was substantially decreased [1].

Different foreign countries have been supporting Ukraine in the implementation of infrastructure and humanitarian projects to renew infrastructure of the Donetsk region since 2014. The foreign and Ukrainian programmes were aimed at restoring the eastern regions of Ukraine, providing equipment for medical institutions, medical equipment for the eastern regions of Ukraine, and humanitarian assistance for the internally displaced persons. The assistance is also aimed at rebuilding of critical infrastructure in the eastern regions of Ukraine, which will promote social cohesion and support for

small businesses in communities affected by the conflict in Donbas, building up the educational potential in the Donetsk region under the control of the Ukrainian government [12].

As a result, the measures taken to renew life and damaged infrastructure of the settlements of the region as of January 1, 2016 were restored (Fig. 1): residential buildings, electricity supply, heat supply, water supply, gas supply, drainage, health care institutions, educational establishments, pre-school educational institutions, vocational schools, physical culture and sports facilities, cultural objects, trade establishments, objects of road transport infrastructure, etc [12].



**Fig. 1. Restoration of damaged infrastructure of settlements of the Donetsk region as of January 1, 2016**

Recently two destroyed bridges have been restored in the Donetsk region. These are the bridge in the village of Semenivka, Kramatorsk City Council, and a 300-meter bridge across the river Seversky Donets in the village of Zakotne, Limansky district.

As a whole, 2331.9 mln. UAH were allocated for the implementation of the Program activities, including 362.7 mln UAH from the state budget, 1046.5 mln UAH

from local budgets, 851.2 mln UAH from enterprises' funds and 71.5 mln UAH from other sources [10].

Infrastructure plays a key role in the development of the economy, as its existence is connected with the state of productive forces and the territorial division of labor, as well as the efficiency of the sphere of material production. The infrastructure of the country's economy, on the one hand, depends on the pace of modernization;

on the other hand, it is itself a supplier of economic growth. Therefore, Ukraine is putting enormous efforts to restore it [1].

The Donbas catastrophe has already caused enormous economic losses in Ukraine and continues to require a huge amount of funding every day for the maintenance and rearming of the army, for social assistance, for the renewal of the infrastructure of the affected areas, for assistance to internally displaced persons throughout the country.

Speaking about the social problems of the development of the Donetsk region, it is clear that, as a result of recent events, almost all spheres of social life concern internally displaced persons (IDPs). The population that had to leave the Donetsk region as the result of occupation, during the armed confrontation faced numerous problems such as possibilities and ways of departure, looking-for the temporary accommodation, employment opportunities, educational establishments for children, obtaining medical aid, etc. A lot of people were left without documents. This fact raised the complex issue of reissuing of documents certifying a person, his/her affiliation to the Ukrainian citizenship, legalization of the temporary registration, as well as employment opportunities [2].

The vast majority of IDPs suffered substantial material and moral losses connecting with:

1. by the fact that they left home and property accumulated over decades in the occupied territory. A lot of the movables and immovables were damaged (or destroyed) as a result of hostilities;

2. loss of work and a stable source of income, in connection with which most migrants could not quickly find employment in a new place, and a significant part of them are still unemployed;

3. moving and arranging in a new place that needed a lot of money; long-term unemployment, which led to a significant reduction of available savings or debt growth;

4. loss of the usual social and domestic environment (relatives, friends, colleagues, neighbours, familiar workers of social services, etc.), that is the necessary condition for sustainable resettlement;

5. the fact that the majority of IDPs in the occupied territory have relatives and property requiring periodic trips to the uncontrolled territory of Ukraine. The cost of transportation services has increased several times, that complicates the already difficult material situation of IDPs;

6. the state does not fully fulfill its financial obligations to IDPs. This concerns the timely payment of purpose-oriented targeted assistance and the gradual reduction of these payments.

As of October 17, 2016, Ukraine registered 1 681 725 internally displaced persons, or 1 360 898 families from Donbas and AR Crimea [5]. In terms of the number of migrants, Ukraine takes the first place in Europe and is among the leaders of the world (Table 1).

Table 1

**Countries with the largest number of internally displaced persons as of December 31, 2015, people**

Place	Country	Number of IDPs
1	Syria	6 600 000
2	Colombia	6 270 436
3	Iraq	3 290 310
4	Sudan	3 182 286
5	Yemen	2 509 068
6	Nigeria	2 095 812
7	Southern Sudan	1 696 962
<b>8</b>	<b>Ukraine</b>	<b>1 678 587</b>
9	Democratic Republic of Congo	1 500 000
10	Pakistan	1 459 000

The analysis of the socio-economic situation in the Donetsk region shows that the region needs the immediate renewal. The destruction of the technologically outdated economy and the rupture of traditional ties with the temporarily occupied territories lead not only to the formation of a fundamentally different economic complex, but also to the search for new markets for the supply of the necessary raw materials, components and sales of manufactured products. Therefore, now it is very important to consider the countries that provide assistance in implementing these measures and are the largest sources of funding for the renewal of our territory [1].

According to the "Extraordinary Credit Program for the Restoration of Ukraine", which is implemented by the Cabinet of Ministers of Ukraine together with the European Investment Bank, projects for financing totaling over UAH 627 million have been identified. More than UAH 204 mln from these funds will be spent on the renewal of the infrastructure of the part of the Donetsk region controlled by Ukraine and more than UAH 89 mln of the Luhansk region. At the expense of these funds the renewal and reconstruction of schools, kindergartens, dormitories and infrastructure objects, including heating and water supply, will be provided. The Government of Ukraine revealed the amount of financing for the reconstruction of the Donbas infrastructure [10].

Restoration of transport and communications. The restoration of transport and communications operation in Donbas should be based on the idea of integration into the system of international transport corridors and the trans-European transport network. Future prospects of joining to the European Infrastructure Network will stimulate the formation of a highly developed economy of Donbas, promote investment attraction, integration with the regions of the EU, that will significantly strengthen Ukraine's position in the transport and communications market.

Modernization of the social sphere provides the restoration of health care objects, education, culture and sports. Proper development of this sphere will allow the fully usage of the potential of the region, increase social mobility of the population, as well as it will formulate social policy for ensuring sustainable development [10].

The benefits of introducing in the Donbas controlled areas of the community development corporations and non-profit financial institutions of local development are: the concentration of capital in communities through the development of residential and commercial real estate, from affordable housing to shopping centers, enterprises and industrial parks; direct participation of the public in making managerial decisions; increasing of activity of inhabitants and public organizations and empowerment of the community to ensure effective social communication and interaction of all social subjects involved in the renewal of Donbas.

**Conclusions and perspectives of further research.** Thus, the renewal of Donbas requires the purposeful and systematic work of the authorities, the broad engagement of civil society and international organizations, as well as the adaptation and maximum usage of the experience of other countries.

The Donbas Recovery and Development Program has become a national project for the comprehensive modernization of the economy and infrastructure of Ukraine. At the initial stage of rehabilitation, more than 90% of public funds are sent for the rehabilitation and reconstruction of life support systems and infrastructure, as well as not only public funds and international assistance, but also resources of Ukrainian business are obtained.

The renewal and modernization of the housing stock, economic, transport and social infrastructure are carried out depending on the degree of damage, based on the priorities of post-conflict recovery, investment efficiency criteria and reasonable cost minimization [1]. Due to limited resources, situational instability and social tension, forming the organizational and managerial support for the renewal of Donbas it is expedient to implement priority directions of activity that will depend on the effectiveness of further actions and the requirements of decentralization of the management system, namely:

- 1) modernization of the state administration system;
- 2) strengthening public oversight of duties;
- 3) regulation of the powers, competence, duties and responsibilities of central and regional executive authorities for overcoming the consequences of a military conflict and renewal of Donbas;
- 4) providing information security in post-conflict areas, minimizing information risks and dangers and preventing them from appearing such risks, strengthening control over the information space, stimulating mass

media to form a positive attitude of the society towards the restoration of Donbas;

5) intensifying the attraction of international and domestic investments for the renewal of production, transport, social and other infrastructure of Donbas;

6) the formation of relations of subjectivity between civil society, the state, business according to the restoration of Donbas, etc.

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**Єфременко В. В., Гавриш О. Г. Соціально-економічні наслідки воєнних дій в Донецькій області та пріоритетні напрями відновлення території**

Оцінено соціально-економічні наслідки воєнних дій в Донецькій області за видами економічної діяльності, проаналізовано стан пошкоджених та відновлених об'єктів інфраструктури Донецької області внаслідок воєнних дій, визначено проблеми соціально-економічного розвитку Донецької області, проаналізовано джерела для відновлення соціального та економічного життя на території Донецької області та розроблено пропозиції по відновленню території Донецької області.

*Ключові слова:* соціально-економічний розвиток, Донецька область, інфраструктура, проблеми, воєнні дії, відновлення території.

**Ефременко В. В., Гавриш Е. Г. Социально-экономические последствия военных действий в Донецкой области и приоритетные направления восстановления территории**

Дана оценка социально-экономических последствий военных действий в Донецкой области по видам экономической деятельности, проанализиро-

вано состояние поврежденных и восстановленных объектов инфраструктуры Донецкой области в результате военных действий, определены проблемы социально-экономического развития Донецкой области, проанализированы источники для восстановления социальной и экономической жизни на территории Донецкой области и разработаны предложения по восстановлению территории Донецкой области.

*Ключевые слова:* социально-экономическое развитие, Донецкая область, инфраструктура, проблемы, военные действия, восстановление территории.

**Yefremenko V., Gavrysh O. Socio-economic consequences of military conflicts in the Donetsk region and priority areas of the regional renewal**

The socio-economic consequences of military conflicts in the Donetsk region by types of economic activity are analyzed, the state of damaged and restored objects of the infrastructure of Donetsk region as a result of military actions is analyzed, problems of socio-economic development of the Donetsk region are determined, sources for the renewal of social and economic life on the territory of the Donetsk region are analyzed and proposals for the restoration of the Donetsk region territory are developed.

*Keywords:* socio-economic development, the Donetsk region, infrastructure, problems, military conflicts, the renewal of the territory.

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## **THE PROBLEMS OF RECOVERY AND DEVELOPMENT OF THERMAL POWER ENGINEERING AT THE CONTROLLED TERRITORIES OF DONETSK AND LUGANSK REGIONS**

Despite the worldwide shift in the approaches to thermal power sector functioning and putting the stimulation of renewable and alternative sources of energy usage as the main priority of global power engineering development, thermal power plants still play the important role in electric power production.

Aspirations to diversify the ways of electric energy production and to lead energy production to the principally new level of development, are characteristic also for Ukraine. However, the structure of electric energy production remains practically unchanged. Its maximal part is related with atomic power plants (about 55%). The share of thermal power plants is also high (35%). Traditionally the most demanded energy sources in Ukraine are fossil resources: natural gas and coal, presenting together 2/3 of total energy balance of the country.

The structure of electric power production in Donetsk and Lugansk regions witnesses the orientation of energy production of these both regions on the traditional production by thermal power plants (TPP). This production depends on stable coal supplies. Taken into account the huge losses of coal industry of Ukraine due to the military conflict at the East of the country, the thermal power engineering development at the controlled territory of Donetsk and Lugansk regions requires the correct assessment of the opportunities of its recovery and of its further prospects in the conditions of changes in economic, industrial and natural potentials of Donetsk and Lugansk regions.

Considering the importance of energy sector for the economic development of the country, the problems of its reforming and efficient functioning are paid by large attention both in research and practical aspects. The All-Ukrainian energy Assembly [1] provides at the regular basis the surveys of energy sector. The experts of O. Razumkov Center have done significant research interventions, where based on complex analysis of energy sector functioning in Ukraine in 2016, the achievements and lost opportunities of each sector have been determined, taken in account the specific of Donetsk and Lugansk regions [2].

Last time the studies of energy security problems in the view of Eastern regions' involvement in hybrid war have got widespread. At the early beginning of Russian aggression the energy component of the war of a new generation have been reviewed [3]. The issues of energy sector as one of priorities of Donbas socio-economic potential's recovery have been raised [4]. The

problems of destroyed/damaged potential at the uncontrolled territories recovery after control reestablishment, situation and problems of energy sector at the controlled territories of Donetsk and Lugansk regions have been studied [5]. Meanwhile, beyond the marks of research studies remains the assessment of weaknesses and opportunities of energy sector of controlled territories of Donetsk and Lugansk regions, that influence directly on the sector's recovery and prospective. Thus, the goal of the article is to determine the risks and opportunities of thermal power engineering recovery at the controlled territory of Donetsk and Lugansk regions and the prospect of its further functioning in the new economic and political conditions.

The energy production of Donetsk and Lugansk regions has been based on the usage of traditional types of thermal electric power, produced by TPPs. In each region it has been presented by the integrated complex of generating, networking and technical-maintenance industries.

In the structure of all-Ukrainian production of electric energy at TPPs and Combined heat and power plants (CHPP), electric energy production at the controlled territories of Donetsk and Lugansk regions accounted for more than one third. In 2017 the share has been reduced at the expense of loss of control over Starobishyvska, Zuivska TPPs and Zuivska CHPP, producing (data of 2015) more than 5 % on electric energy of these regions. Taken into account high energy intensity of "basic" industries of Donetsk and Lugansk regions and export orientation of electric power engineering itself, these losses are tangible for the economies of the regions and Ukraine as a whole and will affect the economic indicators (Table 1).

The majority of electric energy generating plants of Donbas (4 of 6 TPPs, Kramatorska CHPP in Donetsk region, DTEK Luganska TPP as well as Severodonetska and Lysychanska CHPPs in Lugansk region) have been remained at the territory, controlled by Ukraine.

Besides that, some industrial plants of Lugansk (CJSC "LINIK", JSC "Rubezhnoe Cardboard & Package Mill", "Research and Production Enterprise "Zarya" Ltd, State enterprise "Chemical plant "Pivdenny") and Donetsk (JSC "Avdiivka Coke Plant", CHPP "Azovstal") regions, controlled by Ukraine, have unit-stations, producing electric energy, used by them for their own needs. Its share in total electricity, produced by each region, is not significant and does not reach over 5%.

**Electric energy production by TPP and CHPP at the controlled territories of Donetsk and Lugansk regions in 2015-2016, KWh\*H mln**

	2015	2016	2016 to 2015, %
<b>TPP total in Ukraine, incl.:</b>	<b>49 386,237</b>	<b>49 902,321</b>	<b>101,04</b>
<b>TPP in Donetsk region</b>	15 595,15	13 856,30	88,85
<b>TPP in Lugansk region</b>	2 591,058	3 338,427	128,84
<i>JSC "Donbasenergo", incl.:</i>	<b>4 288,379</b>	<b>2 991,322</b>	<b>127,1</b>
Starobishyvska TPP	1 934,938	-	-
Slovianska TPP	2 353,441	2 991,322	127,10
<i>JSC "Tsentrэнерго", incl.:</i>	<b>8 422,152</b>	<b>9 858,364</b>	<b>117,05</b>
Vuhlehrska TPP	4 446,922	4 879,356	109,72
<i>OJSC "DTEK Shidenerho", incl.:</i>	<b>9 450,906</b>	<b>9 324,053</b>	<b>98,66</b>
Zuivska TPP	890,461	-	-
Kurakhivska TPP	5 969,387	5 985,626	100,27
Luganska TPP	2 591,058	3 338,427	128,84
<b>CHPP total in Ukraine, incl.:</b>	<b>6 075,221</b>	<b>6 709,309</b>	<b>110,44</b>
<b>CHPP in Donetsk region</b>	343,92	386,175	112,29
<b>CHPP in Lugansk region</b>	197,377	68,690	34,80
JSC "DTEK Donetskoblenerho"	317,485	386,175	121,64
Zuivska CHPP	26,437	-	-
Siverodonetska CHPP	197,377	68,690	34,80
<b>Total in Ukraine</b>	<b>55 461,46</b>	<b>56 611,63</b>	<b>102,07</b>
<b>Total in Donetsk region</b>	<b>15 939,07</b>	<b>14 242,48</b>	<b>89,36</b>
<b>Total in Lugansk region</b>	<b>2 788,44</b>	<b>3 407,12</b>	<b>122,19</b>

The main projected fuel for Donetsk and Lugansk regions electric power plants are coals of ranks "A" (anthracite) and "G" (gas coal), however all of them can operate with gas-oil fuels as reserve ones. Furthermore, controlled territories of Donetsk and Lugansk regions own a rich energy potential, that can be efficiently used

in the reconstruction of TPPs, that worked with anthracite coal (Table 2). The reconstruction, scheduled by the Plan of Development of Generating Capacities at Thermal Power Plants till 2026, expands the opportunities of generating plants of Donetsk and Lugansk regions in the modern conditions [6].

Table 2

**Energetic capacity of Donetsk and Lugansk regions, controlled by Ukraine**

City/District	Coal		Electricity	
	Coal deposits (balance, mln tons)	Ranks of coal	TPP capacity MWt	Unit-stations capacity, MWt
Vuhledar	290,9	Gas, Gas-flame		
Pokrovsk	429,1	Coke, Fat, Gas		
Myrnohrad	220,2	Gas		
Selidove	403,7	Gas, Flame		
Dobropillja	640,7	Gas, Gas-flame		
Svitlodarske			3600	
Myronivske			160	
Mykolaivka, Sloviansky Distr.			800	
Kurakhove, Mariinsky Distr.			1460	
Kramatorsk				28,5
Mariupol				172,0
<b>DONETSK REGION, TOTAL</b>	<b>1984,6</b>	<b>Gas-flame, Coke, Fat, Gas, Flame</b>	<b>6020</b>	<b>200,5</b>
Zolote	100,0	Gas-flame, Gas		
Hirske	45,4	Gas-flame, Gas		
Toshkivka	30,2	Flame, Gas-flame		
Lysychansk	179,7	Flame, Gas-flame, Gas		
Shchastja (Luganska TPP)			1360	
Severodonetsk			260	
Lysychansk				110
<b>LUGANSK REGION, TOTAL</b>	<b>355,3</b>	<b>Gas-flame, Gas, Flame</b>	<b>1620</b>	<b>110</b>



The state of TPPs, located at the controlled territory, differs and has been determined, first of all, by their position related to demarcation line and places of fighting. However, all TPPs operate in complicated conditions, caused by the damages of infrastructure, rupture of well-established business communications, difficulties with fuel supply due to fighting and locking coal transportation from temporarily uncontrolled territories of Donetsk and Lugansk regions since the beginning of 2017.

Vuhleirska, Myronivska, Luganska TPP have been located at the confrontation line, thus their problems have been determined by the consequences of fighting. Primarily these are:

- damages, inability/difficulty of recovery works;
- damages, that cannot be recovered (DTEK Luganska TPP);
- shortage of coal supply;
- minimal regime of power units capacities' utilization due to logistic limitations of fuel supply;
- inability to ensure safe labor conditions (violation of "silence regime", mining of "grey zone");
- shortage of substations and high-tension cables.

The periodicity and efficiency of these TPPs' operation depends of conflict escalation and shortages of any types resources' supply (coal and chemicals), necessary to recover the production process at electric generating plants, damages of electric equipment, shortage of spare parts for repair and impossibility of its stable supply, as well as lack of personnel (about 70%).

Slovianska TPP has the problems, conditioned by the consequences of fighting. As actual for this TPP, are also the problems of fuel shortage, caused by locking of anthracite supplies from uncontrolled territories. Logistic limitations are minimal after rearranging of the power units on gas coal.

Restructured in 2015, DTEK Kurakhivska TPP is one of the most prospective of TPPs of Donetsk region. Based on the program of wide scale technical re-equipment of generating capacities, the latter have been increased, maneuverability range has been expanded, economic and environmental indicators have been improved. Since 2017 the technological processes should be audited for the compliance with world standards and complex energy saving program should be elaborated. In the new conditions Kurakhivska TPP has the problems getting the optimal capacity utilization level.

Starobishyvaska and Zuivska TPPs have been located at the territory, not controlled by Ukraine.

To some extent the shortage of electric energy in the energy system on the regions could be compensated by the improvement of productive capacities' utilization of neighboring regions' TPPs, that mainly operate in suboptimal regimes and have been loaded by 20-25% of design conditions. This should be considered as real, as soon as other energy generating plants of Donetsk and Lugansk regions operate with coal ranges, extracted at

the controlled territory, as well as gas-oil fuels, that allows some maneuvers in fuel supply.

However, even after the termination of fighting, the recovery of thermal energy engineering should be complicated by high physical deterioration and obsolescence of energy equipment, causing significant non-productive losses of fuel and energy resources (the degree of fixed assets' of the sector wear in Donetsk and Lugansk regions accounts for more than 50 %). The majority of energy facilities does not comply with European environmental standards, have severe negative impact on environment and requires modernization.

In the conditions of financial resources' shortage for TPPs reconstruction, the further exploitation of obsolete technologies will exhaust the resource of fixed assets' usage in electricity and heat generation and aggravate the problem of efficiency of its exploitation (increment of losses during the transportation of fuel and energy resources, its distribution and electric energy and heat utilization, increase of emissions of pollutants). The analysis of strengths and weaknesses of thermal power engineering recovery/development at the controlled territory of Donetsk and Lugansk regions has been integrated in Table 3.

Taken into account comparatively low cost of 1 KWh of electricity, generated by TPPs, the general state-level priority of TPPs modernization till 2026 creates some opportunities for thermal power engineering development during Donbas economy recovery. Furthermore, according to electric energy production forecast till 2035, electricity generation at TPP/CHPP in Ukraine will be reduced insignificantly [7].

Accounting the world trends of TPPs share reduction in electric power generation requires the analysis of opportunities for the development of alternative energy engineering in Donetsk and Lugansk regions, based on usage of non-traditional and renewable energy sources – one of basic directions of technologies' development worldwide. Integrated with informational and nanotechnologies, this could be an important component of neo-industrial model of economic development of Donbas.

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**SWOT-analysis of thermal power engineering at the territories  
of Donetsk and Lugansk regions, controlled by Ukraine**

Strengths	Weaknesses
<p>Location of the majority of energy generating plants of Donetsk and Lugansk regions at the territory, controlled by Ukraine;</p> <p>Location of main consumers of electricity, produced by TPPs (with energy intensive production), at the territory of the regions;</p> <p>National-level aspiration to TPPs modernization, according to European Parliament and EU Council Directive, limiting emissions of atmospheric pollutants at large combustion plants;</p> <p>Positive experience of TPPs modernization (Starobishyvska &amp; Kurakhivska) compliant with the European standards of energy generating plants' operation concerning the limits of atmospheric pollutants emission;</p> <p>Positive experience of Kurakhivska TPP reconstruction concerning the improvement of its reliability and increase of equipment lifetime, expanding maneuverability range, reducing energy intensity;</p> <p>The majority of energy generating plants of Donetsk and Lugansk regions operate with the coal of ranges, extracted at the territory, controlled by Ukraine;</p> <p>The significant stock of explored reserves of coal at the territory of Donetsk and Lugansk regions;</p> <p>Adopted Plan of generating capacities' development till 2026, envisaging TPPs' modernization and reconstruction;</p> <p>Planned re-equipment of TPPs, ordered to transfer to the coal of gas range;</p> <p>Planned increase of the capacities of Vuhlehirska, Kurakhivska, Slovianska, Luganska TPPs at the expense of energy units' rearrangement for gas range coal or low-calorie coal and screened coal;</p> <p>Planned building of a new power unit at Slovianska TPP;</p> <p>Ability of all TPPs of Donetsk region and Luganska TPP, remained at the controlled territory, to operate both with coal and gas-oil fuels, that enables some maneuverability in fuel supply strategies;</p> <p>Opportunity to develop energy engineering using the facilities of distributed generation of low and medium capacity (unit-stations at the plants of coal, metallurgical and coke industries)</p>	<p>Significant physical wear and obsolescence of energy equipment, causing large non-productive losses of fuel and energy resources (the degree of wear of fixed assets of the sector in Donetsk and Lugansk regions accounts for more than 50 %);</p> <p>The majority of TPPs does not comply with European environmental standards and make severe negative impact on environment;</p> <p>Major part of existing energy facilities requires modernization;</p> <p>Modernization of TPPs requires large investments;</p> <p>Worldwide trends of TPPs' share reduction in electricity generation;</p> <p>Reduction of demand for energy resources, conditioned by demand decline at the international markets of products of basic sectors of Donetsk and Lugansk regions;</p> <p>Inefficient usage of productive capacities of TPPs (operating at the load of 20-25 % of design conditions reduces the efficiency of facilities, mechanisms, equipment, working in suboptimal regimes, the share of nonproductive unit costs increases);</p> <p>Weakens the development potential of the sector due to the location of 3 of 5 energy generating plants at confrontation line and one – at the stage of liquidation (SE "Lysychanska CHPP");</p> <p>Reduction of coal extraction and its shortage for stable TPPs operation;</p> <p>Increasing problems of TPPs' supply with coal fuel due to the problems in coal industry and transport infrastructure destruction;</p> <p>Damages of energy facilities of TPPs, located at confrontation line;</p> <p>Lack of personnel of energy generating plants (about 70%) in the conditions of fighting;</p> <p>Shortage of spare parts for repair and impossibility of its stable supply, conditioned by fighting; complications of other resources' supply (coal and chemicals), necessary for production process recovery at energy generating plants;</p> <p>Significant losses during transportation, distribution and usage of electric energy and heat</p>
Opportunities	Threats
<p>Shortage of financial resources for electric energy consuming enterprises to implement energy-efficient measures, causing the conservation of high energy intensity;</p> <p>Comparatively low cost of 1 KWh of electric energy, generated by TPPs;</p> <p>Undeveloped alternative energy sources</p>	<p>Deterioration of the problems of TPPs supply with any resources due to the next escalation of armed conflict, or its expansion to new territories of the country;</p> <p>Shortage of financial resources for TPPs' reconstruction;</p> <p>Further exploitation of obsolete technologies at TPPs;</p> <p>Exhausting of the lifetime of fixed assets in electricity and heat generation, that can cause the reduction of efficiency and deterioration of pollutants' emission;</p> <p>Increase of losses during the transportation of fuel end energy resources, distribution and usage of electric energy and heat;</p> <p>Risks of price increases for energy resources</p>

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**Снігова О. Ю. Проблеми відновлення та розвитку теплової енергетики на підконтрольній території Донецької та Луганської областей**

Здійснено оцінку представленості генеруючих підприємств теплової енергетики на підконтрольній території Донецької та Луганської областей. Оцінено спроможність та перспективи відновлення теплової енергетики в нових економічних та політичних умовах, що характеризуються втратою частини потенціалів східних областей. Виявлено слабкі сторони та обмежувачі функціонування галузі в нових умовах. Встановлено ризики (загрози), що можуть стримувати, ускладнювати або унеможливити її розвиток.

*Ключові слова:* тепла енергетика; перспективи відновлення; підконтрольні території; Донецька та Луганська області; втрата частки економічного та ресурсного потенціалу.

**Снеговая Е. Ю. Проблемы восстановления и развития тепловой энергетики на подконтрольной территории Донецкой и Луганской областей**

Осуществлена оценка представленности генерирующих предприятий тепловой энергетики на подконтрольных территориях Донецкой и Луганской областей. Выявлены перспективы восстановления тепловой энергетики в новых экономических и политических условиях, характеризующихся потерей части потенциалов восточных областей. Выявлены слабые стороны и ограничения функционирования отрасли в новых условиях. Установлены риски и угрозы, которые могут сдерживать или усложнять ее развитие.

*Ключевые слова:* тепловая энергетика; перспективы восстановления; подконтрольные территории; Донецка и Луганская область; утрата экономического и ресурсного потенциала.

**Snihova O. The problems of recovery and development of thermal power engineering at the controlled territories of Donetsk and Lugansk regions**

The assessment of representation of thermal power plants at the controlled territories of Donetsk and Lugansk regions has been done. The opportunities and prospects of thermal power engineering recovery has been estimated in the new economic and political conditions, characterized by the loss of a part of Eastern regions' potential. Weaknesses and limitations of the sector functioning in the new conditions have been revealed. Risks (threats) that can impede, complicate or disable its development, have been determined.

*Keywords:* thermal power engineering, recovery prospects, controlled territories, Donetsk and Lugansk regions, loss of a part of economic and resource potential.

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## EROI OF THE UKRAINIAN COAL

### Introduction

Coal production in Ukraine is not only loss making and subsidized as a result but it is also a very power-consuming. This became clear as early as the 80<sup>th</sup> of the last century. At the time of a considerable reduction of coal production, consumption of rolled metal grew by 20%, consumption of electricity grew by 4% (specific consumption grew by 10%), steel intensity of mining equipment grew by more than 1 mln. tons, etc [1].

The problem of wide-scale liquidation of coal mines at Donbass became very acute [2]. But the demonstrative survey of coal mines of Sverdlovantstsite amalgamation [3] which was held in the post-soviet period was used as an argument in favour of further exploitation of these coal mines since direct and indirect electricity inputs for production of 1 ton of anthracite including those materialized in various stuff, equipment, buildings, structures, etc. amounted for one eighth/ ninth of a corresponding electricity costs at a thermal power station.

The situation in coal production and thermal power engineering sectors deteriorated considerably since then.

The problem of whether production of coal in Ukraine is reasonable or not is still quite topical. This thesis is substantiated by the article [4]. On the contrary, the situation in Donbass and requirement of increasing the anthracite imports from the USA make this problem even more acute. A methodology in use still does not give a clear understanding of factors influencing the energy efficiency of the Ukrainian coal production on a large scale.

Thus the main objective of this work is to review the current situation in the industry and to make out the methodology to be used in determining the basic factors which influence the fluctuations of energy efficiency indexes of the Ukrainian coal mines.

### Methods of analysis

One of the initial tasks to be fulfilled as a result of this research is to achieve the acceptance as a category of the proposed system of energy efficiency evaluation of all processes under study.

According to V. Pak, the Ukrainian scientist in mechanics and specialist on coal industry, the concept of exergy should be used in this regard [5]. His suggestion has possibly been influenced by a book of Polish scientists J. Szargut and R. Petela "Exergy" translated version of which was published in the USSR [6, original edition 7].

Being a category of thermodynamics, exergy as a derivative of a Greek word "work" having a prefix signifying the highest degree of something, means a maximum amount of work which can be accomplish by a system when it transforms from the existing state into a state of equilibrium with all components of the environment, i.e. with a source and the final receiver of any stream of energy such as water, vapour, raw materials, chemical products, various kinds of energy. It is well known, for example, that a burning fuel extracts more heat in the oxygen medium than in the open air. At the same time the summarized exergy of the system is less since some extra work should be performed for obtaining oxygen from the air.

The situation with coal production is similar. It requires more inputs of coal, materialized in electric and thermal energy, metal, etc.

The notion of exergy was modified by C.J. Cleveland, C.A. Hall, R. Costanza and R.K. Kaufmann into the notion of EROEI (energy returned on energy invested), or EROI (energy return on investment) almost 20 years ago [8]. This notion came into general use since then as a synonym of energy efficiency.

"One potentially useful alternative to conventional economic analysis is net energy analysis, which is the examination of how much energy is left over after correcting for how much of that energy (or its equivalent from some other source) is required to generate (extract, grow or whatever) a unit of the energy in question. Net energy analysis is sometimes called the assessment of energy surplus, energy balance, or, as we prefer, energy return on investment (EROI or sometimes EROEI)" [9, p. 25].

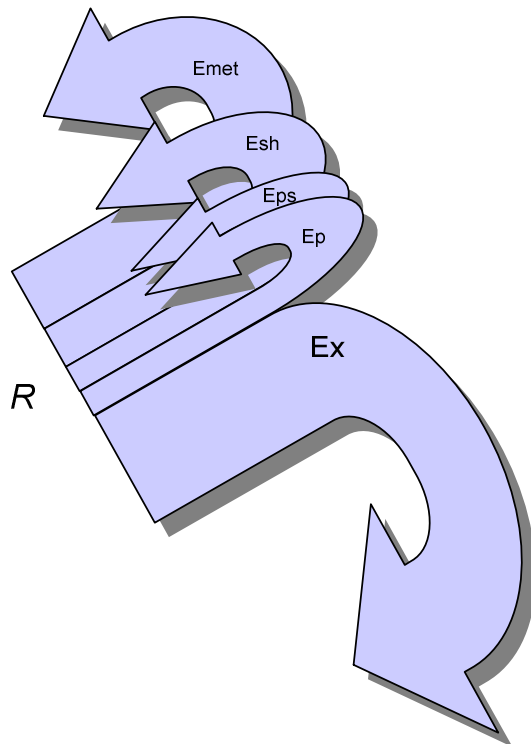
Keeping the above in view, EROI category is accepted in this work as the basis to evaluate coal mining efficiency.

To demonstrate the right approach in evaluation of EROI the diagram of Grassmann is suitable [6, c. 310]. Grassmann diagrams which are also known as Grassmann-Szargut diagrams usually show the system's streams of resources on a scale horizontally and in proportion to their numerical values. The diagrams graphically demonstrate the amounts of energy losses and their location as well as reallocations between the elements of the system (object) under study.

A coal mining enterprise can be shown in the form of distributed coal streams symbolizing energy resources (Fig. 1): one stream of coal consumed at a coal mine itself, the other one transported to the metallurgical

(by-product coking plant), to the power station, and the one domestically consumed by the personnel of all technologically combined enterprises, etc.

The elements of the Grassmann diagram are as follows:  $Ex$  – energy net-output of the system;  $E_{met}$  – energy inputs in metallurgical production,  $E_{sh}$  – energy inputs in coal mining and coal washery;  $E_{ps}$  – energy inputs for functioning of thermal power station and transformation of coal into electric energy;  $E_p$  – energy inputs to meet the requirements of personnel which is engaged in servicing of the system.



**Fig. 1. Grassman diagram**

The formula corresponding to Grassmann diagram looks as follows:

$$Ex = R - E_{pc} - E_{met} - E_p - E_{sh}. \quad (1)$$

EROI index of coal mining and processing system equals to:

$$EROI = Ex / (E_{pc} - E_{met} - E_p - E_{sh}). \quad (2)$$

Review of the system from the energy point of view gives a clear and stable (not depending on the state of the markets) presentation of the enterprise efficiency. This includes the understanding of whether a further existence of the enterprise is feasible from the resource point of view.

Thus a coal mine needs a certain electric power resources to produce a certain quantity of coal. In order to deliver a required quantity of electricity to the coal mine some volume of electricity should be ordered by a coal mine supplier of electricity from a thermal power station. This amount should exceed the amount required to the coal mine itself by the amount which will be lost

during its transportation in the electricity network. In order to meet the requirements of the electricity supplier, thermal power station should produce the amount of electricity ordered by the electricity supplier plus the amount required for its own needs.

Fuel consumption at a thermal power station depends on its technological efficiency and quality of a fuel. For the Ukrainian thermal power stations it is three times higher than the output of a secondary energy resources when calculated in coal equivalent units (tce).

A coal mine consumes not only an electricity but a thermal energy on a large scale. That is why some quantity of coal produced by a coal mine should be used as a boiler fuel at a coal mine itself in order to ensure its operation.

To cover its requirements in metal products a coal mine transports another portion of produced coal to a by-product coking plant to use it as a coal blend for coking. Besides some coal will be transported to electric power station and will be used to generate electric energy to cover the requirements of by-product coking plant, metallurgical plants, energy transportation losses in electricity networks plus the requirements in electric energy of thermal power station itself.

Besides some quantity of coal goes to the power station for generation of energy used in the process of coal beneficiation and transportation, as well as in production of some auxiliary materials used in various technological processes at a coal mine, etc.

Some coal is needed to meet the requirements in electric and thermal energy of metacorporation personnel.

If coal mine ensures a sizable net-output of useful resource, then some unprofitability of it can be considered acceptable. At the same time a combination of low economical and energy efficiency and moreover an energy cannibalism are absolutely impermissible.

Direct inputs of electric energy at the enterprise are considered a basic index for calculation of coal EROI.

Despite well-known declarations on the unique nature of each of Donbass coal mines, it was proved in the article [10] that the level of electricity consumption at the underground coal mining enterprises follows certain rules.

Statistical analysis of data from 93 separate coal mines [11] made it possible to find a correlation between energy, geological and mine technical factors. This analysis was accomplished at the period when the mine list of the Ukrainian coal industry was quite representative in quantity.

$$W = 0.260 \cdot P + 0.224 \cdot H + 0.679 \cdot N, \quad (3)$$

where  $W$  – a total electricity consumption at a coal mine;

$P$  – production capacity of a coal mine;

$H$  – a maximum mining depth;

$N$  – a number of simultaneously developed coal seams.

Indexes which are present in the formula are given in a standardized form (from minus one to plus one, irrespective of the factors' nature). Standard errors of variables were used in the process of standardization as variability interval. At the same time mathematical expectations of values are used as the natural value of the factor. A mean level was equal to zero.

The values of regression indexes show that the number of developed coal seams (variable  $N$ ) has the highest effect on coal mines' energy consumption. This has a direct connection with the attitude of bed: the value of this factor is much higher for steep gradient seams than in the case of flat-lying seams.

A depth of mining and a production capacity of a coal mine affect the energy characteristics of mining enterprise practically in the same way. At the same time they do not play the primary role in this process. Evaluations of  $W$  by  $N$  value explain such a high energy intensity observed at coal mines developing steep-pitch seams.

Five coal mine clusters were formed as a result of cluster analysis of three determining variables ( $P$ ,  $H$  and  $N$ ) (Table 1).

Table 1

**Mean values of variables by mine clusters***(in standardized estimation)*

Cluster No.	Number of coal mines	$W$	$P$	$H$	$N$
1	14	0,021	0,530	1,614	-0,455
2	36	-0,199	-0,301	-0,394	0,101
3	10	0,285	2,098	-0,534	-0,261
4	23	-0,842	-0,838	-0,754	-0,750
5	10	2,339	0,171	0,945	2,261

It is clear that energy consumption in the first cluster is almost on a mean level according to our data base (45,5±13,4 GWh or 5,6±1,6 thousand tons of coal equivalent per year). This cluster included the following industrial objects - 14 coal mines which existed at the moment. All of them had relatively high production capacity (740±155 thousand tons) and developed limited number (2,7±1,9) of deep-lying (1088±165 m) coal seams.

Energy consumption in the second cluster is below average (33,8±12,9 GWh or 4,2±1,6 thousand tons of coal equivalent per year). A production capacity here is also below average (522±145 thousand tons), depth occurrence is less than an average one as per our data base (587±120 m). At the same time a number of seams which are developed is sizable (4,4±1,9).

The second cluster has the second by rank gradation average mine wise number of coal seams. By this index the second cluster is next to the fifth cluster only. Actually it is explained by the fact that the second cluster

also includes some coal mines which develop steep-pitch seams like "Bulavinskaya", "Enakievskaya" and other mines of "Ordzhonikidzeugol" amalgamation. A number of objects in the cluster is 36.

The third cluster combines 10 objects having the highest production capacity (1153±146 thousand tons) and developing a limited number of seams (3,3±1,2), which are lying at the average depths (672±164 m). Thus by an electric energy consumption the third cluster coal mines occupy the position which can be characterized as exceeding by approximately one third the average level by a number of objects (51,1±15,0 GWh or 6,3±1,8 thousand tons of coal equivalent per year).

The fourth cluster combines objects with characteristics in the bottom of the range: these are shallow coal mines (498±147 m) with a minimum number of coal seams (1,8±0,8) and a low production capacity (380±113 thousand tons). Energy consumption at such coal mines constitutes (16,4±7,9 GWh or 2,0±1,0 thousand tons of coal equivalent per year).

The fifth cluster is featured by an impressive depth of mining (921±132m) and a great number of simultaneously developed seams (10,9±1,4). The depth of mining here is approaching the top of the range and the production capacities are high enough - 646±138 thousand tons (at least they are above the average). This substantiates such a high energy inputs in coal production. They greatly exceed the overall level of energy consumption in a coal industry (112,5±18,9 GWh or 13,8±2,3 thousand tons of coal equivalent per year). This cluster combines 10 coal mines.

Conversion of electricity units into equivalent fuel indexes was made taking into account the ratio 1 kWh = 123 grams of coal equivalent, which comes from the conversion of SI units (1 kwh = 3,6 MJ; 1 kg of coal equivalent = 7000 kcal or 29,3 MJ).

$$E = 0.123 \cdot W \quad (4)$$

where  $E$  – electric energy consumption, expressed in the units of equivalent fuel, thousand tons of equivalent fuel.

There is a statistical difference (with a probability of 95%) between all the clusters in the level of energy consumption and a striking difference of the fifth cluster from all the other ones.

Beside the general energy consumption clusters differ from each other by energy consumption in various technological processes.

About 29% of energy goes on mine ventilation and only 9% goes on operation of compressors in the first cluster. At the same time 56% of energy goes on operation of pneumatic equipment, and 12% of energy is consumed by the ventilators of main ventilation system in the fifth cluster.

Cluster wise energy intensity characteristics in kind for the main coal mining processes (Table 2).

Table 2

**Energy consumption characteristics by technological processes, GWh**

Номер кластера Cluster No.	$W$	$W_3$	$W_4$	$W_5$	$W_{10}$	$W_{11}$
1	45,5±13,4	12,9±7,1	5,6±3,7	4,3±4,1	11,0±5,1	3,6±2,3
2	33,8±12,9	7,2±4,4	4,9±3,8	6,7±10,4	7,5±4,5	1,9±1,1
3	51,1±15,0	16,1±7,0	3,9±3,6	2,7±4,0	10,1±4,2	5,4±3,2
4	16,4±7,9	3,8±2,7	2,2±1,4	0,3±0,9	4,5±4,6	2,0±1,6
5	112,5±18,9	13,7±3,8	8,1±4,4	62,2±15,4	11,1±5,4	1,4±1,0

The designations are following:

- $W_3$  – Annual energy consumption for Ventilation process, GWh;
- $W_4$  – Annual energy consumption for “Mine hoist” process, GWh;
- $W_5$  – Annual energy consumption for “Compressed air supply”, GWh;
- $W_{10}$  – Annual energy consumption for “De-watering” process, GWh;
- $W_{11}$  – Annual energy consumption in underground transportation processes, GWh.

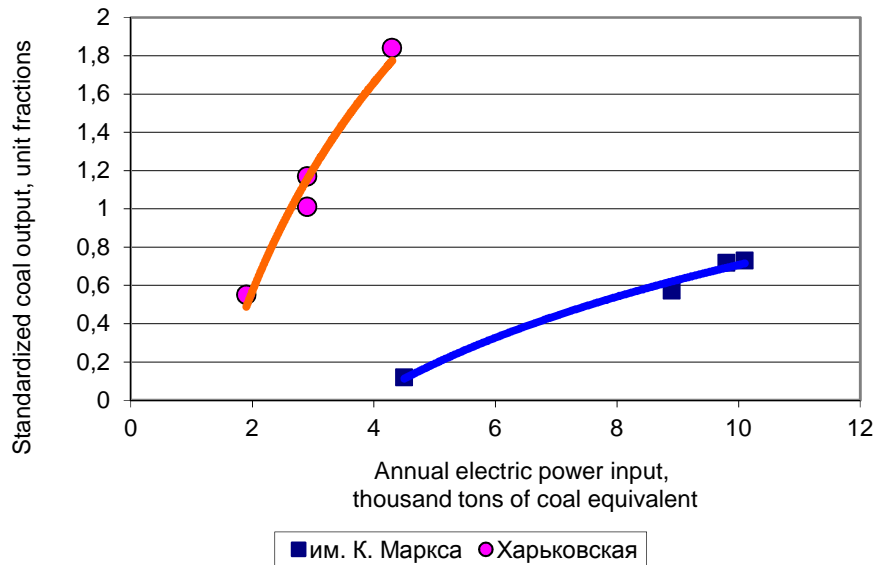
The above mentioned patterns are typical for those cases when mine production funds are used to a great extent and implementation rate is close to one. Productive capacity implementation rate equal to zero ( $D = 0$ ) represents the “idle running” operation of the enterprise

using the mechanics terminology. With some exaggeration we can assume that when a coal mine is in “full idle run” operation the only really operating equipment are the ventilation and pumping installations.

If we know the electricity consumption for these processes, we can determine the requirements of a coal mine when production capacity implementation rate equals zero.

A power production function of a coal mine – is a correlation between the production output and energy consumption.

Fig. 2 gives graphs of actual electric power consumption for production of coal at two coal mines belonging to marginal fourth and fifth clusters. Standardized coal production at mine S forms the ratio of the annual coal output to production capacity of the mine.



**Fig. 2. Correlation between a production development and electric power consumption at coal mines belonging to various clusters**

Coal mine “Kharkovskaya” situated at Sverdlovsk of Lugansk region has a capacity of 320 thousand tons/year and belongs to the fourth cluster. Coal mine named after Karl Marx situated at Enakievo has a capacity of 900 thousand tons and belongs to the fifth cluster.

The production function of a coal mine shown in its totality forms a logarithmic function graph beginning in the point having coordinates ( $E_{(D=0)}$ ;  $D=0$ ) and going through the point having coordinates ( $E_{(D=P)}$ ;  $D=P$ ),

where  $E_s$  – summarizes the basic inputs of coal used for functioning of an enterprise.

$$D = K_e \ln(E_s) + C, \quad (5)$$

where  $D$  – Annual coal output, thousand tons;

$K_e$  and  $C$  – Logarithmic function coefficients;

$E_s$  – total standardized coal consumption for production needs which is in correspondence with a total coal mine output.

$$E_s = E_3 + F_{MET} + f_p N_p + F_{Sh}, \quad (6)$$

where  $E_3$  – Total electric power consumption in the system which includes energy resource production at a thermal power station and energy losses in the electric networks;

$F_{MET}$  – Consumption of coal in metallurgical production;

$f_p N_p$  – Consumption of coal by personnel for domestic needs;

$F_{Sh}$  – Coal consumption for coal mine needs.

Table 3 shows the electric energy consumption at a coal mine in two cases: when a coal mine production reaches its maximum which corresponds to its production capacity and in the “idle-run” operation. Based on this data one can make a coal mine production function typical for the particular cluster.

Table 3

**Mean cluster wise electric power consumption, thousand tons of coal equivalent**

Cluster No.	Electricity consumption when $D=P$	Electricity consumption when $D=0$
1	5.6	2.0
2	4.2	1.8
3	6.3	2.5
4	2.0	0.8
5	13.8	5.5

Based on the review of observation data published in [3, p. 16-17], a conclusion can be made with regards to electric power consumption in coal dressing processes, its transportation by rail road, as well as a volume of electric power materialized in consumed materials, buildings and structures and equipment which was put into action during the period of the year. Percentage-wise, these figures constitute, respectively: 11,1±3,0; 5,1±0,9; 65,3±8,6; 6,6±1,2; and 10,6±1,8% of direct electric power consumption at a coal mine.

Still these indexes are typical for coal mines with flat pitch coal seams.

According to the research made by DonUGI specialized laboratory of wood and material stores [12, p. 8] there exist considerable differences in consumption of materials depending on bed attitudes. On the basis of long term observations, functioning of coal mines developing flat pitch seams goes under the following pattern as far as a daily material consumption is concerned:

$$Q_{MAT}^I = 25.5 + 25.3 \cdot D_1 + 2.5 \cdot L_{np} + 1.3 \cdot L_p, \text{ t}, \quad (7)$$

where  $Q_{MAT}^I$  – A daily consumption of materials at a coal mine, tons/day;

$D_1$  – A daily extraction of coal at a coal mine, thousand tons/day;

$L_{np}$  – An average daily penetrating face advance, m/day;

$L_p$  – An average daily overhauled advance in mine workings, m/day.

For coal mines developing steep pitch seams

$$Q_{MAT}^K = 51.4 + 150 \cdot D_1 + 2.0 \cdot L_{np} + 1.2 \cdot L_p, \text{ t}. \quad (8)$$

All elements of the above formulas may be divided into 2 groups: the one in which consumption is calculated in tons of materials and a group of elements referring to a running meter of mine workings which are being advanced or overhauled. As a rule a nomenclature of the latter combines the metallurgical products such as arch support, rails, pipes.

According to standard requirements of a relatively small coal mine having a daily output of 1 thousand tons (or around 250 thousand tons of coal per year) a daily supply of about 51 tons of mixed cargo and 20 tons of metal products is needed i.e. a total requirement is 71 tons if coal mine develops flat pitch coal seams and 169 tons of loads if a coal mine develops steep pitch seams.

Because of geological conditions the difference in material consumption of an average mine having an annual capacity of 700 thousand tons is about 3,4 times. At the same time coal mines developing steep pitch seams consume 2,5 times more electricity.

That’s why in case of coal mine with steep pitch seams the ratio between the electricity consumption materialized in goods and consumed directly requires correction: this ratio should be increased 1,4 times compared to coal mines developing flat pitch seams. At the same time, keeping in view the abovementioned increased electricity consumption for own needs of coal mines with steep pitch seams, specific costs for the other categories at these mines should be reduced.

Data on coal mines of both types is given in Table 4.

Table 4

**Electricity consumption rate, unit fractions, from direct electricity consumption at a coal mine**

	Coal mine with flat pitch seams	Coal mine with steep pitch seams
Coal dressing	0,11	0,04
Railroad transportation	0,05	0,02
Materials	0,65	0,92
Equipment	0,11	0,04
Buildings and structures	0,07	0,03

Costs of electric power supply to a coal mine are as follows:

$$E_3 = \frac{E \cdot (1 + \rho) \cdot (1 + \lambda) \cdot (1 + \phi)}{\eta_{PS}} \quad (9)$$

where  $\rho$  – electricity inputs for processes of coal dressing and transportation, inputs of electricity materialized in goods, metal products, buildings and structures, equipment;

$\lambda$  – electricity losses in its transportation;



$\varphi$  – electricity inputs for own needs of a thermal power station;

$\eta_{PS}$  – energy efficiency of thermal power station with regards to fuel consumption.

Coal mines are heavy users of not only an electric power energy but of thermal energy and motor oil as well.

Based on the regression analysis it is determined that summary inputs of fuel (boiler coal, petrol and diesel fuel) are comparable with electricity consumption [13, 14]. With a high degree of accuracy this dependence can be presented in the following way:

$$F_{Sh} = 1.133 \cdot E. \quad (10)$$

$$F_{MET} = f_{MET} \cdot Q_{MET}, \quad (11)$$

where  $f_{MET}$  – specific consumption of energy resources in metallurgical production, thousand tons of equivalent fuel;

$Q_{MET}$  – annual consumption of metal rolled stock at a coal mine, thousand tons.

The data provided in the work [15, p. 113] shows that on the whole 1,3 tons of coal equivalent is consumed in production of 1 ton of rolled stock. At the same time this data involves net-inputs of electricity. It does not take into account fuel inputs at generating plants.

Taking into account the data given in the work [16, p. 52] a summarized specific consumption of materialized coal if recalculated considering all cycles of metallurgical treatment can be considered equal to 2,1 tons of equivalent fuel for 1 ton of rolled stock consumed by a coal mine. However, there is a reason to divide costs and under  $f_{MET}$  understand only the consumption of coal for the production of coke – 640 kg per ton of coal/ton of rolled metal [16, p. 157], and the remaining part of the costs included in the electricity consumption.

The following dependences defining the respective requirements in metal-roll by coal mines developing flat-pitch and steep-pitch seams respectively are based on generalized statistical data.

$$Q_{MET}^n = 10^{-3} \cdot l_1 \cdot P \cdot s \cdot (2.5 + 1.3 \cdot k_p), \quad (12)$$

thousand tons,

$$Q_{MET}^k = 10^{-3} \cdot l_1 \cdot P \cdot s \cdot (2.0 + 1.2 \cdot k_p), \quad (13)$$

thousand tons,

where  $l_1$  – specific ratio of a coal output and preparatory works made during the year (6,5 m/thousand tons);

$k_p$  – Ratio coefficient between face advance activities and underground overhauling activities (according to previous experience this ratio can be admitted as 0,5 on the average).

Evaluation of energy inputs for participation of personnel in production processes is a matter of special attention. Instead of evaluating a direct labour it is suggested in the work to calculate energy inputs in domestic needs of company personnel. Coal consumption clearly prevails in total energy consumption for domestic heating but at the same time one needs to consider inputs of electric and thermal energy as well.

According to the terms of the Mining Code of Ukraine [17, art. 43], all personnel of coal mining (coal processing) and mine building companies are enabled to acquire a free coal for domestic needs in quantity of 5,9 tons of coal for 1 person which can be equated with 4,2 tons of coal equivalent.

$$F_p = 10^{-3} \cdot N_p \cdot f_p, \quad (14)$$

where  $F_p$  – An annual consumption of furnace and chimney fuel for personnel needs, thousand tons of coal equivalent;

$N_p$  – Number of free coal receivers, men;

$f_p$  – Specific consumption of furnace/chimney fuel, tons of coal equivalent/men.

During the period of intensive exploitation of mine fund objects, cluster wise direct labour inputs by coal mines are equal (with a probability of 0,95) to  $2,7 \pm 0,3$ ;  $3,8 \pm 0,4$ ;  $2,3 \pm 0,8$ ;  $4,4 \pm 0,9$ ;  $3,3 \pm 0,2$  persons / 1000 tons of produced coal. Any changes in the production output do not lead to linear changes in personnel number.

Empirical dependence for coal mines developing flat pitch seams looks as follows:

$$N_{Sh}^{bl} = B_{Sh}^{aK} \cdot P \cdot s^{(1-0.398)}, \quad (15)$$

where  $N_{Sh}^b$  – A current number of mine personnel, men;

$B_{Sh}^a$  – Labour coefficient in production of coal at a coal mine having a high degree of production capacity utilization, men/thousand tons.

The dependence for coal mines developing steep pitch seams (the fifth cluster) looks as follows:

$$N_{Sh}^{bk} = B_{Sh}^{aK} \cdot P \cdot s^{(1-0.516)}. \quad (16)$$

Workers of metallurgical, by-product coking plants and thermal power stations involved in processes associated with coal production can be considered a personnel participating in coal production on the basis of outsourcing agreements. To estimate the number of this personnel it is acceptable to use data on labour-intensiveness of various operations/processes at the corresponding enterprises.

As far as metallurgical companies are concerned, the labour-intensiveness of metallurgical production is equal to 7,4 persons per 1 thousand tons of steel (the data was provided by Monitor Company Group, analytical firm which made a development strategy of Donetsk Region).

According to the data published in article [18], a labour content in operation of power generating enterprises in its dependence from the annual quantity of processed fuel is as follows:

$$N_{PS} = 0.539 \cdot d - 7 \cdot 10^{-5} \cdot d^2 - 94, \quad (17)$$

where  $N_{PS}$  – Number of personnel involved in servicing of energy generating company, men;

$d$  – Annual consumption of fuel (coal) at the thermal power station, thousand tons of equivalent fuel.

Though the personnel involved in metallurgical production and energy generation is not on the coal mine staff, their involvement in coal production provides the ground for considering this personnel as consumers of domestic coal.

The total number of personnel in production system is as follows:

$$N_p = N_{sh} + N_{PS}(d) + N_{MET^*}(Q_{MET}), \quad (18)$$

where  $N_{PS}(d)$  – Labour-intensiveness in servicing of power station in respect of a coal mine requirements, persons;

$N_{MET}(Q_{MET})$  – Labour-intensiveness in servicing of metallurgical production in respect of a coal mine requirements, persons/

Graph-analytic method is most suitable for defining a production function and determining the coefficient  $K_e$ . This means the requirement to calculate the value  $E_s$  which forms the combined energy inputs of a coal mine in  $D = 0$  and  $D = P$  modes. After this the logarithmic dependence graph should be made with the help of Excel MS software.

The following formula describes a quantity of useful coal mine production:

$$Ex = R - E_s. \quad (19)$$

It is acceptable to use a simplified dependence [19] in order to recalculate a quantity of produced coal given in physical terms into coal equivalent terms

$$\beta = \frac{Q^r = (31505.7 - 332.8 \cdot A^d)}{1000 \cdot 29.3}. \quad (20)$$

where  $\beta$  – Transfer coefficient from physical units into units of coal equivalent;

$Q^r$  – The lowest heating power of coal at a particular mine, determined on the basis of coal ash content, kJ/kg;

$A^d$  – Coal ash content, percent.

$$R = Q^r = D \cdot \beta. \quad (21)$$

The consumption of energy resources at a coal mine depends on a number of variables. It is essential to determine to which extend each of the variables affects it. To achieve this it is suggested in the work to use the above model for making a multi-factor experiment by Box-Wilson method of experiment planning theory [20, p. 80].

A coal mine when described by its production function is a device at the outlet of which a response function (or criterion function when one says about optimization) is formed under the influence of inlet signals (factors).

Numerical factors can be denoted by any of a great number of acceptable values. Box-Wilson method permits deviation of factors on two levels only: the lower one which is designated by minus 1 and the upper one – by plus 1.

To reduce the labour inputs for analysis, it would be appropriate in the first place to conduct a screening experiment making use of software Statistica® [21]. The

program enables the maximum of 11 factors to be used for analysis. On the assumption of this it is reasonable to form the composition of variables used in the variation in the following way:

- $F_1$  – power energy inputs in coal beneficiation processes;
- $F_2$  – power energy inputs in coal transportation by railroads;
- $F_3$  – power energy materialized in goods;
- $F_4$  – power energy materialized in buildings and structures;
- $F_5$  – power energy materialized in equipment;
- $F_6$  – coal consumption for thermal energy generation;
- $F_7$  – labour inputs in coal mining at a specific mine;
- $F_8$  – electric power energy losses in electric networks;
- $F_9$  – consumption of coal used for personnel domestic needs;
- $F_{10}$  – specific fuel consumption at thermal power station;
- $F_{11}$  – coal inputs in coke production.

Factor variation levels correspond to those indicated in Table 5. As an object of analysis on the stage of a screening experiment the following coal mine was chosen: the one belonging to the third cluster with a production capacity of 1150 thousand tons per year and a respective electric power consumption of 2,5 and 6,3 thousand tons of coal equivalent per year which correspond to a coal mine operation in the idle run mode and with a full load of production funds.

Table 5

Values of factor setting levels

Nomenclature of a factor	The upper level (+1)	The basic level	The lower level (-1)	Variation interval
$F_1$ , unit fractions.	0,08	0,11	0,14	0,03
$F_2$ , unit fractions.	0,04	0,05	0,06	0,01
$F_3$ , unit fractions.	0,57	0,65	0,73	0,08
$F_4$ , unit fractions.	0,05	0,065	0,08	0,015
$F_5$ , unit fractions.	0,09	0,105	0,12	0,015
$F_6$ , unit fractions.	1,03	1,135	1,24	0,105
$F_7$ , men./th.tons	1,5	2,3	3,1	0,8
$F_8$ , unit fractions.	0,05	0,085	0,12	0,035
$F_9$ , t.e.f./man.	0	2,1	4,2	2,1
$F_{10}$ , gr.c.e./kWh	200	300	400	100
$F_{11}$ , t/t	0,40	0,525	0,65	0,125

Appropriateness of applying a fractional factorial experiment matrix for factor variation is substantiated by the necessity to reduce research labour inputs since a comprehensive plan involving 11 factors varied on two levels would have constituted 2048 tests.

A matrix containing 16 tests (fractional factor experiment having a view of  $2^{(11-7)}$ ) and generated by software Statistica® is designated for systematic variation of variables.

When the factors affecting the third factor in a big way are selected in the course of the screening experiment it is required to start the experiments at the coal mines representing the marginal clusters, the fourth and the fifth ones. To achieve this the selected factors should be supplemented by another factor, a qualitative one, the lower level of which embodies a coal mine of the fourth factor, and the upper level – a coal mine of the fifth cluster.

The results of experiment at coal mines representing the marginal clusters are aimed at presenting a full spectrum of the Ukrainian coal mines characteristics.

### Results

The results of screening experiment, fulfilled with the use of a software pack Statistica 6.0®, show that one factor only, the tenth one, which is a specific fuel inputs at the thermal power station, has a statistically significant effect on function  $E(s)$  in the idle run mode.

The following dependence reflects the values of the variable

$$E_{(D=0)} = 20.408 + 4.614 \cdot F_{10}. \quad (22)$$

Two factors, the tenth and the ninth, the same specific fuel consumption at thermal power station and rates of coal allocated for domestic needs of the personnel, have statistically sizable effect on accumulated energy consumption at coal mine operating at full swing.

Energy loads at the coal mine operating at full swing are formed according to the following dependence

$$E_{(D=P)} = 63.639 + 8.341 \cdot F_9 + 11.934 \cdot F_{10}. \quad (23)$$

Thus a production function of coal mines belonging to the third cluster can be formed by two sets of data, estimated in thousands of tons of coal equivalent: when setting factor values at the upper level  $E_{(D=0)} = 25.0$ ;  $E_{(D=P)} = 83.9$ ; and setting factor values at the lower level  $E_{(D=0)} = 15.8$ ;  $E_{(D=P)} = 43.4$ . Corresponding production functions are given on the Fig. 3.

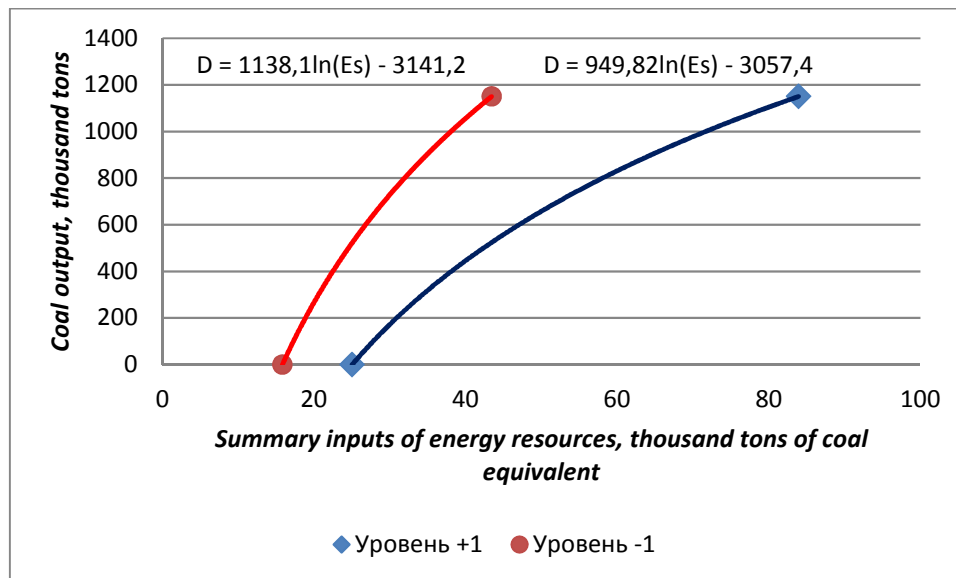


Fig. 3. Production functions of coal mine belonging to the third cluster (Level +1 and Level -1)

Coefficient  $K_e$  for the first production function is equal to 1138, for the second one – 950; coefficients  $C$  are 3141 and 3057 respectively. It is clear that the elasticity of production functions in standardized imaging becomes less with the increase of effecting factor values.

Such effect can actually be achieved if one applies the system which includes the elimination of benefit for the mine personnel which is a free provision of coal (zero rate) plus improving the effectiveness of thermal power stations by reducing fuel consumption rates.

According to the estimates a maximum energy efficiency of a coal mine is achieved when it operates at a maximum capacity. Depending on the attendant factors EROI of a coal varies from 17,5:1 to 8,6:1.

Keeping in view the obtained data on effect of various factors it makes sense to carry out the next experiment. This time it is a three-phase hypothetical (computer) experiment with one qualitative factor by matrix of a comprehensive factor experiment  $2^3$  consisting of 8 tests. The first factor  $F_1$  is a cluster type (+1 corresponds to a coal mine of the fifth cluster, and -1 corresponds to a coal mine of the fourth cluster). The second factor  $F_2$  – is a distribution rate of a free coal provided to the personnel of a coal mine. The third factor  $F_3$  – is a fuel consumption efficiency at a thermal power station.

According to the experimental conditions it is admitted that a coal mine of the fourth cluster has a production capacity of 380 thousand tons of coal per year, direct inputs of electric power energy at a coal mine

operating in the idle run mode is 0,8 thousand tons of coal equivalent and 2 thousand ton of equivalent fuel when the coal mine operates at a full swing.

The capacity of the fifth cluster coal mine is 650 thousand tons, corresponding direct electricity inputs are 5,5 and 13,8 thousand tons of equivalent fuel. The values of those factors which are statistically of no importance for the response function i.e. electricity inputs for coal beneficiation, coal railway transportation and those materialized in products, etc. are fixed at the average level.

The experiment results bring one to the conclusion that only two factors, the first and the third ones, as well as their interaction, have statistically sizable effect on energy consumption of coal mining process. The difference between coal mines representing clusters which are marginal in terms of energy inputs is so sizable that they overlap the effect of the second factor.

The effect of the first and third clusters correlation  $F_1F_3$  is also of essence: it is positive which means that the response function value increases when factors are set on one and the same level.

The dependence of response functions from the factors are as follows:

$$E_{(D=0)} = 23.726 + 16.931 \cdot F_1 + 6.151 \cdot F_3 + 4.629 \cdot F_1F_3; \quad (24)$$

$$E_{(D=P)} = 65.582 + 42.630 \cdot F_1 + 15.685 \cdot F_3 + 11.363 \cdot F_1F_3. \quad (25)$$

The marginal sets of indexes for coal mines of the fourth and the fifth clusters, calculated in thousands tons of coal equivalent, amount: when the factor values are set on the upper level  $E_{(D=0)} = 51.4$ ;  $E_{(D=P)} = 135.3$ ; when factor values are set on the lower level –  $E_{(D=0)} = 5.3$ ;  $E_{(D=P)} = 18.6$ .

The higher capacity and more energy consuming coal mines of the fifth cluster have more elastic production function. That is why smaller coal mines developing flat pitch seams require a greater increase of energy inputs (in relative terms) in order to achieve a sizable increase of coal output. For the coal mines which develop steep pitch seams an increase of coal output does not require such a high increase of energy inputs.

The effect of the second significant factor  $F_2$  is of no less importance: coal mines are not self-sufficient: a low effectiveness of thermal power stations' operation reduces greatly the effectiveness of the entire coal mining industry. And actually the more energy consuming a coal mine production is, the more the fuel inputs at the thermal power stations effect a coal mine operation. This is reflected by plus or minus symbol showing the factors' mutual effect.

Table 6 shows at which conditions the optimum operation of coal mines belonging to different clusters at various effectiveness of thermal power station operation can be achieved. Optimality conditions are calculated with the help of "Search for a solution" module of Excel MS software.

Table 6

Optimal coal mine operation modes

Optimization conditions	Optimal standardized output, fractions of one	Optimal energy input, thousand tons of coal equivalent	EROI of a system
Coal mine of the 4 <sup>th</sup> cluster, high effectiveness of TPS	0,709	201	9,60
Coal mine of the 5 <sup>th</sup> cluster, high effectiveness of TPS	0,948	412	4,79
Coal mine of the 4 <sup>th</sup> cluster, low effectiveness of TPS	0,756	208	8,00
Coal mine of the 5 <sup>th</sup> cluster, low effectiveness of TPS	0,989	377	3,08

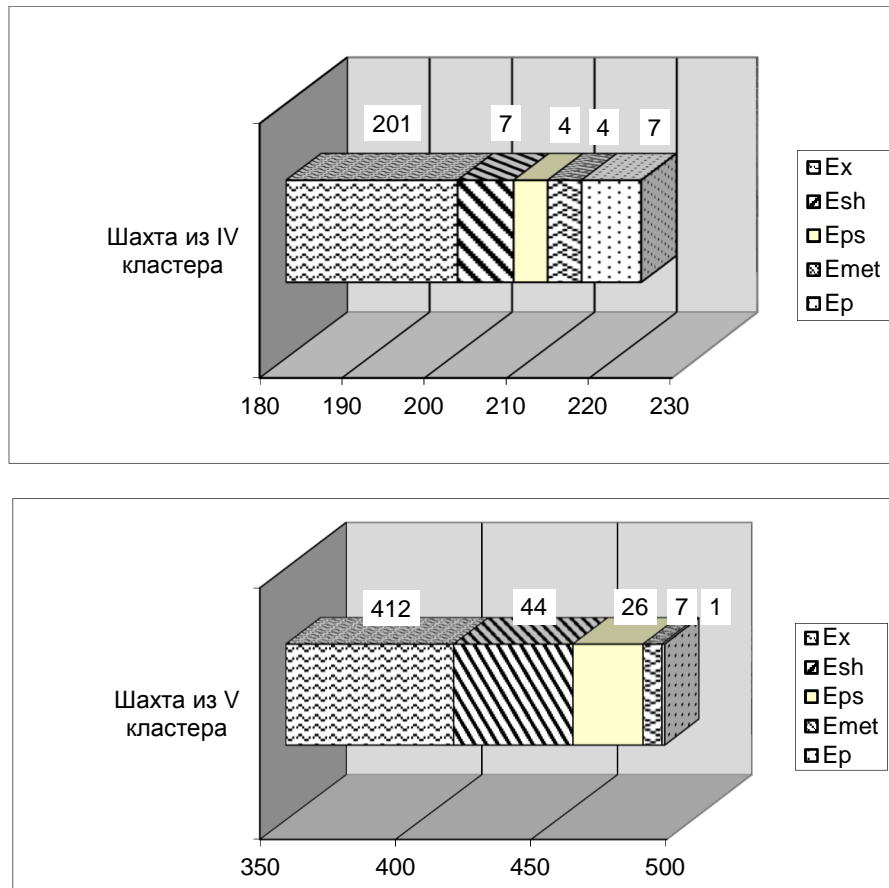
To achieve the highest possible energy efficiency it is required to control and adjust the operation modes at the fourth cluster coal mines which have a more rigid production function as far as a resource aspect is concerned. The optimal values of standardized coal production at such mines varies between 0,71 and 0,76. As to the fifth cluster coal mines the basic condition for achieving an effective operation mode is the increase of an annual coal output to reach a rated level of production capacity.

This goal is hard or more likely impossible to achieve since it requires to attract very sizable investments and involve a lot of additional manpower. Since these enterprises are loss-making they do not have any resources of their own to achieve the above. Budget resources are limited and are not sufficient to support even more efficient coal mines. This is the reason why the

majority of state-owned coal mines have low production loads and their energy efficiency is at a very low level.

The following Grassmann diagrams (Fig. 4) are indicative of the operating efficiency of the fourth and fifth clusters' coal mines when they operate in the optimal operation modes at a high efficiency of thermal power station operation.

Actually these are the descriptions of how the produced coal is distributed. The fourth cluster coal mine consumes 7 thousand tons of equivalent fuel (in coal) for its own technological needs. Besides it sends: 4 thousand tons of equivalent fuel to electric power station, 4 thousand tons of equivalent fuel to the by-product coking plant and 7 thousand ton – for the domestic needs of personnel. EROI of coal mine having a useful coal output at the level of 201 thousand tons of equivalent fuel equals 9,60.



**Fig. 4 Comparative Grassmann diagrams for coal mines of the fourth and the fifth clusters when thermal power stations operate with a high efficiency**

Out of 650 thousand tons of equivalent fuel produced by the hypothetical fifth cluster coal mine, 44 thousand tons of equivalent fuel (in coal) is consumed by the coal mine directly (in a boiler house) or indirectly for its own technological needs. Besides, 26 thousand tons of equivalent fuel goes to electric power station, 7 thousand tons goes for production of coke and another 9 thousand tons goes for domestic needs of personnel. The actual useful output of coal amounts for 412 thousand tons of equivalent fuel. And EROI of this coal mine constitutes 4,79.

When electric power stations operate inefficiently, the inputs  $E_{ps}$ , i.e. the amount of fuel to be used at the energy generating enterprise increases to 13 and upto 80 thousand tons of equivalent fuel depending on whether a coal mine belongs to the fourth or to the fifth cluster. In this case a net energy production of the system constitutes 208 and 376 thousand tons of equivalent fuel respectively. And EROI is 8,0 and 3,08 respectively.

#### Discussions

According to the available information EROI of the American coal is 80:1, and the average EROI worldwide is 46:1, a Chinese coal has the ratio of 27:1 (according to the data of 2007) [22]. Research in the sphere of various processes in the energy sector of the national coal mining sector can be concluded in the following way: EROI index of the best national enterprises operating

in the most favourable geological conditions and with the most efficient thermal power station is about 18:1. The actual profitability in the Ukrainian fuel and energy complex is much worse.

In the pre-depression and prewar 2006, a cumulative curve of EROI distribution by groups of coal mines excavating Steam Coal and Anthracite had the form, given in Fig. 5.

A general situation with anthracite coal has been improved by few high-performance coal mines forming an integral part of Sverdlovanthracite and Rovenkianthracite amalgamations. One of them has an EROI index which corresponds to an average global level of energy efficiency by coal, two other mines have EROI index on the level of Chinese coal mining industry. The rest of coal mines do not show any improvement as far as the energy characteristics of coal are concerned. There is a great number of coal mines in both groups having a low coal output which leads to a sort of energy cannibalism in coal mining industry.

For the first group a total reported coal production amounted 18,5 million tons, and EROI turned to be 9,3:1, as for the second group a reported coal production is 15,5 million tons and EROI is 10,1:1. A general EROI index of the Ukrainian steam coals is equal to 9,6:1 (according to the data of 2006).

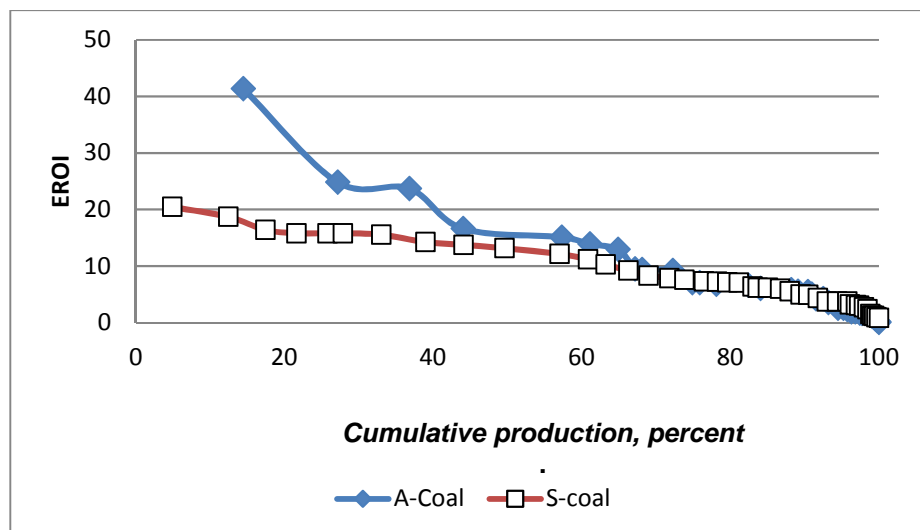


Fig. 5. Cumulative curves, characterizing energy cost-effectiveness of various coal grades mines

Such a low efficiency of the national coal mining industry is substantiated by unfavourable geological conditions (great depths and high gassiness of coal seams), neglect of technical facilities especially of state-owned coal as well as by the backwardness of thermal power engineering.

It should not be overlooked that Donbass basin is one of the oldest in the world, its history goes back to 200 years ago. The deepest coal mine in the world, “Shakhterskaya glubokaya”, is situated here. Mining activities are conducted at this mine at the depths exceeding the minus 1546 meters mark. No other country “takes risk” of developing such deposits. And until recently Ukraine was one a dozen of the biggest coal producing countries in the world. In view of the abovesaid, coal mining enterprises of Donbass are more likely the productions of hard, liquid and gaseous coal wastes (more than 5 т on 1 ton of excavated fossil) than on the contrary [23].

As shown in the article, a high fuel capacity of electric power energy production at the thermal power stations is one of the most powerful factors affecting the energy profitability of the Ukrainian coal.

Sigmund Freud believed that the technical expansion of Civilization is akin to a culturally acceptable form of sadism. But est modus in rebus: the desire for sustainable development requires the legislative restriction of enterprises with a low EROI [24].

It makes sense to update the obtained results to the recent situation in the coal mining industry of Ukraine, but even the given data is suitable for taking decisions on restructuring of capital assets in coal mining industry as well as developing policies on fuel provision of the national energy sector.

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#### **Череватський Д. Ю., Атабсков О. І. EROI українського вугілля**

Поняття EROI (energy return on investment) стало загальноживаним синонімом енергетичної рентабельності, певною альтернативою традиційної економічної оцінки.

Дослідження виконано з метою складання методичних положень щодо встановлення значимості основних чинників, що впливають на динаміку показників енергетичної ефективності вугілля українських шахт, і оцінки реальної ситуації в галузі.

Вугледобувне підприємство представлено як розподілені потоки вугілля, які символізують енергетичні ресурси: що витрачаються по шахті; відправляються на металургійний (коксохімічний) завод; на електростанцію; споживаються в побуті персоналом всіх технологічно пов'язаних підприємств тощо.

*Ключові слова:* EROI, вугільна шахта, коксохімічний завод, електростанція, персонал, витрата енергетичних ресурсів.

#### **Череватский Д. Ю., Атабеков О. И. EROI украинского угля**

Понятие EROI (energy return on investment) стало общеупотребительным синонимом энергетической рентабельности, определенной альтернативой традиционной экономической оценки.

Работа выполнена с целью составления методических положений по установлению значимости основных факторов, влияющих на динамику изменения показателей энергетической эффективности угля украинских шахт, и оценки реальной ситуации в отрасли.

Угледобывающее предприятие представлено в виде распределенных потоков угля, символизирующих энергетические ресурсы: собственно расходимые на шахте; отправляемые на металлургический (коксохимический) завод; на электростанцию; расходимые в быту персоналом всех технологически связанных предприятий и т.п.

*Ключевые слова:* EROI, угольная шахта, коксохимический завод, электростанция, персонал, расход энергетических ресурсов.

#### **Cherevatskyi D., Atabyekov O. EROI of the Ukrainian coal**

The concept of EROI (energy return on investment) has become a commonly used synonym for energy efficiency, an alternative to traditional economic evaluation.

This work was carried out with the goal of drawing up methodology for determining the significance of the main factors affecting the dynamics of the energy efficiency of Ukrainian coal and assessing the real situation in the coal branch.

The coal mining enterprise is represented in the form of distributed flows of coal, symbolizing the energy resources: actually spent at the mine; sent to the metallurgical (by-product) plant; to the power station; spent in the everyday life of all technologically related enterprises personnel, etc.

*Keywords:* EROI, coal mine, by-product coke plant, power station, personnel, energy consumption.

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## THE BASIC ASPECTS OF THE HYMAN MINSKY'S FINANCIAL INSTABILITY HYPOTHESIS

### Introduction: Minsky about Keynes's theory, uncertainty, money and investments

Minsky was a leading advocate of Post Keynesianism, one of the main heterodox schools of modern economic thought. Developing the underlying principles of the Post Keynesian school, Minsky showed that Keynes's main ideas had been treated incorrectly, while many of them were simply omitted by J. R. Hicks, A. Hanses, and other proponents of traditional Keynesianism<sup>1</sup>.

“Decision-making under uncertainty, the cyclical nature of the capitalist process, and financial relations of an advanced capitalist economy” (Minsky, 1975. P. ix) are what Minsky referred to as the elements of Keynes's theory lost in traditional Keynesianism. The very main aspect is the first one. A capitalist economy exists in a historical time where “its past is given and cannot be changed, and... its future is uncertain and cannot be known.”<sup>2</sup>

The Post Keynesian perception of uncertainty is radically different from mainstream (in particular, neo-classical) one. According to the Post Keynesian approach, *uncertainty* is the situation when agents do not know both quantity of possible future events and probabilities of these events. Therefore, the probability theory is irrelevant for an analysis of situations in which uncertainty takes place (Davidson, 1991). As Keynes (1937. P. 213 – 214) wrote: “By “uncertain” knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty; nor is the prospect of a Victory bond being drawn. Or, again, the expectation of life is only slightly uncertain. Even the weather is the only moderately uncertain. The sense in which I am using the term is that in which the

prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence, of the obsolescence of a new invention, or the position of private wealth-owners in the social system in 1970. About these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know”. We can say that uncertainty is the essential feature of any economic system characterized use of durable assets and high degree of the division of labor. In a such system all agents are interdependent in a real time; future successes and failures of each agent depends upon the decisions of the others, and there are no opportunities to predict the future variables.

To provide protection from the uncertainty money is created as an absolutely liquid and reliable asset. However, money cannot be readily produced, as was pointed out by Keynes in his *General Theory* in Chapter 17.<sup>3</sup> Consequently, increasing (decreasing) the demand for money by decreasing (increasing) the demand for productive assets “responsible” for national income and employment will lead to a recession (recovery) in an economy. This lays the basis of the cyclical nature of a capitalist economy. The point is the following. When agents increase demand for money or other non-productive assets, real GDP and employment will not increase. But decreasing demand for fixed capital and other productive assets will lead to falling GDP and employment. The outcome is a recession. And visa versa: increasing demand for productive assets – that is, productive investments – together with decreasing demand for non-productive liquid assets including money will generate economic expansion. So, business cycles are turned to be the endogenous phenomenon which is inherent for the market capitalist economy. This conclusion is explicitly inconsistent with the neoclassical doctrine of the market economy's stability.

<sup>1</sup> It is the models of traditional Keynesians that form the basis for introductory macroeconomics courses, and it is according to these models that Keynesianism is judged. At the same time, it should be remembered that those models do not fit well into the modern mainstream – although they are slightly better than the theory of Keynes himself or Post Keynesian elaborations – primarily because many of them are not based on microeconomic foundations.

<sup>2</sup> The quote belongs to B. Moore and is taken from: (Arestis, 1988. P. 42).

<sup>3</sup> This thesis is correct with respect to commodity money. Credit money is often characterized by endogeneity (see below), which is why this assertion cannot be applied to it. It is, however, characterized by a zero labor intensity, just like commodity money.



### Investments in more details: endogenous money supply and two price levels

The described cyclicity *can be aggravated by the complex financial relationships* that enable greater investments during a recovery phase, while resulting in a *heavy debt burden for investors during a recession*. Thus, Keynes's theory asserts a cyclical *instability* inherent in capitalist economies. Those are the very aspects that were lost in traditional Keynesian macroeconomic theory, while the theory of Keynes himself<sup>1</sup> wound up as just a specific case of the neoclassical theory.

These circumstances encouraged Minsky to assert an inherent relationship between traditional Keynesianism and neoclassical theory. He argued that both approaches were "based upon a barter paradigm – the image is of a yeoman or craftsman trading in a village market" (Minsky, 1975. P. 57). His own approach "rests upon a speculative financial paradigm – the image is of a banker making his deals on a Wall Street" (Minsky, 1975. P. 58).

Minsky also noted that in some of his articles (Keynes, 1937; 1939), published after *General Theory...*, the British economist described the processes of accumulating fixed capital and its financing, thereby laying the foundation for the endogenous money supply theory. According to Keynes, the acquisition of capital is immediately preceded by a businessman receiving the money ("finance" according to his terminology) from financial institutions. The latter's creation of money by providing credit to investor firms serves as a necessary condition for investment. However, Keynes did not expressly formulate this thesis, which is only implied in his theory. Minsky stressed this fact, noting that "in a capitalist economy, money is tied up with the process of creating and controlling capital assets." (Minsky, 1986. P. 223). In other words, money is an asset created within an economy, i.e. endogenously, to acquire productive assets (first of all, fixed capital)<sup>2</sup>.

In the 1950s, Minsky showed that, when faced with insufficient reserves, financial institutions satisfy the demand by firms for investment-financing money through financial innovations (Minsky, 1957). For example, executing transactions involving repurchase agreements (selling and then buying a debt obligation) results in the seller immediately receiving money that can be loaned.

Later, Minsky and other Post Keynesians pointed to important financial innovations: using deposit certificates and foreign exchange loans, securitization (converting bank loans into securities), and off-balance sheet activity. This latter type of innovation may be expressed, for example, through issuing "facilities" to several firms in the form of an obligation to provide loans in certain amounts upon their demand, etc. (Chick, 1992). This type of financial evolution reduces the efficiency of the central bank's monetary policy and enhances the endogeneity of the money supply.

Minsky built on the ideas contained in Chapter 17 of the *General Theory*, showing that the value of any long-term asset is determined by its own rate of interest. Simply put, this indicator is the sum of all benefits received from an asset, less its carrying costs. Those benefits include not only monetary proceeds (pecuniary yield) but also the implicit advantages of owning it, e.g., high liquidity. It should be stressed that all of the above benefits are anticipated and not actual values<sup>3</sup>.

According to Minsky, an asset's own rate of interest is none other than the demand price for that asset, reflecting its attractiveness as perceived by a particular investor (or the market as a whole). There is also the asset's supply price. It is nothing more than the price of its production and is determined by the sum of the average cost and (affected by the market power) markup, as is the case with imperfect competition, which was usually assumed by Minsky and other Post Keynesians. Thus, a capitalist economy is characterized by *two price levels*. One of these levels depends on the conditions of asset production, while the other depends on the capitalized value of anticipated income from their use. The amount of investment in an asset is determined by the relationship between the demand and supply prices. Strictly speaking, investments in an asset will be made only if the demand price is equal to or exceeds the supply price.

However, these price levels are not the only investment factors. Unless firms seek the assistance of financial institutions and the market to finance their investments, there is a serious limitation on investments in the form of internal financial resources (funds). Whenever external financing is used for investments, additional determinants of investments appear, i.e., the lender risk and the borrower risk<sup>4</sup>. The first risk relates to the concerns of banks and other financial institutions that the borrower might not be able to repay the debt. The se-

<sup>1</sup> From the point of view of Minsky and other leading Post Keynesians (P. Davidson, F. Carvalho, L. R. Wray, etc.), the most significant elements of the Keynes's legacy – and most underestimated in traditional Keynesianism – are Chapters 12 and 17 of his *General Theory of Employment, Interest and Money*. See in particular: (Davidson, 1972; Carvalho, 1992).

<sup>2</sup> It should be noted that the endogenous money supply concept itself was not invented by Minsky. Many Post Keynesians wrote that money is created endogenously in a modern capitalist economy (Arestis, 1988; Chick, 1992; Davidson, 1972; Wray, 1992). But Minsky's contribution is that he identified a relationship between money supply dynamics combined with its structural changes due to the emergence and spread of more liquid money aggregates, on the one hand, and the process of accumulating fixed capital through productive investments, on the other.

<sup>3</sup> Keynes himself did not put particular stress on the differences between values for these two types.

<sup>4</sup> The terms "borrower risk" and "lender risk" were first suggested by Keynes in Chapter 11 of the *General Theory*. However, they were lost by his immediate followers.

cond risk is associated with the borrower firm's concerns that it might not be able to repay the loan. Both risks are directly correlated to financial leverage, i.e., the ratio of an economic entity's debt (in this case, the investor firm) to its equity. Increasing the amount of investments financed through debt will sooner or later entail an increase in the lender and borrower risks, which will limit their value.

Thus, the function of investments includes factors reflecting the uncertainty of the future and the degree of pessimism or optimism (we can remember "animal spirits" described by Keynes in Chapter 12 of his *General Theory*) by economic entities. It is these factors, rather than the determinants associated with the current top productivity of capital (as in neoclassical theory), that play an important part in determining the amount of investments. Furthermore, the variables in the investment function reflecting the financial condition of investors are equally important. Thus, the amount of investment by a firm depends on its liability structure.

### **The Financial Instability Hypothesis as the theory of cycles and crises**

The financial instability hypothesis (hereinafter referred to as the FIH) is based on Minsky's theories of money, financial evolution and investment, as well as on I. Fisher's concept of debt deflation (Fisher, 1933)<sup>1</sup>. According to this concept, the downward trends in an economy are aggravated by lowering prices (supply prices in Minsky's terms), as such a reduction makes real debt a heavier burden, leading to insolvency and bankruptcy for many production units.

The FIH is the basis for the "theory of how a capitalist economy endogenously generates a financial structure which is susceptible to financial crises" (Minsky, 1983. P. 289-290). A financial structure here is "the market interactions between borrowers and lenders and the balance sheets of non-financial firms, intermediaries and households that reflect these interactions" (Pollin, 1994. P. 97). According to the FIH, economic trends are largely determined by the way in which firms finance their fixed capital investments. In the beginning of the increasing stage of the business cycle (recovery phase), *hedge* finance prevails, where current monetary proceeds are sufficient for firms to repay debt including interest. This type of financing is, to a great extent, dependent on the firm's heavier reliance on internal financial sources rather than on external funds. An explana-

tion is that during the recovery phase, the recent depression is still fresh in the memories of economic entities. This is why lender and borrower risks are still high.

However, those memories fade gradually, particularly because national income created through hedge investments is increasing. Lender and borrower risks are decreasing. As Keynes wrote, "during a boom the popular estimation of the magnitude of both these risks, both borrower's risk and lender's risk, is apt to become unusually and imprudently low." (Keynes, 1978. P. 210). As a result, firms actively switch to external financing for capital investments. Over time, a situation arises where the monetary proceeds for many firms are only sufficient to pay interest, but are not enough for the amortization (repayment) of the respective principals. To save themselves from bankruptcy, those firms are forced to take out new loans to repay the old ones. Minsky called this *speculative finance*. Growing interest rates or falling money proceeds for firms inevitably transform speculative finance into *Ponzi finance*<sup>2</sup>, where those proceeds are inadequate even for regular interest payments. The only way out of this situation is to *increase the amount of debt* to repay old loans. While speculative finance is characteristic of the boom phase, Ponzi finance leads to recession. This is because, sooner or later, firms using this type of financing will become unable to obtain new loans, either due to increased lender risks (reflecting the pessimism of financial institutions) or due to the general lack of financial resources (money and its substitutes) in the economy. If firms start to sell their productive assets to receive those resources, this will lead to a decrease in their demand price, investment levels, and, naturally, to an economic crisis. Such crisis can be made worse by excessively high borrower risk (resulting in lower investments by firms than the amount that would have been financed based on internal sources) and, particularly, by the demand price for productive assets falling below the supply price. This is because the latter case will make the investment process halt altogether.

Thus, the most important reason for periodic debt crises is the systematic *inability of firms to repay their debts in the financial sector*. This is an important conclusion of the FIH. Another is that, during a business cycle, the financial system becomes *more and more fragile*, i.e. the liquidity of an economic entity balance sheet decreases. In other words, a business cycle can be perceived as a phenomenon related to changes in the financial fragility of an economy (Carvalho, 1992).

<sup>1</sup> Minsky believed that his financial instability hypothesis was created under the influence of ideas by Keynes, Fisher, and also Simons (Simons, 1936. P. 130) who was the first to note the dangers associated with the endogenous creation of money through short-term financing of long-term investment projects. On Minsky's earlier studies, see: (Toporowski, 2008).

<sup>2</sup> This financing technique was named after a Boston banker, C. Ponzi, who, immediately after the First World War, engaged in financial speculations similar to those that were applied decades later in post-Soviet Russia by financial companies, such as MMM.

P. 153)<sup>1</sup>. Cyclical expansion of business activity is concerned with an accumulation of financial fragility in the economy, and such accumulation creates conditions for subsequent recession and crisis.

Minsky generalized the basic provisions of the FIH as follows. “The first theorem of the financial instability hypothesis is that the economy has financing regimes under which it is stable and financing regimes in which it is unstable. The second theorem of the financial instability hypothesis is that over periods of prolonged prosperity, the economy transits from financial relations that make for a stable system to financial relations that make for an instable system.” (Minsky, 1992. P. 7-8). Thus, the FIH demonstrates that “stability – or tranquility – in a world with a cyclical past and capitalist financial institutions is destabilizing.” (Minsky, 1985. P. 37).

### **Conclusions from the Financial Instability Hypothesis for economic policy and the causes of the Great Recession**

Minsky argued for active macroeconomic and institutional intervention by the government in the economy. He treated the government’s macroeconomic role, first of all, as preventing a financial collapse during recessions and depressions, i.e. *maintaining monetary proceeds* for production and financial units. In his opinion, for this purpose, expansionist fiscal and monetary policy should be pursued during recessions. The former increases income for the private sector through increasing aggregate demand, enabling many firms to repay their debts and avoid bankruptcy. The latter increases liquidity of the financial sector, enabling financial institutions facing bad debts or a mass withdrawal of customer deposits to “stay afloat.” According to Minsky, this type of intervention saved Western countries from a new Great Depression by preventing debt deflation from the 1970s through the 1990s. On the other hand, stagflation was the price to pay for that prevention.

However, a macroeconomic policy cannot change the underlying parameters of advanced modern capitalist economies which make them prone to instability. The problem is that a repeated policy of government stimulus lulls both firms and banks into a false sense of security. As more and more investment projects are successfully implemented, economic entities will become more

and more reckless. As Minsky noted, “once the doctrine of salvation through investment becomes deeply ingrained into our political and economic system, the constraints on foolish investments are relaxed. This is especially so if the government stands ready to guarantee particular investors or investment projects against losses” (Minsky, 1985. P. 52). In the Post Keynesian tradition, this phenomenon is usually called the *Minsky paradox*.

According to Minsky, a capitalist economy can be saved from instability through the government’s institutional policy. This policy should consist, first of all, of stimulating changes to the aggregate demand and production technology structure: *the share of consumption* in the aggregate demand should increase, while technology should become more *labor intensive*. He suggested that “an economy that is oriented towards the production of consumption goods by techniques that are less capital intensive... will be less susceptible to financial instability and inflation.” (Minsky, 1985. P. 53). Second, this type of policy should require a *simpler financial system*, which would be achieved mainly through limiting short-term lending for long-term investment projects, i.e. through restricting speculative and Ponzi finance. As Minsky noted, “the financing of capital asset ownership and investment is the critical destabilising phenomenon” (Minsky, 1980. P. 520)<sup>2</sup>. While all of these recommendations were suggested as early as the 1980s, they remain relevant today.

Minsky died in 1996, but his ideas were adopted by his students around the world<sup>3</sup>. The Great Recession that hit the world 12 years later resulted in active support for his ideas (Wray, 2011; Wray, Tymoigne, 2008). From the perspective of Minsky’s theory, the main reasons for the Great Recession are obvious. The long growth that was observed at the turn of the century and was caused, in particular, by the specific combination of the development of the “new economy” (related to telecommunications, Internet, etc.), heavy financial innovation and globalization processes, increased the financial fragility of the entire global economy. This boom caught economic entities off guard around the world, and they took out many “doubtful” loans and became illiquid and insolvent.<sup>4</sup> Quite logically, the “payback” was the global crisis. Thus, according to Minsky, the Great Recession is a consequence of the functioning and evolution of the

<sup>1</sup> Therefore the financial instability hypothesis is often called also the *financial fragility hypothesis*.

<sup>2</sup> It should be noted that the idea of financial fragility caught the attention of mainstream economists, represented by the New Keynesian economists such as O. Stiglitz, B. Bernanke, etc. This led to the publication of famous articles (Bernanke, Gertler, 1990; Greenwald, Stiglitz, 1993) that are considered pioneering works for some reason, although it was Minsky who first studied the concept of financial fragility and its role. Moreover, the New Keynesian economists interpreted financial fragility in their accustomed manner as a consequence of asymmetric information. Those authors also did not appeal in any way to uncertainty, the special role of money, financial evolution or investment (Wray, Tymoigne, 2008. P. 3).

<sup>3</sup> The authors of many papers applied the FIH in their analyzes of financial crises in Southeast Asia (Arestis, Glickman, 2002; Kregel, 1998), Latin America (Cruz, Amann, Walters, 2006; De Paula, Alves Jr., 2000), the Middle East (Dufour, 2006), Greece (Argitis, Nikolaidi, 2014) and Eastern Europe (Bezemer, 2001).

<sup>4</sup> Although debt financing of consumption expenditures (not investment) was the main problem, see: Kapeller. Schütz, 2015).

institutions belonging to the modern advanced capitalist economy. Overcoming this crisis and preventing it from repeating is impossible without profoundly reforming those institutions. Some areas of focus within such reforms might include restricting the securitization and development of derivative financial instruments, as well as the short-term financing of long-term projects. It is also desirable to pose stricter requirements on the liquidity of financial institution balance sheets.

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### Розмаїнський І. В. Основні аспекти гіпотези фінансової нестабільності Хаймана Мінські

У статті розглядаються основні аспекти гіпотези фінансової нестабільності, розробленої Хайманом Мінські. Ця концепція стала дуже актуальною через події, пов'язані з Великою рецесією. Автор роботи демонструє як зв'язки між теорією Кейнса і підходом Мінські, так і посткейнсіанський «дух» описуваної гіпотези. Підкреслюється особлива роль невизначеності і грошей. Показано, що гіпотеза дозво-

ляє зрозуміти, як сучасна ринкова капіталістична економіка ендогенно стає «фінансово тендітною» і, таким чином, схильною до криз. Автор демонструє, що Велику рецесію можна трактувати як наслідок процесів, що описуються гіпотезою фінансової нестабільності.

*Ключові слова:* гіпотеза фінансової нестабільності, Мінські, посткейнсіанство, фінансова крихіткість.

**Розмаинский И. В. Основные аспекты гипотезы финансовой нестабильности Хаймана Мински**

В статье рассматриваются основные аспекты гипотезы финансовой нестабильности, разработанной Хайманом Мински. Эта концепция стала очень актуальной из-за событий, связанных с Великой рецессией. Автор работы демонстрирует как связи между теорией Кейнса и подходом Мински, так и посткейнсианский «дух» описываемой гипотезы. Подчеркивается особая роль неопределенности и денег. В статье показано, что гипотеза позволяет понять, как современная рыночная капиталистическая экономика эндогенно становится «финансово хрупкой» и, таким образом, подверженной кризисам. Автор демонстрирует, что Великую рецессию

можно трактовать как следствие процессов, описываемых гипотезой финансовой нестабильности.

*Ключевые слова:* гипотеза финансовой нестабильности, Мински, посткейнсианство, финансовая хрупкость.

**Rozmainsky I. The Basic Aspects of the Hyman Minsky's Financial Instability Hypothesis**

This paper considers the basic aspects of the financial instability hypothesis developed by Hyman Minsky. This conception has become very pertinent due to the events concerned with the Great Recession. The author shows both links between Keynes's theory and Minsky approach and Post Keynesian "spirit" of the described hypothesis. The special role of uncertainty and money has been emphasized. The paper shows that the hypothesis provides an understanding of how the contemporary market capitalist economy endogenously becomes "financially fragile" and thus prone to crises. The author demonstrates that the Great Recession can be treated as a consequence of the processes described by the financial instability hypothesis.

*Keywords:* financial instability hypothesis, Minsky, Post Keynesianism, financial fragility.

*JEL:* B59, E12, E32, E44, E52.

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## TOURISM SATELLITE ACCOUNTS – AN INFORMATION BASIS FOR THE ANALYSIS OF TOURISM EXPENDITURE

### Introduction.

Tourism is increasingly becoming an important sphere of economic activity due to the growth of its share in the GDP in the countries and regions, and its impact on the development of infrastructure and a number of sectors of economic activity – construction, transport and communications, agriculture, etc. We must note its role for providing investment opportunities, creating new jobs and revitalizing not only the national but also the local economy. The development of tourism is a prerequisite for visitors to get acquainted with the cultural and historical heritage of the country, its natural features and traditions. At the same time, travelling abroad is a sign of the increased living standards of the population and a proof of the expansion of the business relations with other countries.

The sustainable development of tourism, strengthening its competitiveness and increasing the efficiency of the activities it covers are the strategic goals facing the tourism sector for the coming years [1]. The availability of sufficient statistical data, conclusions and evaluations obtained through appropriate statistical analysis methods are a prerequisite in developing the respective management solutions in order to exploit the economic and social benefits of tourism. In this regard, it is important not only to timely provide the statistical information to the authorities concerned, but also to ensure data comparability, completeness and the necessary degree of detailing. The responsibility of the statistical offices of all EU countries to be guided by and apply the relevant regulatory documents: Council Directive 95/57/EC [2] until the end of 2011 and from the beginning of 2012 – Regulation 692/2011 [3] of the European Parliament and of the Council plays an important role in this respect.

The *object of study* is tourism satellite accounts.

The *subject of study* is the information aspects of tourism satellite accounts in the context of their application for tourism expenditure analysis.

The *purpose* of this article is to theoretically justify and study empirically the possibilities for analyzing tourism expenditure based on data from tourism satellite accounts.

### Main text.

#### *I. Significance of tourism satellite accounts*

The introduction of tourism satellite accounts has its historical development. The term ‘satellite accounts’ was introduced in the late 1970s in France to designate special accounting methods related to the System of National Accounts using a special approach to quantify the economic importance of tourism. After a number of expert developments under the auspices of the United Nations World Tourism Organization (UNWTO), the Committee on Tourism at the Organization for Economic Cooperation and Development and other international organizations, in 1993 the UN Statistical Commission adopted ‘Recommendation on tourism statistics’ [4]. This was the beginning of the development of the conceptual basis for the creation of tourism satellite accounts, the joint work of the WTO, the OECD and Eurostat, which was adopted in 1999 [5]. For the first time in 2000, the UN Statistical Commission adopted the document ‘Tourism Satellite Account: Recommended Methodological Framework’ [6]. An improved version of this document came out in 2008 [7]. It covers the changes in the System of National Accounts 2008 and the International Recommendations on Tourism Statistics 2008 [8]. At present, many countries apply this methodology to collect and analyze statistical information in the field of tourism in order to assess the economic effect of this economic activity.

Tourism statistics usually focus on visitors’ accommodation and relate to the physical flows – overnights stays in tourist accommodation establishment or number of tourist trips. Such information is insufficient to get a comprehensive evaluation of tourism, conduct an economic analysis of its contribution to the national economy and assess its impact on the other economic sectors. In order to make a conclusion on the competitiveness of tourism activities, one must know well their volume, characteristics, profile of tourists, tourism expenditure and economic benefits.

In the System of National Accounts, tourism is not clearly specified as an economic sector. That is why satellite accounts are used, which have similar basic concepts, definitions, classifications and rules of accounting. Enterprises engaged in tourism activities are involved in various sectors of the national economy. On the other hand, tourism characteristic products belong to

different groups, according to the National Classification of Products by Economic Activities [9]. At the same time, tourism activities are related to different groups, according to the National Classification of Economic Activities [10]. All this poses difficulties in reporting and measuring the contribution of tourism to the national economy and is a factor in the use of tourism satellite accounts.

## *II. Basic concepts and structure of tourism satellite accounts.*

The term 'tourism industry' or 'tourism related activities' summarizes internationally comparable activities such as accommodation for visitors, catering activities, passenger transport by rail, land, sea and air, hiring of vehicles, activities of travel agencies, tour operators and other reservation services, sports and cultural activities. Retail trade of country-specific tourism characteristic goods and services are also added here.

Tourism satellite accounts contain data that is grouped into ten standard tables presented in a logical order [11]. In eight of them, the production, consumption, income generation and investment in tourism are presented. A special table is compiled for non-monetary indicators – number of tourists, number of overnight stays, number of enterprises, number and capacity of mass catering establishments. One table describes employment in tourism. The content of the tables is as follows:

- Table 1: Inbound tourism expenditure, detailed by products and categories of visitors, i.e. consumption in the country of non-resident visitors;
- Table 2: Domestic tourism expenditure, detailed by products, categories of users and types of trips, i.e. consumption in the country of resident users, which includes both travel expenses within the country and travel expenses incurred in the country of those travelling abroad;
- Table 3: Outbound tourism expenditure, detailed by products and categories of users, i.e. the consumption of resident visitors when travelling abroad;
- Table 4: Domestic tourism consumption, by product type, i.e. the expenditures of Tables 1 and 2 are aggregated to provide information on one of the key tourism indicators, the basis for calculating the Gross Domestic Product and Gross Value Added created directly by tourism;
- Table 5: Production accounts in the tourism sector and in other sectors (at basic prices);
- Table 6: Total volume of domestic supply and consumption related to domestic tourism (at purchase prices);
- Table 7: Employment in the tourism sector;
- Table 8: Gross accumulation of fixed capital in the tourism sector and in other sectors;
- Table 9: Collective tourism consumption, detailed by product and managerial level;

- Table 10: Non-monetary indicators. This table is made up using four sub-tables – number of trips and overnight stays by types of tourism and categories of visitors, inbound tourism: number of arriving visitors and overnight stays by type of transport, number of accommodation establishments and accommodation options by forms of accommodation, number of establishments by tourism activities according to the average number of work places.

The product classification contains two main groups – 'Consumer products' and 'Products with a certain value'. Consumer products are divided into 12 groups for 'Typical tourism products' and one group 'Other consumer products'. Typical tourism products are accommodation services, catering services, rail, land, water, air passenger services, leasing services of transport equipment, travel agency services and other reservation services, tourism services, sports and recreational services, tourism characteristic goods and services typical for the particular country.

Statistical information provided through tourism satellite accounts is available on the Eurostat website [12]. The main database is in the section 'Industry, Trade and Services', subsection 'Tourism'. Additional information resources on tourism statistics are structural business statistics, balance of payments, a module from the specialized study on the use of information and communication technologies, as well as passenger transport statistics.

The official data on tourism related activities in Bulgaria, which the National Statistical Institute offers on its website [13] in the part 'Tourism' of the 'Business statistics' section, refers to tourism expenditure of different categories of visitors (resident and non-resident), types of expenditure, types of trips (one-day or with overnight stays).

- Table 1: Inbound tourism expenditure by products and category of visitors;
- Table 2: Domestic tourism expenditure by products and category of visitors;
- Table 3: Outbound tourism expenditure by products and category of visitors;
- Table 4: Tourism expenditure in the country by products and forms of tourism.

In the tables published by the National Statistical Institute, the products offered are described in six categories characteristic of tourism – these are accommodation services, services related to food and beverage serving, transport, tour operators and travel agencies, cultural events, sports and recreation. All other products are grouped under the category 'Other consumption products'.

Data for the period 2008–2014 is currently available on the National Statistical Institute's official website. The information sources are: report on the activities of the accommodation establishments, a survey for stud-

ying the tourist trips of the population, a survey for studying the outbound trips from Bulgaria of foreign and Bulgarian citizens, the balance of payments of Bulgaria, national accounts, annual report on the activities of tour operators and travel agencies and report on the activities of museums.

### III. Statistical analysis of the tourism expenditure dynamics.

Data on tourism expenditure provided by satellite accounts shows that tourism industry has a high relative share in the GDP of Bulgaria. From the diagrams in Figure 1, it can be concluded that there are two sub-periods in the dynamics of this indicator – until 2010 and after that. In the first sub-period, the values of the indicator are decreasing, with tourism expenditure being the smallest in 2010, a possible explanation of which is the consequences of the global economic crisis. After 2010, there began a gradual increase in the absolute amount of real tourism expenditure. At the same time, their relative

share in the GDP of the country is increasing to reach and surpass the pre-crisis level.

The analysis of tourism expenditure in the country shows that its relative share remains stable by categories of visitors over the studied period – for residents it is 12.9% on average and for non-residents it is 87.1% on average of the total expenditure. These results lead to the conclusion that non-resident visitors have almost 7 times higher expenditures in the country than resident visitors.

There are two categories excluded from product expenditure in this study. One is services related to tour operators and travel agencies – since no values are reported for non-resident visitors, it is impossible to compare them with the data for resident visitors. Services related to sports and recreation, despite their increase in nominal and real terms, have a very small share in the tourism expenditure – about 1-2% for both non-resident and resident visitors, which allows them to be excluded from the analysis.

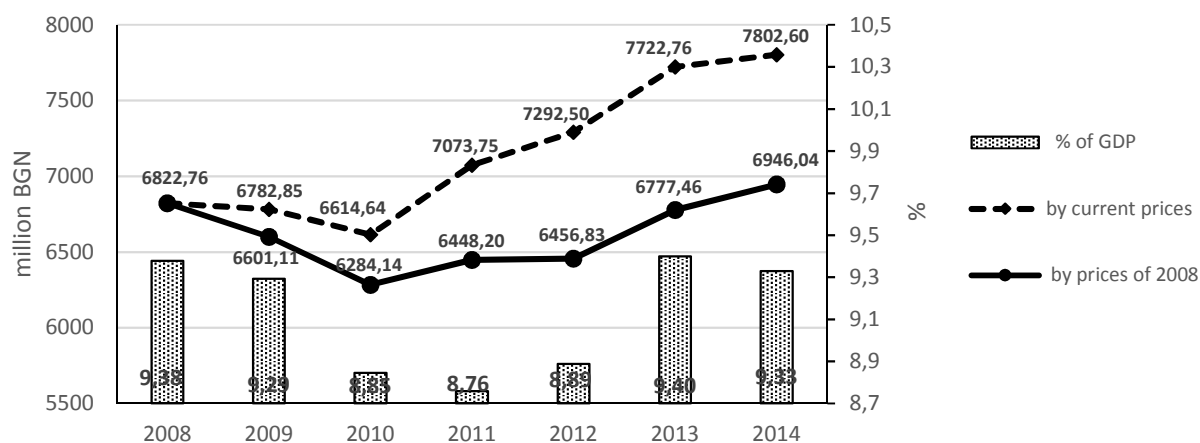


Fig. 1. Tourism expenditure (resident and non-resident visitors) in the country for the period 2008 – 2014

Source: [13] and own calculations.

### Statistical analysis of the tourism expenditure structure.

Exploring the dynamics of the absolute values of tourism expenditure over the period studied makes it difficult to draw conclusions on the contribution of individual product categories and tourists to the benefits of tourism in the country, as they are a value indicator. Studying their structure by the 'product categories' attribute can give a clearer view of the changes that occurred.

The following conclusions can be drawn for tourism expenditure, studied by categories of visitors:

- The structure of domestic tourism expenditure is stable over the period studied. The relative shares of

the different expenditure categories until 2013 are ranked in the same way (Table 1). In 2014, the ranking changes with regard to the largest relative shares. The largest part of the tourism related expenditure is spent on food and beverage serving services and the smallest part is for cultural services;

- During the period studied, there were slight changes in the structure of domestic tourism expenditure (Table 2). Until 2011, the expenditure on transport services had the highest relative share, and in the last three years the expenditure on food and beverage serving services ranked first. Despite the exchanged roles, it can be said that these two categories of expenditure cover about 57% of the total domestic tourism expenditure;



Table 1

**Structure of inbound tourism expenditure by products for the period 2008 – 2014, %**

Products	2008	2009	2010	2011	2012	2013	2014
Accommodation services	21.82	20.46	20.46	21.03	21.03	20.69	22.09
Food and beverage serving services	27.81	26.56	26.81	27.15	27.15	29.70	30.48
Transport services	11.30	11.71	11.69	11.79	11.79	9.65	9.82
Cultural services	9.29	8.43	8.30	8.18	8.18	8.38	8.31
Other consumption products	29.78	32.84	32.74	31.85	31.85	31.58	29.30

Source: [13] and own calculations.

Table 2

**Structure of domestic tourism expenditure by products for the period 2008 – 2014, %**

Products	2008	2009	2010	2011	2012	2013	2014
Accommodation services	16.77	24.41	24.88	21.43	23.46	22.54	25.19
Food and beverage serving services	21.80	16.62	22.00	27.93	31.93	28.96	27.86
Transport services	26.17	39.43	35.05	32.28	27.85	27.58	27.36
Cultural services	12.36	10.33	8.45	6.79	7.56	8.74	8.54
Other consumption products	22.90	9.21	9.62	11.57	9.20	12.18	11.05

Source: [13] and own calculations.

• There is an interesting phenomenon in the structure of outbound tourism expenditure (Table 3). Until 2012, the structure is relatively stable, keeping the order of relative shares. There is a significant preponderance of expenditure on other consumption products, and tourism related expenditure is dominated by the expenditure on food and beverage serving services. The

structure of tourism expenditure underwent a dramatic structural change in 2013 when the relative share of the expenditure on accommodation and transport increased their share more than twice at the expense of the three-fold decrease in the share of the expenditure on other consumption products.

Table 3

**Structure of outbound tourism expenditure by products for the period 2008 – 2014**

Products	2008	2009	2010	2011	2012	2013	2014
Accommodation services	8.67	10.21	8.51	8.35	11.01	21.30	22.13
Food and beverage serving services	16.48	19.62	29.15	28.04	28.73	28.44	27.82
Transport services	11.22	10.38	11.50	10.71	10.38	27.29	26.92
Cultural services	3.01	2.85	3.38	4.09	4.60	6.26	5.98
Other consumption products	60.62	56.94	47.46	48.81	45.28	16.71	17.15

Source: [13] and own calculations.

The identified regularities as a result of the descriptive analysis are confirmed by the values of the integral coefficient of structural changes [14], used as an analytical measure for the occurring structural changes (Table 4). The insignificant annual structural changes in the inbound tourism expenditure led to slight structural changes for the period as a whole. The domestic tourism

expenditure underwent slight annual structural changes, the accumulation of which was reflected in moderate structural changes throughout the whole period studied. It can be seen that the dramatic structural changes in the outbound tourism expenditure for the period 2008-2014 are the result of the dramatic structural changes measured in 2013 compared to 2012.

Table 4

**Values of the integral coefficient of structural changes for the tourism expenditure structure for the period 2008 – 2014**

Categories of visitors	2009/ 2008	2010/ 2009	2011/ 2010	2012/ 2011	2013/ 2012	2014/ 2013	2014/ 2008
Non-residents in the country	0.054	0.004	0.016	0.000	0.048	0.040	0.047
Residents in the country	0.309	0.101	0.111	0.096	0.064	0.045	0.243
Residents abroad	0.058	0.161	0.025	0.056	0.471	0.018	0.616

Source: Own calculations.

The comparison of tourism expenditure structures between the different categories of visitors can provide additional clarity to characterize their needs. The values

of the integral coefficient of structural differences [14] are used as a measure for this purpose (Table 5).

Table 5

**Values of the integral coefficient of structural differences for the tourism expenditure structure for the period 2008 – 2014.**

Differences between categories of visitors	2008	2009	2010	2011	2012	2013	2014
Residents and non-residents in the country	0.276	0.536	0.478	0.414	0.405	0.382	0.370
Residents in the country and abroad	0.540	0.724	0.633	0.590	0.563	0.078	0.107
Residents abroad and non-residents in the country	0.446	0.350	0.261	0.285	0.232	0.335	0.335

Source: own calculations.

The results show that there are moderate to dramatic structural differences in the tourism expenditure of the different categories of visitors. The structures of residents abroad and non-residents in the country show the slightest difference. A possible explanation for this fact is the similar needs of tourists travelling outside their own country. Although for 2013 and 2014 there are slight structural differences between the expenditures of residents in the country and abroad, for the remaining years of the studied period these differences are measured as great, and in 2009 – as dramatic. As already noted in the descriptive analysis, this is due to the large relative share of expenditure on other consumption products of residents abroad.

### Summary and Conclusions

The purpose of creating and using tourism satellite accounts is to enable the analysis of all aspects of the demand and supply of tourism related goods and services, as well as to identify the link between this supply and other types of economic activities. Using them, on the one hand, ensures the coherence of tourism statistics with other areas of the official statistics of each country and, on the other, it improves the international comparability of data on the contribution of tourism to the respective national economy.

Tourism is increasingly becoming an important area of economic activity due to the growth of its share in the GDP of the country and its impact on the development of infrastructure and many sectors of economic activity – construction, transport and communications, agriculture, etc. The availability of detailed information on tourism expenditure is a prerequisite for expanding the possibilities to analyze their volume and structure. This, in turn, may reveal the potential for increasing the contribution of the tourism industry to the GDP and realizing the country's competitive advantages as a tourism destination.

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**Шопова М. Сателітні рахунки туризму – інформаційна база для аналізу витрат на кінцеве споживання**

Для розробки управлінських рішень, що сприяють сталому розвитку туризму, утвердженню його

конкурентоспроможності та підвищенню ефективності видів діяльності, що входять в його охоплення, необхідна наявність своєчасно наданої статистичної інформації, яка гарантує сумісність, повноту і деталізацію даних. У публікації представлено методологічні основи сателітних рахунків туризму. Акцентовується увага на їх значенні як джерела достовірної і порівнянної статистичної інформації про значимість туризму для економіки з точки зору витрат, зайнятості та валового внутрішнього продукту. Розглядається зміст таблиць, які надають дані про туризм за видами діяльності і продуктів. Теоретичні аспекти проілюстровані емпіричним дослідженням витрат на кінцеве споживання туристів (резидентів і нерезидентів) в Болгарії. За допомогою статистичних методів аналізу досліджено зміни їх розміру і структури за період 2008-2014 рр.

*Ключові слова:* туризм, сателітні рахунки туризму, витрати на кінцеве споживання, статистичний аналіз структур.

#### **Шопова М. Сателітніє счета туризма – інформаційна база для аналізу расходов на конечное потребление**

Для разработки управленческих решений, способствующих устойчивому развитию туризма, утверждению его конкурентоспособности и повышению эффективности видов деятельности, входящих в его охват, необходимо наличие своевременно предоставляемой статистической информации, гарантирующей сопоставимость, полноту и детализацию данных. В публикации представлены методологические основы сателитных счетов туризма. Акцентируется внимание на их значении в качестве источника достоверной и сравнимой статистической информации о значимости туризма для экономики с точки зрения расходов, занятости и валового внут-

реннего продукта. Рассматривается содержание таблиц, предоставляющих данные о туризме по видам деятельности и продуктам. Теоретические аспекты проиллюстрированы эмпирическим исследованием расходов на конечное потребление туристов (резидентов и нерезидентов) в Болгарии. Посредством статистических методов анализа исследованы изменения их размера и структуры за период 2008-2014 гг.

*Ключевые слова:* туризм, сателитные счета туризма, расходы на конечное потребление, статистический анализ структур.

#### **Shopova M. Tourism satellite accounts – an information basis for the analysis of tourism expenditure**

In order to develop management decisions promoting sustainable tourism development, strengthening its competitiveness and increasing the efficiency of the activities it covers, there must be timely statistical information available ensuring data comparability, completeness and detailing. This paper presents the methodological foundations of tourism satellite accounts. The emphasis is placed on their significance as a source of reliable and comparable statistical information on the importance of tourism for the economy in terms of expenditure, employment and gross domestic product. The contents of the tables containing data on tourism by activity and products are discussed and the theoretical aspects are illustrated through the empirical study of tourism expenditure (resident and non-resident visitors) in Bulgaria. Statistical methods of analysis are used to study the changes in their size and structure for the period 2008-2014.

*Keywords:* tourism, tourism satellite accounts, tourism expenditure, statistical analysis of structures.

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## BALANCED APPROACH FOR OPTIMIZING MARKETING NETWORKS IN TOURISM

This paper focuses on the current manifestation of marketing inter-firm networks and attempts to further develop the knowledge for optimizing their activities. The marketing network concept is based on the theory of networks in the economy, business networks and the marketing paradigm, in particular. Wilkinson [1] highlights a few areas of contemporary research on these issues, namely: interactions among the dimensions of network relationships, relations between partners, network analysis, simulation, and modelling of network complexity. At present, on the one hand, scholars' research and discussions in these areas have not yet been exhausted, especially in the field of marketing networks. On the other hand, there are modern processes of distribution of network formations in different economic sectors, including in tourism. They are perceived as a means of overcoming economic crises at company, national and global levels, as well as of tourism companies coping with the risks and problems related to dynamic competition, surrounding macro- and micro-business environment, and processes of customization and globalization. The tourism sector has the potential to develop marketing networks representing modern structural formations, as well as the strategy to achieve competitive advantages for tourism business organizations.

Viewing marketing tourism network as a flexible system and an integrated economic organism, whose activities can be optimized, the paper aims to offer a new balanced approach to improving network activities based on the established Balanced Scorecard performance management approach. It is logical to bind the specificity of marketing networks as an economic phenomenon, their specificities in tourism and their optimization through a new Marketing Balanced Scorecard in Tourism (MBScT) approach, based on a system of balanced Key Performance Marketing Indicators in Tourism Networks (KPMItn).

### 1. Specifics of marketing inter-firm networks in the tourism sector

The introduction of the network concept into economic theory and practice, and marketing in particular, occurs at different times and in different aspects. **The theory of marketing networks in the economy** is based on the knowledge of business networks and marketing paradigm. Several stages of development in the 'business networks' aspect can be highlighted [2]: linking the statics and dynamics of these networks to their

economic, social and legal dimensions; studying the behavioural characteristics of the participants in them; applying analytical models of their structure (mathematical modelling and empirical measurements and analysis); holistic perception of networks; studying the power and conflicts in the partners' behavioural relationships. In the 'marketing paradigm of business organizations in networks' aspect, normative marketing management theories of companies participating in a network are initially developed and research is still ongoing [3]. A number of authors, such as Bartels [4], Reid and Plank [5], present a systematized knowledge of network structure, nature of the relations between partners, degree of coordination, management and control, changes, network optimization and efficiency, and views of individual firms on network relationships. Iacobucci [6] defines the main modern trends of studying marketing networks as marketing relations in B2B networks and network management, as well as creation of strategic advantages.

**Marketing networks as business associations of companies** are formed in three aspects: as a structure (group of companies), as a strategy of an individual participant or of the whole group, and as tactical moves (behaviour). These networks have specific characteristics, namely: a structure of partner organizations of a different scale, level, economic sector, united by a common marketing strategic goal, a dominant (focal organization) and two-way (dyadic and/or multiple) relations among partners of the type 'gives to – takes from', which are channels for the passage of marketing flows (information, investment, knowledge, personnel); adding value; flexibility; complexity; lifecycle with phases of preparation, construction, functioning, disintegration; dynamics; non-linearity of the 'efforts-benefits' relationship; strategic border management; way of occurrence (informal or formal); key principles of work (mutual trust, creating shared value through fair distribution, risk diversification); integration of participants; a dual competitive role (both combating and encouraging competition); synergistic effects; arrangements; management and control processes. Based on these formulations, a definition of marketing network can be proposed: *a market structure built by non-hierarchically integrated organizations of varying scale and activity, located on one or several levels along the value chain, of which one can dominate, maintaining dual relationships with each other and performing a common marketing*

*strategic goal (related to creating, distributing and communicating value to the client)*<sup>1</sup>.

The characteristics presented are also valid for the **marketing tourism networks** that arise among tourism business organizations in order to carry out various marketing processes related to the creation, supply and realization of tourism products and services. They are developed in a vertical aspect (franchising, for direct sales, of the tour operator-restaurant-carrier type, vertical cluster, etc.) and horizontal aspect (with homogeneous and heterogeneous specialization of partners, horizontal clusters, strategic alliances, innovative, distributor, communication, etc.). This process is mostly influenced by factors, such as the global trends in supply and demand for tourism products, the macro- and microeconomic business framework, the marketing specificities of national tourism services markets.

Key parameters for evaluating these networks are the features of the participating firms, the duration of the relationships between them, the degree of centralization, the intensity (density) of the relationships, the efficiency of the network and the factors that influence the achievement of the results.

The optimization of marketing tourism networks is necessary in their functioning in cases of creating, when problem situations arise, identifying weaknesses in the general marketing activity, total or partial non-fulfillment of the adopted common marketing strategy. To this end, it is necessary to adopt an approach that is relevant to this type of networks and ensures that the set strategic goals are achieved.

## **2. Relevance of the Balanced Scorecard approach for optimizing marketing network activities**

In economy, the goal of optimization is to achieve the best possible positive effect (short-term or long-term) among many alternatives, within the framework of the established organizational structure and the surrounding business environment, in such a way that this effect is not constant but can be maximized and adapted to changes. Several aspects have been developed for its realization in marketing networks:

– *maintaining an achieved competitive advantage or building a new one* – when these networks are one of the possible strategies of business organizations for building competitive advantages;

– *achieving a complete synchronization between the network structure and activity and the adopted network strategy, choosing a new network strategy or renovating the existing one* – in perceiving these networks as a whole organism that manages itself through stra-

tegic approaches in order to achieve the strategic goal common for all partners;

*impacting individual marketing activities within the framework of the adopted marketing strategy of the network* – in this case, approaches are sought for optimizing marketing activities and/or campaigns.

These ideas can be realized by applying the **Balanced Scorecard (BSc) concept** due to its proven ability to build a new competitive advantage, synchronize the structure, operation and strategy, as well as to measure and evaluate current marketing activities according to the extent of implementation of the adopted strategy. It is flexible, adaptable and fully applicable to the marketing network theory, perceiving marketing network as a single economic organism functioning in the light of the common marketing strategy of the partner organizations.

In order to implement the BSc approach, established in the United States by Kaplan and Norton [7] in 1992, an integrated balanced system of goals and indicators is created, which makes it possible to measure the efficiency of processes and to control the organization's strategic development. Besides, the qualitatively described goals are transformed into desired future results and effects that are boiled down to the operational level of management and performance.

Its development is influenced by quality management theories, performance management theory, traditional management control systems, stakeholder theory (co-owners, customers and employees), as well as by the competing organization theory as a set of internal processes, etc.

Niven [8] defines BSc's primary goal as an ambition to achieve two main outcomes: effective measurement of the activity and implementation of the strategy. Key performance indicators (KPIs) are used as measures, they serve as a tool of identifying the current state of the activity, proper targeting of investments, monitoring the efficiency of processes, management, disclosure of performance and priorities in the organization, motivation of staff, calculation of remuneration.

The BSc presents in a structured way a small number of factors that are critical to the implementation of the strategy with the aim to model the value chain of the organization<sup>2</sup>. In this way, the management process is integrated through a continuous analysis of the correspondence between the factual and target values by key indicators integrated into a system. They are grouped into four perspectives – financial, customer, internal process, learning and growth, and are presented in a special map through goals, indicators, tasks and measures,

<sup>1</sup> In the present study, the 'marketing network' concept is distinguished from the narrowly perceived understanding of marketing networks that serve for marketing purposes in the Internet space and developed by Social media marketing.

<sup>2</sup> According to the initial idea of the approach, the results are reflected in four groups of indicators – customer, internal business processes, staff and interests of partners [7].

which are used to track the transformation of resources into goals [9, p. 197]<sup>1</sup>.

According to the logic of the value chain, the 'learning and growth' perspective is the input of the BSc, the transformation and the actual operation are presented in the 'internal process' perspective, the 'customer' perspective is the output, and the economic outcome is presented in the 'financial' perspective [10].

The **Marketing Balanced Scorecard (MBSc)** retains its strategic focus and involves measuring the effectiveness of the organization's marketing activity through a system of key performance marketing indicators (KPMI) that balance financial with non-financial, integrated with private, external with internal, short-term with long-term indicators, and those in the separate perspectives. It provides information on the impacts that have to be undertaken and the way they are to be carried out in order to perform the marketing activity in compliance with the set goals and standards and the marketing strategy. The emphasis is on the non-financial KPMI for efficiency, on the non-quantifiable aspects of the activity and the key success factors of marketing.

MBSc focuses on indicators that are used to quantify efficiency and effectiveness and to bind these indi-

cators to marketing strategy and long-term improvement of marketing activity. At a strategic level, it assesses the extent to which marketing contributes to achieving the desired levels of innovation, quality, flexibility and expenditure in the organization. At the operational level, it identifies the achieved level of marketing performance.

The MBSc system is built iteratively, by major product groups or categories, and the processes in the activity are viewed comprehensively. The goals and indicators are developed on the basis of a market analysis first for the 'customer' and 'financial' perspectives, then for 'internal and external marketing processes' and finally for 'learning and growth' perspectives. The procedure goes through the following stages: 1) developing a strategy map; 2) identifying relevant KPMIs for each of the goals of the four perspectives and developing a performance map; 3) selecting strategic initiatives. One of the goals of the approach is to discover potential for the development of marketing activity as part of the overall activity of the organization.

The formulations of this modern approach have a number of advantages and opportunities for improvement as defined in Table 1.

Table 1

#### Characteristics of MBSc<sup>2</sup>

<b>ADVANTAGES OF MBSC</b>
<i>interactivity</i> – due to the constant traceability of the results by individual indicators, the causal relationships between them and their binding to the strategic goals, it is constantly the focus of attention of marketing and corporate managers [11]
<i>predictability</i> – the results by indicators are tracked on a dashboard, similar to a cockpit, where several KPMIs are placed, requiring regular monitoring at different frequencies, and several warning 'signalling' marketing efficacy indicators that inform about possible problems in performing the goals. Attention is directed to them when diagnosing deviations from target values. Timely warnings are given on problems and opportunities for corrective measures
<i>timeliness, relevance, clarity and accuracy of information</i> – it is obtained regarding the current marketing activity at all times, at all levels of management and performance, and the extent of achieving the marketing goals is assessed
<i>flexibility</i> – the causal relationships between marketing indicators are established specifically for each organization [12]
<i>dynamics of the KPMI system</i> – the causal relationships between the indicators are not constant but of a probable and dynamic nature according to the daily needs of the management [7, p. 218]
<i>communication, information and training nature of the approach</i> – the strategy is clearly formulated and transformed into goals and tasks, the strategic initiatives are coordinated and the strategic feedback is expanded [9, p. 10-19]
<i>accuracy of the obtained information</i> regarding past and current processes, analysis and assessment of the trends in the development of marketing activities, detection of potential problems, setting and meeting goals and performing corrective effects to optimize marketing management
<i>universal applicability</i> for all sectors of the economy
<i>all-round application in the organization</i> – enables and requires managing the implementation of the marketing strategy at all executive levels by linking goals, initiatives and indicators
<i>transforming the strategy into individual actions</i> by aggregating the KPMI

<sup>1</sup> Business organizations themselves decide which perspectives they will use, and can add new ones according to their importance for achieving the strategic goals.

<sup>2</sup> Developed by the author.

<i>integrating financial and non-financial indicators in the KPMI system</i>
<i>management of non-material values, such as customer loyalty, innovation, employee competencies, etc.</i>
<i>preserving the structure of the organization – the marketing activity is regulated without any change in the organizational structure of the company</i>
<i>real-time measurement of key factors</i>
<i>creating a system for marketing activity operational management</i>
<i>changes are encouraged</i>
<i>integrated, iterative and interactive approach to marketing management and its measuring, which makes management more reliable [13, p. 130]</i>
<i>reduces the heterogeneity and variety of the information processed by systematizing it.</i>
<i>establishes priorities in performance and measurement trends</i>
<i>comprehensiveness – integration with other approaches, such as the comparative approach of measuring performance towards goals</i>
<i>prevention – opportunity to identify wrong or poorly defined goals</i>
<b>OPPORTUNITIES FOR IMPROVING THE MBSC</b>
<i>methodological simplification in defining indicators (especially for effects that are difficult to measure, such as those related to intellectual capital)</i>
<i>providing data on all external environment parameters to overcome inaccuracies in the ‘customer’ perspective [14]</i>
<i>taking into account the expanded value chain, which is an essential principle for building up modern network organizations instead of affecting only key suppliers [15]</i>
<i>demonstrating the role of society in defining the business environment in which the organization operates [15]</i>
<i>measuring the results should be viewed as a two-way process, without giving priority to the ‘top-down’ relationship, which requires a cascading principle in the development of performance maps [15]</i>

The presented features of the approach confirm its relevance to the problem of optimizing the activity of marketing networks. Moreover, the network partners can modify it according to the specifics of the general marketing activity. In this way, it can contribute to realizing a number of advantages such as growth in net marketing profits, increasing customer satisfaction, improving product (service) competitiveness and quality, introducing product innovation, improving the quality of managerial decision-making in marketing, improving partners' image, ensuring the economic sustainability of the business and the rational use of all kinds of resources at national level. Moreover, its versatility makes it applicable to all types of marketing networks, including in the tourism sector.

### 3. Framework of the MBSc approach for optimizing the marketing tourism network management

Some of the opportunities for developing the specifics of the MBSc approach in conceptual and practical terms are manifested in optimizing marketing networks that arise in a particular economic environment, especially in the service sector. In this way, the tourism sector as one of the fastest-growing areas of the global economy where marketing networks emerge is a suitable sphere for its approbation. In this regard, the MBSc approach can be tailored according to the specificities of marketing tourism networks and a modification called **Marketing Balanced Scorecard in Tourism (MBScT)** can be proposed based on the principle of balanced ma-

agement of the key performance indicators of the common marketing strategy of this network.

The basic **elements** of the approach are: \*marketing strategy of the network; \*marketing activity of the network; \*resources – competences of marketing specialists, data about internal and external marketing processes of the network, information and technical tools, financial resources; \*causal relationships between marketing indicators at all levels of marketing activity; \*KPMI system with target values defined in accordance with the strategic goals of the network; \*process of measuring (diagnosing) the short-term effects (outcomes) of marketing activity; \*process of assessing the marketing effects for the network; \*process of optimizing the marketing activities of the marketing tourism network; \*information provision.

When evaluating and optimizing the effects of marketing activities of this type of networks, the approach takes into account factors such as the conceptual aspects of network theory, characteristics of marketing tourism networks, features of marketing in the tourism sector, global and national trends in the tourism services market. The theoretical foundations adhere to the principles of holism, integrity, comprehensiveness and balance.

MBScT is based on the symbiosis of marketing short- and long-term effects measured through selected KPMIs for marketing tourism network (KPMIt<sub>n</sub>) bound into a system. Optimization as a process is subject to the logic ‘input – activity – output’, the input being the re-

sources: the competencies of the marketing network specialists, internal and external marketing processes carried out in it, information and technical tools and financial resources of the network. The input information enters into four panels containing KPMItn, then it is analyzed and the short- and long-term effects are evaluated. The evaluation is performed towards the KPMItn's target values and the adopted marketing strategy of the network. KPMItn give a detailed picture of the current state and development of the marketing tourism network, and they have to be disaggregated to the lower executive levels. This will lead to greater expedience and rationality in the processing of results and in making managerial decisions.

The four panels of the approach are presented in the model in Fig. 1 and are described as follows:

– **'Financial effects related to the marketing activity of the network' panel.** In this panel, the following key indicators are most commonly used: *number of sales of targeted products and services, expenditures on general advertising campaigns, return on marketing investments*. KPMItn can be disaggregated by segments, and some of them (*sales revenue, revenues generated from launching new tourism products*) – by separate tourism products.

– **'Effects, related to the customers of the network' panel.** The following can be used as key indicators: *'mystery shopper' regular surveys, number of customers attracted for a certain period of time, regular internal checks of customer service, customer feedback analysis*. The focus of the activities of marketing tourism networks on the relations with customers requires that the tools of another management approach – Six Sigma, be applied by creating three additional subpanels: 1) 'KPMItn related to finding and attracting new customers'; 2) 'KPMItn related to retaining loyal customers'; and 3) 'KPMItn related to developing loyal customers'. Here, the evaluation is conducted in two stages, the *first* of which includes the following elements [16]: defects (errors) in the marketing activities of the network in the development of customer relationships; opportunities for measuring customer relationships; units to be measured and marketing indicators; detailed customer process mapping; plan for gathering data on customer relationships; dashboard for data presentation; graphs for measuring customer-related processes; assessing customer relationships; opportunities for improving the customer-related marketing activity of the network. The *second stage* involves measuring and reporting customer opinions and attitudes to them before booking/buying a tourism service.

– **'Effects, related to internal and external marketing processes in the network' panel.** For the tourism sector, this panel covers two groups of marketing processes: the internal ones are related to the pricing of tourism products, assortment solutions, product innovations, and the external ones are related to communica-

tion solutions, sales promotion, distribution solutions, etc.

– **'Effects, related to the development of marketing activity and marketing personnel in the network' panel.** This panel covers KPMItn in two trends: marketing activity as a whole and marketing personnel, where four sets of indicators are used – motivation, quantitative characteristics, qualitative characteristics and improving the qualification of the marketing personnel.

The possible KPMItn by individual panels are presented in Table 2.

The outlined KPMItn function in a system based on causal relationships between them, which is an essential element of the structure of the balanced approach.

**The approach operates according to the following logic:** the information submitted from the document flow and the information flows in carrying out the marketing activities in the network goes to the four panels containing KPMItn. There, the short-term effects achieved (diagnosing the results) and the long-term effects obtained, as well as the expected (predictive evaluation of the effects) are processed, analyzed and evaluated. The evaluation is carried out in accordance with the marketing goals expressed in the KPMItn target values and the adopted marketing strategy of the network. The input of the evaluation process involves the competences of the marketing specialists, information and technical tools and financial resources. The output involves the optimization process based on the assessments made of the achieved marketing effects and proposed corrective impacts.

The conclusion of the presented research. The formulations of the Balanced Scorecard approach are relevant and completely applicable in optimizing marketing tourism networks. The new framework of this balanced approach focuses on measuring and evaluating the current state of these networks, depending on the implementation of the common marketing strategy adopted by the partners.

Further research perspectives of the issues raised relates to the approbation of the optimization approach in a real marketing tourism network, as well as its use in marketing networks in other economic sectors.

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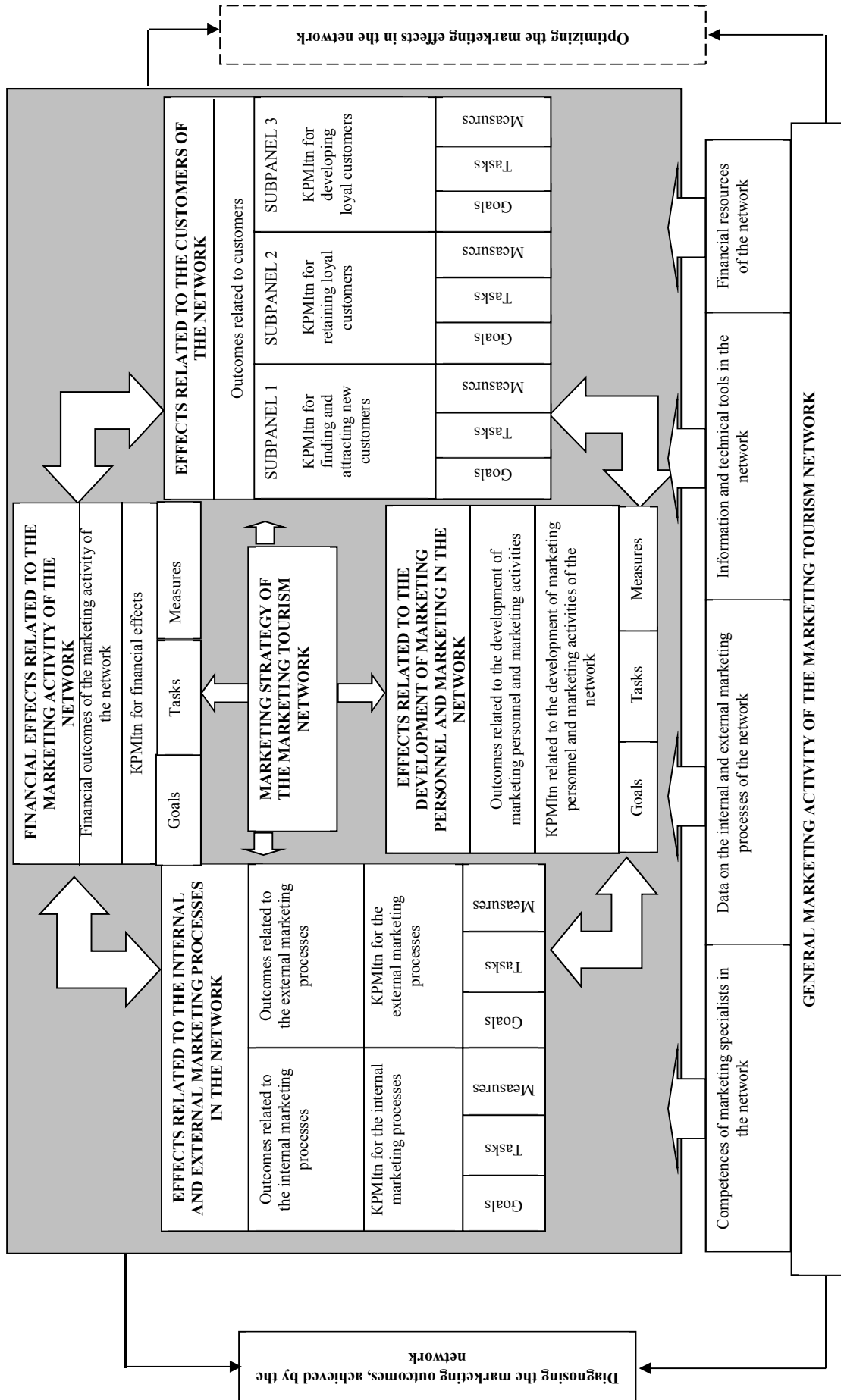


Fig. 1. Model of the MBScT approach for optimizing a marketing tourism network (Developed by the author)

<b>Recommended KPMItn<sup>1</sup></b>			
<b>Panel: Financial effects related to the marketing activities of the network</b>	<b>Panel: Effects related to the customers of the network</b>	<b>Panel: Effects related to internal and external marketing processes in the network</b>	<b>Panel: Effects related to the development of marketing activities and marketing personnel in the network</b>
<ul style="list-style-type: none"> <li>• Returns on marketing investments</li> <li>• Net marketing profit</li> <li>• Marketing expenditures</li> <li>• Revenues from sales of tourism services</li> </ul>	<b>Subpanel</b> <b>Finding and attracting new customers</b>	<b>Subpanel</b> <b>Internal marketing processes</b>	<b>Subpanel</b> <b>Effects related to the development of the marketing personnel in the network</b>
	<ul style="list-style-type: none"> <li>• Number of new customers</li> <li>• Coefficient of updating the customer base</li> </ul>		<ul style="list-style-type: none"> <li>• Efficiency of sales units</li> <li>• Number of launched innovations of tourism products</li> <li>• Efficiency of customer service units</li> <li>• Efficiency of communications units</li> <li>• Share of revenue generated from launched innovations in the total sales revenue over the last 3 years in %</li> </ul>
	<b>Subpanel</b> <b>KPMItn related to the development of loyal customers</b>	<b>Subpanel</b> <b>External marketing processes</b>	<b>Subpanel</b> <b>Effects related to the development of the marketing activities of the network</b>
<ul style="list-style-type: none"> <li>• Number of purchases by loyal customers</li> <li>• Frequency of using network products by loyal customers</li> <li>• Number of products of the network by types, used by loyal customers</li> <li>• Amount of one-off consumption of network products by loyal customers</li> </ul>	<ul style="list-style-type: none"> <li>• Accessibility of tourism products</li> <li>• Realized sales by types of distribution channels in %</li> <li>• Market share in %</li> <li>• Network competitiveness</li> </ul>		<ul style="list-style-type: none"> <li>• Difference between the set and accomplished marketing strategic goals for a certain period of time</li> <li>• Market placement of the network products for a certain period of time</li> <li>• Number of initiatives for innovating the tourism products</li> </ul>
<b>Subpanel</b> <b>Retaining loyal customers</b> <b>Customer satisfaction (rating)</b>			
	<ul style="list-style-type: none"> <li>• Customer loyalty by the number of repeated purchases</li> <li>• Customer loyalty index (rating)</li> <li>• Customer retention rate %</li> </ul>		

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#### **Григорова В. П. Збалансований підхід до оптимізації маркетингових мереж у туризмі**

Теорія маркетингових мереж, розроблених у сфері туризму, пов'язана з підходом збалансованої системи показників, що пропонують новий метод їх оптимізації. З цією метою здійснено спробу коротко пояснити положення теорії маркетингових мереж, їх специфіку в секторі туризму. Для цього пропонується ввести поняття маркетингу збалансованої системи показників у сфері туризму як інструменту оперативного управління та оптимізації цих мереж.

*Ключові слова:* маркетинг мережі компанії, маркетинг туристичних мереж, оптимізація, збалансована система показників, маркетинг збалансована система показників в сфері туризму, ключові показники маркетингу показники для туризму мережі.

#### **Григорова В. П. Сбалансированный подход к оптимизации маркетинговых сетей в туризме**

Теория маркетинговых сетей, разработанных в сфере туризма, увязана с подходом сбалансированной системы показателей, предлагающим новый метод их оптимизации. С этой целью предпринята

попытка кратко объяснить положения теории маркетинговых сетей, их специфику в секторе туризма. Для этого предлагается ввести понятие маркетинга сбалансированной системы показателей в сфере туризма как инструмента оперативного управления и оптимизации этих сетей.

*Ключевые слова:* маркетинг сети компании, маркетинг туристических сетей, оптимизация, сбалансированная система показателей, маркетинг сбалансированная система показателей в сфере туризма, ключевые показатели маркетинга показатели для туризма сети.

#### **Grigorova V. Balanced approach for optimizing marketing networks in tourism**

The article links the theory of marketing networks developed in tourism with the established Balanced Scorecard approach, offering a new balanced approach for their optimization. To this end, the formulations of the marketing network theory and their specificity in the tourism sector are briefly clarified and the Marketing Balanced Scorecard in Tourism concept is introduced as an optimization tool of the operational management of these networks.

*Keywords:* marketing corporate networks, marketing tourism networks, optimization, balanced scorecard, marketing balanced scorecard in tourism, key performance marketing indicators for the tourism network.

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## SPECIAL ECONOMIC ZONES: KEY LESSONS LEARNED FROM GLOBAL EXPERIENCE

Special economic zones (SEZs) are increasingly common and popular policy instrument for economic growth. They are one of the oldest economic regulators and have been in existence for several centuries. The idea of zones' establishing arose in the XII century in Europe; at those times, they were functioning in form of free ports and cities. Since then the meaning of the term has expanded significantly and now SEZs are defined as «*demarcated geographic areas contained within a country's national boundaries where the rules of business are different from those that prevail in the national territory. These differential rules principally deal with investment conditions, international trade and customs, taxation, and the regulatory environment; whereby the zone is given a business environment that is intended to be more liberal from a policy perspective and more effective from an administrative perspective than that of the national territory*» [1, p. 23].

If considering the components of the term «special economic zone» apart, it can be seen that they are both sufficiently broad and precise [1, p. 26-27]:

1) «*special*» relates to the differential regulatory regime that distinguishes the zone from the national economy;

2) «*economic*» refers to a variety of activities allowed in zones, without prejudice concerning their nature and focus;

3) «*zone*» relates to the legally or physically bounded «economic space» contained in the national territory.

Nevertheless, the definition given above only partly related to the reality, because some countries do not apply taxation incentives, and others have rejected the geographic spatiality of the SEZs and have preferably made it a solely legal space which is applicable to the entire of the domestic territory or large parts of it. It is therefore not surprising that there is some confusion in the name and classification of zones.

Experts *Thomas Farole* and *Gokhan Akinci* comment on it this way [2, p. 1]: ask three people to describe the economic zone and you will get three different answers. The first person may describe a fenced-in territory offering industrial land in a developing country with tax breaks and other investment incentives. In contrast, the second person may remember the «miracle of Shenzhen» – a fishing village, which was transformed into a modern city of over 14 million inhabitants 30 years after the establishment of [3]. A third person

might think about Singapore or Dubai's ports, which operate as the foundation for a wide range of trade- and logistics-oriented activities. Notably, all three of these opinions are correct descriptions of economic zones. Table 1 shows key characteristics of SEZs' types which have become widespread in recent decades.

In addition to SEZs' types identified in table 1, economic zones are often included *specialized economic zones* – highly specialized structures adapted to the necessities of specific activities – science and technology parks, software zones, finance service zones, tourism zone, logistics parks and others [4, p. 11].

As the report [1, c. 24] points out, the multiplicity of SEZs' types is the result of several factors, including:

- the need to distinguish between types of SEZs which have significant differences in form and function;
- zone founders' desire to differentiate their product from others in a competitive environment;
- differences in terminology among countries;
- the result of multiple translations.

The definitions of zones vary with the development of their new modifications, the disappearance of old types or their adaptation in accordance with the new conditions. Experts note [1, c. 24-25] that the definition of SEZ should be broad enough to include a wide variety of «past, present, and future zones», and at the same time sufficiently accurate to exclude those that do not reflect «the essential structural features that make a zone a zone»: *specific regulatory regime, dedicated governance structure, physical and transport infrastructure*.

There is an extensive theoretical and practical studies dealing with SEZ, including Ukrainian [7-9]. However, despite decades of research, many crucial issues remain unanswered. There is still an ongoing debate over the value of special economic zones as a policy instrument. Some economists argue that SEZs can act as a catalyst for economic recovery and growth while others consider them as a «second best policy» tool, giving preference to the economy-wide liberalization of investment and trade.

*The aim of the paper*, therefore, is to investigate various challenges, opportunities, and perspectives that arise when countries apply SEZs by analyzing the conditions that lead to success or failure of implementation this instrument in practice. This paper also explores why in Ukraine the experience of SEZs' establishing had proved unsuccessful and what needs to be done primarily to remedy this situation.

Table 1

Key characteristics of common SEZs' types in the world \*

Type of zone	Features	Goal of establishing	Size	Eligible activities	Markets	Examples
Free Trade Zone (Commercial Free Zone)	<ul style="list-style-type: none"> <li>The oldest and one of the most ubiquitous form of SEZ;</li> <li>They are usually <i>in or near</i> major international transport nodes;</li> <li>Physically segregated from both the port's main area and the outside by fences, gates, and walls, because they lie outside the country's customs territory</li> </ul>	Trade supporting	< 50 hectares	Trade-related activities (warehousing, storage, sales, exhibitions, transshipment, and re-export). Light processing operations (packaging, labeling, quality control, sorting)	Domestic, re-export	Colon Free Zone (Panama)
Traditional Export Processing Zone (EPZ)	<ul style="list-style-type: none"> <li>One of the most common form of SEZ;</li> <li>They appear in the 1950-1960s as a way to hasten industrialization and industry-related international trade in developing countries;</li> <li>Today they are a fenced-in territory offering developed industrial land for rent situated outside the country's customs territory;</li> <li>Provide investment and operational incentives, supported by simplified administrative procedures;</li> <li>The entire area within the zone is <i>for export-oriented enterprises</i></li> </ul>	Export manufacturing	< 100 hectares	Manufacturing and related activities	Mostly foreign	Shannon Free Zone (Ireland), Masan Free Export Zone (Republic of Korea)
Hybrid EPZ	<ul style="list-style-type: none"> <li>The first four features are the same as in the case of traditional EPZs;</li> <li>The entire area within the zone is <i>for all industries regardless of export orientation</i></li> </ul>	Manufacturing, including export	< 100 hectares	Manufacturing and related activities	Domestic and foreign	Lat Krabang Industrial Estate (Thailand)
Single Factory EPZ (Free enterprises, FE)	<ul style="list-style-type: none"> <li>Provide incentives to individual enterprises regardless of location;</li> <li>In some countries Single Factory EPZ and EPZ coexist;</li> <li>Some countries have no EPZs as such, and the EPZ status is given to individual enterprises. For instance, in Mexico enterprises that are located along the Mexico-U.S. border have the EPZ status (the so-called maquiladora status)</li> </ul>	Export manufacturing	Designation for individual enterprises	Manufacturing and related activities provide incentives to individual enterprises regardless of location	Domestic and foreign	Mauritius Export Processing Zone (East Africa)
Freeport	<ul style="list-style-type: none"> <li>The largest type of SEZs as they encompass fairly large parts of the territory (urban and rural areas) and also contain large transport facilities (ports and airports);</li> <li>They can include entire regions (even overlap political and administrative units) with populations that live and work in these regions, and all the economic activities that take place there, and even can overlap administrative units;</li> <li>Provide a broader set of incentives and benefits than other zones' types</li> </ul>	Integrated development	> 100 km <sup>2</sup>	Multi-use (accommodate all types of activities, including tourism and retail sales)	Domestic and foreign	Aqaba Special Economic Zone (Jordan)
Enterprise Zone	<ul style="list-style-type: none"> <li>This zone intends to revitalize distressed urban or rural areas by the provision of tax incentives and financial grants;</li> <li>Most zones are in developed countries</li> </ul>	Revitalization, empowerment of distressed urban or rural areas	< 50 hectares	Multi-use	Domestic	Empowerment Zone (Chicago, USA) United Kingdom, France
Industrial Zone (Industrial Park)	<ul style="list-style-type: none"> <li>Offer a broad set of incentives and benefits;</li> <li>Provide the qualitative physical infrastructure (real estate, roads, water, electricity) telecommunications) of modern industrial activity</li> </ul>	Industrial development	< 100 hectares	Industry	Domestic and foreign	Eastern Seaboard (Thailand)

\* Based on sources: [1, p. 27-30; 2, p. 2; 4, p. 3, 10-11; 5, p. 3; 6, p. 2].

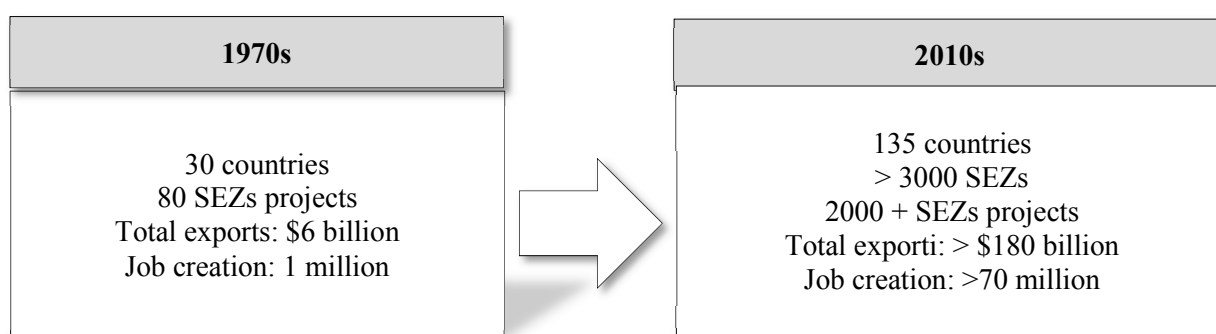
Since the first SEZ in its modern sense was established nearly sixty years ago in Ireland (*Shannon Free Zone*), they have become an essential feature of the world economy [3]. If in 1986, there were 176 SEZs, than in 1995 – already 500 and today more than 3,000 zones are known to exist in 135 countries, which employ more than 70 million people and new ones being added all the time (Figure).

According to *The Economist*, «three out of every four countries have at least one zone» [10]. The largest number of SEZs are found in Asia (470 items), North America (266), Central America (228) and Europa (161). Thus, there are approximately 260 SEZs in the USA, 190 – in China, 115 – in Indonesia, 30 – in Thailand [11, p. 9-10].

Their popularity should come as no surprise. The main economic and social benefits that SEZs can bring are:

- attracting foreign direct investment (FDI);
- jobs creation, especially in «smaller countries with populations of less than 5 million» [4, p. 3-4];
- boosting exports and its diversification as well;
- developing new (among them export-oriented) industries;
- raising government revenue.

These all ultimately resulting in structural transformation, industrialization, and modernization, promoting technology transfer, and innovation through industrial clusters.



**Figure. The growing popularity of SEZs in the world \***

\* Based on sources: [3; 11; 12].

At the same time, *SEZs are not a ready-made solution for all the economic problems*. They should be taken only as one of the instruments of economic policy. It should also be borne in mind that not all countries have demonstrated successful attempts at creating SEZs. There are both successful and failed zone schemes.

Chinese zones are a good example of success. SEZs helped China to encourage industrial development by attracting FDI, accelerating export growth and promoting technology transfer that subsequently spread to other domestic industries. The best-known example is already mentioned «*miracle of Shenzhen*».

However, the stories of successful zones, particularly Asian and Latin American, have proved difficult to replicate in other regions of the world. Many SEZs have failed or have achieved modest results. For instance, Kandla (India), Bataan (Philippines), Cartagena (Colombia), Moin (Costa Rica) fall into this category. Some experts consider [2; 11] that failed zone programs had been applied in countries such as Senegal, Namibia, Liberia, Ivory Coast, Democratic Republic of Congo (Africa), Pakistan (Asia), *Ukraine*, Moldova (Europa).

That explains why there is still no consensus in the academic and political circles have been reached on the importance of zones as a policy instrument. According to the economic literature, the possible impact of SEZs can be divided into two groups.

Representatives of the *first group* assess SEZs with the help of static economic parameters and do not take into account the potential dynamic «indirect» effects (Table 2). This is the orthodox approach, which based on neoclassical economic theory. Orthodox economists support a country-wide liberalization of trade and investment instead of promoting certain SEZs [2; 13].

*Table 2*

**Potential «direct» and «indirect» benefits derived from SEZs \***

Static «direct» benefits	Dynamic «indirect» benefits
Employment creation	Skills upgrading
Export growth	Export diversification
Foreign direct investment	Transfer of knowledge and technology
Foreign exchange earnings	Promotion of non-traditional industries
Government revenue	Regional development

\* Based on sources: [1; 4; 13; 16].

Proponents of the *second approach* – the heterodox approach – hold the opinion that «zones can play a long-term dynamic role in their country’s development process» [14, p. 8], potentially generate «the longer term structural and development benefits» for the national

economy [1, p. 26]. Recent economic literature dealing with SEZs particularly highlights the dynamic benefits that zones could achieve. Modern researchers emphasize such dynamic effects as skill formation, knowledge and technology transfer, cluster effects and the integration of national firms into global value chains [4; 15].

However, even not all successful SEZs have been able to achieve equally positive results in static effects, namely boosting employment, increasing export earnings and attracting FDI. For example, in China (zones account for more than 80 percent of cumulative FDI [4, p. 35-36]), in the Philippines and Malaysia SEZs have been proven to be «a very significant contributor» to foreign direct investment [1, p. 66]. The same cannot be said of South and East Asian, Latin American and North African countries' SEZs.

The zones have played an important role in employment generation in certain countries, but on a regional scale, the rates of job creation are low. This contrasting with export performance (Table 3): in many countries, zones account for a major share of exports.

For example, in Nicaragua – 79,4% of total export, in the Dominican Republic – 77%, in Panama – 67%, in the Philippines – 78,2%, in Morocco – 61% [4, p. 35].

Nearly 60 years of SEZs' experience show that the success or failure of a particular zone is related to a multitude of factors. There are as many explanations of such situation as there are zones.

There is evidence that generous fiscal incentives are unable to compensate the weak infrastructure and bad location of SEZs'. Poor roads, no access to electricity, water, and other resources, isolation from suppliers and consumers could not be compensated by tax preferences. Moreover, sometimes tax relief form only a few percent of total cost for implementing investment project and are not the main reason for investing. The most important thing for investors is the state and local government's attitude towards them, their willingness and openness to cooperation. Tesla Motors founder and CEO Elon Musk talks about it in his interview when commenting on the decision to construct of the new factory in Nevada [17].

Table 3

**The economic performance of SEZs' activities across regions and the world at large \***

	Direct Employment		Zone Exports	
	US\$ millions	Percentage of National Employment	US\$ millions	Percentage of Exports
Asia and the Pacific	61089	2,30	510666	41,0
Americas	3084	1,15	72636	39,0
Western Europe	179	..	...	... **
Central and East Europe and Central Asia	1590	0,001	89666	38,7
Middle East and North Africa	1458	1,59	169459	36,4
Sub-Saharan Africa	1040	0,20	8605	48,7
<b>Global</b>	<b>68441</b>	<b>0,21</b>	<b>851032</b>	<b>40,8</b>

\* Based on source: [4, p. 34, 36]

\*\* data are not available.

Familiarizing with experience of SEZs' functioning in different countries and regions of the world makes it possible to highlight common obstacles to zones success.

*1. Mistaken priority setting and the inability to implement them, including due to lack of competent staff.*

Overly ambitious and reassessment of own capacities are frequent in economies which try to use zones as an easy way to addressing the economy's structural problems.

In addition to the obvious, incompatible with reality, the desire of local authorities to transform economically weaker regions and cities into «growth poles», some problems are less noticeable. For instance, many SEZs in Asia were initially oriented on the development of new perspective sectors, such as information and communication technologies, software, new materials, including energy saving. However, in order to achieve

success in these areas, statements of local authorities should be backed by a clear strategy and appropriate programs of economic development.

Therefore, overstated state goals may not coincide with the existing economic conditions and from the very outset hinder the development of SEZs'. Take Kazakhstan, for example. In the country had been decided to develop knowledge-based zones. However, as it turned out Kazakhstan did not have enough qualified personnel, so investors had to attract foreign specialists who possessed the necessary amount of knowledge, relevant technical and marketing skills, which had experience in project management. As a result, the share of zones in the total output of goods and services in the country remains scanty – 0,003% and the number of jobs created within them is only 9,000 units (in the period from 2001 to 2013) [18].

Other countries have faced similar problems. For example, in Malaysia in the mid-1990s, the government initiated a large-scale program of economic restructuring in order to stimulate structural changes and to increase the share of high value-added products. However, by the year 2000 the production «came out on the plateau» – there was no decline and no growth. Some scientists note [19] this situation is affected not least by the imbalance in the labor market and limited of high-quality human resources. Indeed, working conditions, labor relations and the development of human potential are weaknesses in many zones of the world, and, consequently, those areas that needed to be improved.

### 2. *Industrial specialization.*

SEZs should not be created purely as industrial sites in isolation from consumers, suppliers, trade organizations and, most importantly, from the needs of the population. Industrial zones cannot be designed without living quarters and high-quality social infrastructure. Otherwise, the lack of normal comfortable living conditions will prevent the attraction of high-skilled personnel, as it happened, for example, in Airbus Park in Tianjin City, China.

### 3. *Inappropriate land use.*

As a rule, large tracts of land are allocated for SEZs at an adjusted price (at a price below market). This poses risks of using land plots not for their intended purpose, but, for example, as arable lands, or such purposes (that is use land of SEZs for farming) can be claimed initially.

In that case, SEZs become a place for easy enrichment and abuse of state support. In order to preclude such situation, it is important to highlight the priority areas for investments at the legislative level, including within the framework of zones. It could be the investment:

- in technology innovation for industrial modernization;
- in the development of priority sectors of the economy;
- in order to promote the commercialization of scientific and technical developments owned by scientific institutions and universities;
- in order to accelerate the development of economically backward areas and so forth.

### 4. *The risk of distortions of competition.*

Except that provision of public assistance to firms entering the SEZs (in the form of tax, customs, credit benefits and preferences) reduces tax revenues to the budget - at least in the short term - it also entails the threat of distortions to the economy and competition due to the advantages to some firm or to the production of certain types of goods. This is one of the reasons why some scientists and politicians prefer economy-wide liberalization of trade and investment instead of in limited areas of the country.

### 5. *Location and quality of infrastructure.*

As it was mentioned above, offering just tax and other economic benefits to SEZs' firms, the state can certainly improve the economic situation in a certain region, but it is unlikely to provide a long-term effect due to this. The most successful zones in world practice are organically built into the national economy and closely integrated with global markets, for example, the South Korean SEZs have strong links with local suppliers. This, in turn, requires quality infrastructure and substantial public expenditure for the upgrading of roads, electricity and water-supply systems, telecommunication systems, and transport.

Lack of adequate infrastructure even with the favorable economic environment can become an obstacle to the successful development of SEZs how it happened in particular in Africa: lack of reliable electricity and long distance to the port have become the reason of failures of many African zones.

An important role in SEZs' success plays their location and closeness to the transport. SEZ in Dakar (Senegal), which was located far from the port of Dakar and isolated from the main trade routes, may be used as a bad example.

Nevertheless, that does not mean that considerable investment in infrastructure will ensure SEZs' success automatically. For example, Philippine authorities have invested significantly in the infrastructure of SEZ in province Bataan: a port was upgraded, a new dam for supply power was built and new modern office buildings were built. However, despite its «infrastructure attractiveness» for a long time, the zone could not attract investors. Public resources were spent ineffectively. As a whole, it should be pointed out to a large number of similar instances in world practice.

On the other hand, there are several examples of how SEZs have dramatically reduced the number of unemployment, developed export activities, attracted investment and finally have played a catalytic role towards structural changes.

As mentioned above, *in Ukraine the experience of establishing zones was not successful*. The first Ukrainian SEZ – the North Crimean Sivash Experimental Economic Zone – was created over two decades ago (in 1996) as a pilot project with traditionally good intentions: for attracting investments and developing export potential, solving social problems and other. Nevertheless, in 2002 upon termination of the experiment and obviously not too high of its success by decree [20] SEZ «Sivash» was eliminated. Another attempts to create zones also failed.

The preferences and benefits provided by the state to firms entering the SEZs had not yielded the expected results and had led to large losses of the state budget, distortions in the economy and competitive environment. Among «national characteristics» of SEZs are



worth noting neglect of legislative requirements and existence of corruption opportunities for abuse of authority, enrichment of officials at the taxpayers' expense. Therefore, drastic criticism of the Ukrainian SEZ is quite fair. Though could such verdict be final? Obviously not. As well as SEZs, a number of instruments which worked well in numerous countries have not become successfully established in Ukraine largely owing to unqualified implementation and abuse of power.

Today according to the Ministry of Economic Development and Trade of Ukraine there are eleven special economic zones created in the late 1990s and early 2000s. In the form in which they were «locked up», Ukrainian SEZs have significant shortfalls. However, this does not mean that they should not be corrected. Quite the contrary, this instrument of «targeted» stimulating of investment activity, promotion of employment, increases in exports, etc., generally accepted in the world practice, needs to be improved and brought into line with modern conditions.

First of all, Ukrainian's legislation needs to be improved. Basic Law in force on SEZs [21], adopted in 1992, has laid only general legal foundations for zones. However, the Law was not clearly defined criteria to attract investors; it does not specify special requirements for enterprises wishing to work in the SEZs, along with investment benefits. Each SEZ was established on the basis of a separate law, that defined tax, customs and monetary regimes of economic activity, but even in these laws, there were no criteria for drawing investors. This means that enterprise of any sector of the economy (it is not even about high-tech activities as is customary in the world practice) could benefit from SEZs. As a result, the zones have become a convenient tool for abuse of power and tax avoidance, led to distortions in the economy and of the competitive environment. If we add to this the State's position of the refusal to assume responsibility and expenditures on ensuring of the SEZs with all the necessary infrastructure (roads, electricity and water supply systems, telecommunication systems, etc.), it can be stated that the authorities had done its utmost in order to this instrument did not live up to expectations.

It is now important to recognize that without of political leadership's goodwill which should put the future of the country above self-enrichment the situation will remain unchanged. The public policy toward SEZs should be well-balanced, systemic and predictable enough in order to create stable conditions for investing activities. Nevertheless, the existence of SEZ in itself should not be regarded as a self-sufficient instrument for stimulating structural transformation. In addition to supporting the implementation of SEZs' role in the economy, the state should form a common enabling environment for business that extends beyond spatial boundaries of SEZs and spread to the economy as a whole.

**Conclusion.** Special economic zones are widely distributed around the world. The study showed that zones can be an effective instrument to attract foreign investment, create new jobs, stimulate industrial production, increase export revenues, and promote structural transformation, as well as economic development, but only when implemented properly. SEZs are the costly risky initiative that needs careful planning. Despite this nowadays there are too many zones to ignore. The most important lessons of SEZs' world experience for new initiatives are:

The zones do not bring the positive result overnight. It takes from five to ten years before they reach high levels of employment and investment. This is even true for the most successful zones.

SEZs are offered generous tax relief to firms as well as more liberal trade, and operating rules than in the rest of the national territory. However, tax preferences as such had not deserved a broad support. Tax relief brings positive results if political and macroeconomic stability is provided, infrastructure is well-developed and reliable, there is no corruption, there is access to qualified human resources.

As a rule, SEZs' foreign firms seek to prevent disrupting well-established linkages with their sources of inputs because it is hard to develop backward linkages with local suppliers. The exceptions are China and Thailand where developed supporting industries can be identified. So the existence of zones does not necessarily imply the development of local supporting industries due to the SEZs' firms is not always interested in resources locally.

The zones are more likely to bring advantages to the host country if they are an integral part of a general economic development strategy. Zone programs must be part of a broad national or regional development program and they also must be designed to best support of countries' comparative advantages. As an example, in China, Republic of Korea, Singapore and in Dubai zones programs consider as a crucial tool of national or regional economic and industrial development program and they are supported at the very top level of the government.

In Ukraine, the potential contribution of SEZs to solve internal structural problems remains unrealized. In the country as a whole was registered eleven special economic zones, but in fact, they are not functioning. Preferences and benefits in the territory of SEZs were canceled in 2005 and have not been restored to this day. Therefore, enterprises working in zones operate under general tax rules and do not have any state privileges. For changing this situation, it is first of all necessary to amend the legislation and improve state policy towards zones by making it well-balanced, systemic and predictable enough.

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**Підоричева І. Ю. Спеціальні економічні зони: головні уроки, набуті зі світового досвіду**

Спеціальні економічні зони є одним із найстаріших економічних регуляторів, які поширені в усьому світі. Дослідження показало, що зони можуть бути ефективним інструментом залучення іноземних інвестицій, створення нових робочих місць, стимулювання промислового виробництва, збільшення доходів від експорту, сприяння структурним перетворенням і, в кінцевому підсумку, – забезпечити економічний розвиток країни, але тільки коли створюються з дотриманням певних умов. У даній статті основна увага приділяється дослідженню проблем і можливостей, які супроводжують процес створення спеціальних економічних зон, шляхом аналізу умов, які приводять до успіху або невдачі в

реалізації цього інструменту на практиці. Приділяється увага українському досвіду створення спеціальних економічних зон і питанню того, чому в Україні спроба використати цей інструмент економічної політики зазнала невдачі і що необхідно зробити в першу чергу для виправлення цієї ситуації.

*Ключові слова:* спеціальні економічні зони, економічна політика, інструмент, індустріалізація, модернізація, структурна трансформація, економічний розвиток.

**Пидоричева И. Ю. Специальные экономические зоны: главные уроки, извлеченные из мирового опыта**

Специальные экономические зоны являются одним из старейших экономических регуляторов, распространенных во всем мире. Исследование показало, что зоны могут быть эффективным инструментом привлечения иностранных инвестиций, создания новых рабочих мест, стимулирования промышленного производства, увеличения доходов от экспорта, содействия структурным трансформациям и, в конечном счете, – обеспечить экономическое развитие страны, но только когда создаются с соблюдением определенных условий. В данной статье основное внимание уделяется исследованию проблем и возможностей, которые сопровождают процесс создания специальных экономических зон, путем анализа условий, которые приводят к успеху или неудаче в реализации этого инструмента на практике. Уделяется внимание украинскому опыту создания специальных экономических зон и во-

просу того, почему в Украине попытка использовать этот инструмент экономической политики потерпела неудачу и что необходимо сделать в первую очередь для исправления этой ситуации.

*Ключевые слова:* специальные экономические зоны, экономическая политика, инструмент, индустриализация, модернизация, структурная трансформация, экономическое развитие.

**Pidorycheva I. Special economic zones: key lessons learned from the global experience**

Special economic zones are one of the oldest economic regulators which are widespread throughout the world. The study showed that zones can be an effective instrument to attract foreign investment, create new jobs, stimulate manufactured production, increase export revenues, promote structural transformation, and ultimately ensure country's economic development, but only when they are created in accordance with all the necessary conditions. This paper focuses on the study of various issues and opportunities that accompany the process of SEZs' creation by analyzing the conditions that lead to success or failure of implementation this instrument in practice. Attention was paid to Ukrainian experience of SEZs' establishing and to a question on why in Ukraine attempt to use this instrument of economic policy had proved unsuccessful and what needs to be done primarily to remedy this situation.

*Keywords:* special economic zones, economic policy, instrument, industrialization, modernization, structural transformation, economic development.

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## FORMATION OF THE MODERN SUSTAINABLE SECTOR OF TOURISM AND RECREATION IN UKRAINE

**Introduction.** During past decades traveling, tourism and recreation, as well as all supporting this sector ecosystem have become significant drivers of global economic growth, contributing over 10% to GDP and accounting for 1 in 10 jobs on the planet [1, p. xi]. According to World Tourism Organization investigation “Tourism Towards 2030”, the number of international tourist arrivals worldwide is expected to increase by an average of 3.3% a year over the period 2010 to 2030. In absolute numbers, international tourist arrivals will increase by some 43 million a year, compared with an average increase of 28 million a year during the period 1995 to 2010. At the projected rate of growth, international tourist arrivals worldwide are expected to reach 1.4 billion by 2020, and 1.8 billion by the year 2030 [2, p. 14].

As one of the fastest growing segments of economic activity in many countries of the world, the sector is increasingly recognized as a vital contributor to job and wealth creation, poverty alleviation and preservation of cultural heritage [3, p. 4]. It is most commonly mentioned in relation to United Nation’s Sustainable Development Goals (SDGs), specifically, SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), and SDG 17 (Partnerships for the Goals), as having the strongest link with tourism [4, p. 6].

A thoroughly designed and well-managed tourism and recreation sector (TRS) can also help protect the environment and preserve natural resources upon which it depends, empower host communities, generate trade opportunities, and reinforce peace and intercultural understanding between nations [4, p. 4; 5, p. 15; 6, p. 2]. Nevertheless, a modern TRS is facing with current challenges and some impediments to further growth. Many popular destinations are encountering with severe throughput and environmental issues due to tourists overcrowding [6, p. 2; 7, p. 444; 8, p. 8-9]. This is leading to inhabitants’ protest movement and measures of local authorities aimed to restrict access to these destinations (see [8]). In addition, major current challenges for the TRS sector are: safety and security concerns as well as the temptation to build new barriers to travel; the technological revolution and the need for the digitization of services; and charting a course toward sustainable development [1, pp. 61, 67; 5, p.15].

In the East European countries, a TRS used to be one of the key sectors, which made significant contribu-

tions to restructuring of the post-communist economies [10, p. 25-26; 11, p. 182], but not in all cases. In Ukraine, the sector is still underdeveloped as jobs creator, investment attractor and innovation promoter [12; p. 269-270]. This is why **the purpose** of the paper is to analyse current situation and trends of digitising in the global TRS and propose policy-making agendas to shape and direct future actions for develop the sustainable tourism and recreation sector in Ukraine and its regions.

**Methodology and Research Approach.** Initially, in order to build up a solid and tested framework for the proposal part, the concept of sustainable tourism is explored through a literature review of current research of leading scholars on this topic. Then, the dynamics of the global sector of tourism and recreation (TRS) development and trends of its digitising are investigated based on a study of available empirical data and analytical reports. Analysis of the situation with the TRS in Ukraine, existing problems made possible to find ways to overcome them and ensure sustainable development of the sector, taking into account the experience of the European Union countries. Conclusions are summarising the propositions for elaborating and implementing policy measures on regional and local levels aimed on the sustainable tourism and recreation sector development. In doing that, a number of general and special methods were used, such as: theoretical generalization, abstract logic; synthesis, comparative analysis.

**Revising the recent literature on sustainable tourism.** Since the mid-1990s, publications about sustainability of the tourism sector have been increasing significantly [13, p.1]. Naturally, the sustainable tourism definition has been subject to a wide range of interpretation. The result has been a tremendously varied of sustainability definitions in the context of tourism, just as the term has met with similar varying interpretations in other contexts. World Tourism Organization (UNWTO) after several iterations of the definition has made the choice and defined sustainable tourism as “...tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities. Sustainable tourism should thus make optimal use of environmental resources, respect host communities and ensure viable, long-term economic operations, providing benefits that are distributed fairly among all stakeholders” [14, p. 12].

During the period from mid-1990s up to first decade of XXI century, many researchers in economic, social and environmental issues of tourism, with a few exceptions, have been reluctant to express a critical view about application of sustainable development conception for tourism. Apparently, this is because the concept was a particularly attractive to scholars who had concerns about the anthropogenic pressure on the nature, as well as negative social consequences of the TRS deployment, and because many of the principles of sustainable development are in line with many of the basic principles of scarce resources saving and environmental management [15, p.8]. Nevertheless, some researchers revealed significant differences between the concepts of sustainable tourism and sustainable development, suggesting that the principles and objectives of sustainable development in global context cannot be transposed onto the specific context of tourism [16, p. 155]. In particular, it concerns the question how local TRS and economies can thrive, and unique socio-cultural and environmental resources survive, in a globalized environment [17, p. 370].

Richard Sharpley suggested, "...the specific focus on sustainable tourism, the dominant tourism development paradigm of the 1990s, can also be seen as barrier to development; ...sustainable tourism development has evolved in into a perspective and restrictive set of guidelines for tourism development that, whilst offering environmentally appropriate, commercially pragmatic and ethically sound principles for optimising tourism's development role, draws attention away from the potential benefits of other forms of tourism and, indeed, other development agents" [18, p. 7]. Thus, much of the work on sustainable tourism, to date, has been concentrated on understanding and managing the impacts of tourism on the physical environment as well as on economic and social outcomes. A little attention is paid to the cultural heritage, which forms the basis of the so-called Indigenous tourism. The cultural heritage is a much more difficult area to assess and manage, with intangible heritage being especially difficult [19, p. 1076].

Goals of sustainable tourism used to be seen as adaptable according to the circumstances of different contexts and changing circumstances over time. It was also increasingly regarded as relevant for all forms of tourism, as well as for different scale of a concrete TRS. Recently, it is more likely that researchers of the sector are assuming a broader role in understanding of tourism sustainability not only spatial patterns and human – environment interactions but also behavioural patterns, socio-economic impacts, sense of place and place-bound identities, globalization, and management. Accordingly, sustainable tourism is often now seen as a "normative orientation that seeks to re-direct societal systems and

behaviour on a broad and integrated path toward sustainable development" [13, p. 1].

Some researchers now suggest that sustainable tourism entails making trade-offs between differing desirable goals, rather than suggesting that it involves a balance among these goals. There is growing acceptance that there will be differing interpretations of what it entails, the scale of reforms needed to give it force, and the extent to which it is being applied in practice. Because of these differing views, many consider that the idea of sustainable tourism serves as a topic for dialogue that take place in conflict situation and negotiation among a range of actors [13, p. 2]. Although further discussion on the meaning of the concept is important, a great deal more attention must be paid to the problem of how to implement the concept in operational activity and make it applicable in appropriate situations to tourism. Related to this is the issue of whether the concept is the same when applied to the human and social world as it is in the context of the environmental sphere, and whether sustainability is achievable within the same parameters in each situation [15, p. 9].

There are more radical proposals, for instance, C. Michael Hall proposed to re-conceptualize sustainable tourism from an ecological economics perspective and put forward the concept of steady-state tourism. From this approach, sustainable tourism development is understood as tourism development without growth in throughput of matter and energy beyond regenerative and absorptive capacities. Steady-state tourism is, therefore, a tourism system that encourages qualitative development but not aggregate quantitative growth to the detriment of natural capital [20, p. 142-143].

The process of commodification in tourism have been analysed from the political-economic point of view by B. Büscher and R. Fletcher. They theorized "...how tourism destinations become capital, understood as "value in motion", and how this process not only provokes various forms of material violence but can be a form of structural violence" [21, p. 653]. Authors concluded that tourism has to be part of a broader degrowth movement; this means that tourism should become part of what called "bioregional economies", that about longer term connection and dedication to specific places, peoples and their local and extra-local socio-economic, ecological and political struggles. Moreover, they believe that tourism should move radically from a private and privatizing activity to one founded in and contributing to the common [21, p. 664].

Recently, there is evidence that discourse of degrowth is increasing in the literature of sustainable tourism. It is significant that the Journal of Sustainable Tourism announced the submissions for a special issue on tourism and degrowth.<sup>1</sup> Obviously, tourism is one of

<sup>1</sup> See: [http://explore.tandfonline.com/cfp/pgas/rsus-si-degrowth-4q2017?utm\\_source=CPB&utm\\_medium=cms&utm\\_campaign=JMK03022](http://explore.tandfonline.com/cfp/pgas/rsus-si-degrowth-4q2017?utm_source=CPB&utm_medium=cms&utm_campaign=JMK03022).

the world's largest industries and hence a main form of economic expansion. Moreover, it is predicted to grow dramatically in the future as the basis of much of the future development aspirations of many lower-income societies. To seriously pursue degrowth at both global and as well as most national levels, therefore, would likely require a drastic transformation of the model of tourism and recreation industry, its structure and the nature of the interaction among constituent elements of the sector [7, p. 445].

Howbeit, we should agree that during current transforming of global economy as whole and TRC as its part, in order to retain research on sustainable tourism to a high scientific level, a systems perspective and an interdisciplinary approach are indispensable [22, p. 459]. The necessity for further research and possible revision of the sustainable tourism paradigm is associated with the fact that tourism itself is transformed and resides in a state of transition now [23, p. 1-2; 24, p.1]. Primarily, a significant impact on the sector, as well as on other economic sectors, is provided by technological changes, in particular, the rapid development of the digital economy [25, p. 77; 26, p. 164]. A prominent area of tourism transforming is geospatial technology. Platforms such as Google Earth, Wikitravel, TripAdvisor and Wikimapia enable and encourage travellers to provide their own opinions, ratings, and practical information for other travellers. As well, social media is now targeted by destinations and individual service providers as a means of disseminating information and undertaking promotional campaigns [27, p. 166]. The process of digitization of the economy is leading to further globalization, increasing mobility, blurring boundaries among economic sectors and to "softening" of physical borders between countries, that are provoking new forms of cross-border tourism [28, p. 1-2; 29, p. 1] and business tourism [30, p. 107]. Also changing in the TRS is occurring due to advances in sustainability-related technologies, as well as safety and security concerns [31; 32].

The issues of sustainability of tourism and recreation sector in national and regional scales are of certain interest of Ukrainian academic circles. Thus, T. Tkachenko and Iu. Zabaldina have completed the analysis of situation in the Ukrainian TRS since the political and economic crisis in 2013-2014. They concluded that in order to bring the sector out of a difficult situation and direct it to sustainable development, an appropriate phased strategy based on a public-private partnership should be developed [33, p. 226-227]. V. Lipchuk and I. Machikha suggested that one of the major directions of revival of the Ukrainian TRS and ensuring its sustainable development is the implementation of the systemic revitalization of the obsolete tourist facilities [34, p. 95].

Some authors stressed on the necessity to elaborating and implementing a well-defined system of state regulation of the national TRS aimed at the sustainable development of tourist destinations with the proper in-

stitutional support [35-38]. I. Antonenko and I. Mel'nyk [39] as well as L. Matviychuk and T. Luzhanskaya [40] suppose that environmental norms should be integrated into the economic sphere of tourism activity, which means that it is necessary to introduce such economic levers that would allow turn tourism into a friendly sector for the environment.

O. Kondratyuk proposed mechanism of ecological and economic appraisal of TRS functioning for targeting state governance on sustainability goals [41], whereas A. Hahlyuk and A. Lukyanov point to the need for ecologization of tourism activity as well as fostering of ecologically safe technologies introduction in tourism, and elaborating of a national program for the development of ecological tourism, creating of eco-networks, and also increasing the share of environmental taxes in the consolidated budget of Ukraine up to 6-9% [42, p. 42-43].

Some publications are devoted to investigating of regional features of tourism development and creating of tourism and recreation clusters [43-47] and possibilities of using European countries experience concerned support of a national TRS development [48-51].

One of the important areas of research on sustainable development of the tourism and recreation sector in Ukraine, which, in our opinion, is not adequately covered in the literature, is innovation activity in the sector and especially fostering of its digitising (the latter has been devoted only to a small number of works, see [52-54]).

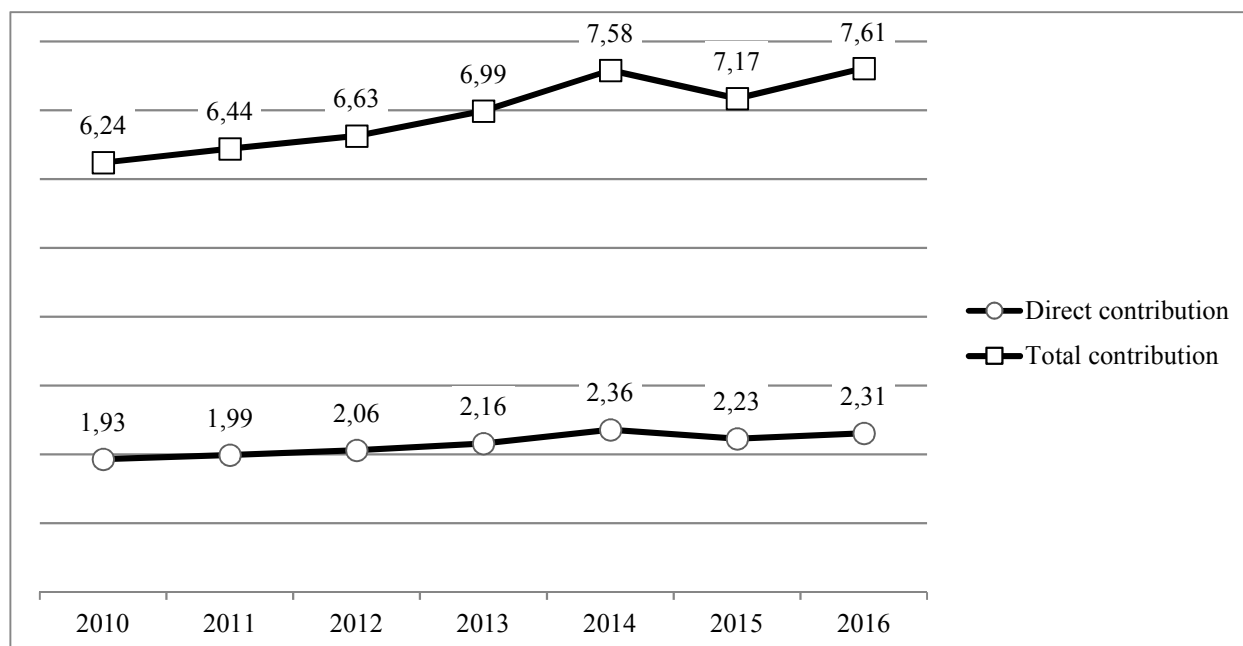
**Situation in the global TRS and trends of its digitising.** In recent years, the tourism and recreation sector and all supporting this sector ecosystem has contributed totally around seven trillion U.S. dollars to the global economy annually, nearing eight trillion in 2016. A highly profitable and valuable sector to the global economy, the TRS makes a direct economic impact of more than two trillion U.S. dollars each year (see Fig. 1).

Over the past seven years, the sector has demonstrated a decline in the share of its total contribution to the global GDP from 9.9% in 2010 to 8.9% in 2012, but then gradually increased its share and in 2016 exceeded the 2010 level (see Fig. 2).

Year 2016 marked the seventh consecutive year of sustained growth in international tourism, with arrivals (number of overnight visitors) increased by 4% or more every year following the global economic crisis of 2009. Slightly more than half of all overnight visitors travelled to their destination by air (55%), while the remainder travelled by surface transport (45%) – whether by road (39%), rail (2%) or water (4%). The trend over time has been for air transport to grow at a somewhat faster pace than surface transport, thus the share of air transport is gradually increasing. In 2016, the purpose of visit for over than half (53%) of all international tourist arrivals was travel for holidays, recreation and other forms of leisure, 27% of international tourist arrivals travelled for

reasons such as visiting friends and relatives, religious beliefs and pilgrimages, health treatment, etc., some 13% of all international tourists reported travelling for

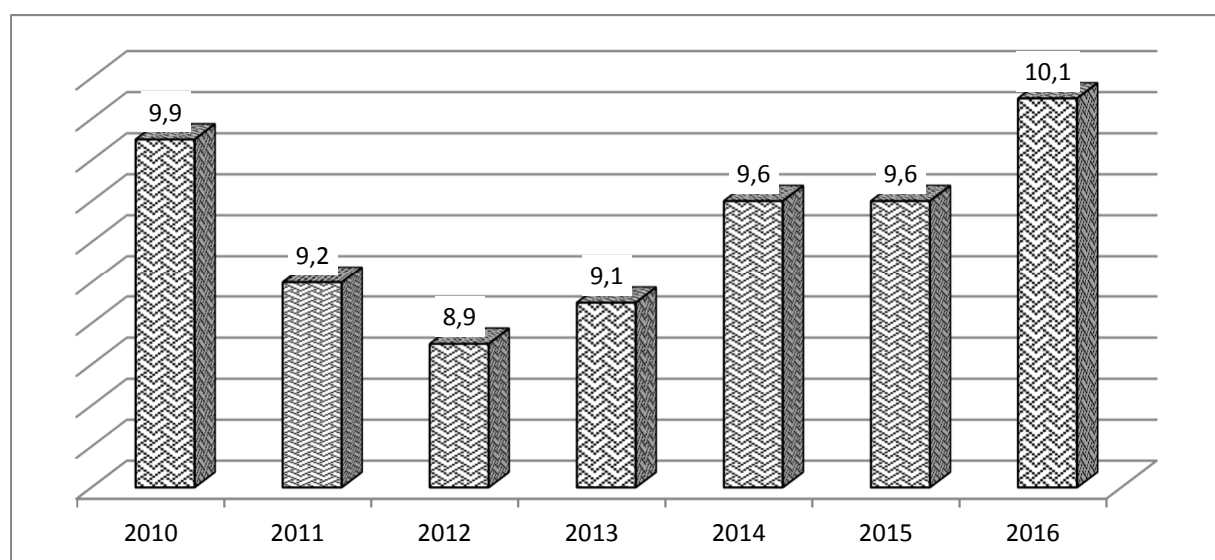
business and professional purposes, and the remaining 7% of arrivals was for other not specified reasons [2, p. 4].



**Fig. 1. Direct and total contribution of TRS to the global economy, trillion US dollars**

Source: The Statistics Portal. Available at: <https://www.statista.com/statistics/233223/travel-and-tourism--total-economic-contribution-worldwide/>.

**Note:** The direct contribution of the TRS includes the related commodities, accommodation, transportation, entertainment and attractions of these industries: accommodation services, food & beverage with related services, retail trade, transportation services and cultural, sports & recreational services. The figures for total impact also include indirect and induced contributions.



**Fig. 2. Share of the TRS total contribution in global GDP, %**

Source: The Statistics Portal. Available at: <https://www.statista.com/statistics/233223/travel-and-tourism--total-economic-contribution-worldwide/>; World Bank's Data Catalog. Available at: <https://siteresources.worldbank.org/DATASTATISTICS/Resources/GDP.pdf>.

The indicators characterizing the dynamics of arrivals by geographical markets of outbound tourism for 2016 in comparison with 2010, as well as the forecast of these indicators until 2030 are presented in Table 1.

According to the table, during 2010 - 2016 Asia-Pacific and American countries were the most growing outbound tourism markets, while the traditional European destinations, occupying half of the market, showed more modest growth (3,6% less than global average growth rates), but it should be noted that these destinations are on the top of growing base numbers. Negative

dynamics of growth in the Middle East region is connected with the military confrontation in Syria and on the borders with neighbouring countries, as well as the high level of threat of terrorist attacks in the region. While African countries have shown modest growth rate since 2010, international tourist arrivals in the continent increased by an estimated 8% in 2016 according to the comparatively limited data available to date, representing a strong rebound after a weaker performance in 2014 and 2015 in the wake of various health, geopolitical and economic challenges [2, p. 7].

Table 1

**Outbound tourism by geographical markets, 2016 and projections for 2030**

Region	2016			2030, projections		
	Number of tourists (millions)	Change,% (to 2010)	Market share (%)	Number of tourists (millions)	Change,% (to 2016)	Market share (%)
Global	1235	29,6	100	1809	46,5	100
Africa	57,8	14,7	4,7	90	55,7	5,0
Americas	199,3	32,8	16,1	265	33,0	14,7
Asia-Pacific	308,4	48,2	25,0	541	75,4	29,9
Europe	616,2	26,0	49,9	832	35,0	46,0
Middle East	55,6	-3,2	4,3	81	45,7	4,5

Source: UNWTO Tourism Highlights: 2017 [2, p. 4]; Calculation of author based on: World Economic Forum. Digital Borders: Enabling a secure, seamless and personalized journey [55, p. 5].

As expected, bulk of the arrivals growth will occur outside the traditional North American and European niches of the international tourism market by 2030. These regions will demonstrate a weak growth yet, but their shares in the global international tourism market will decrease. Most of the arrivals will come from Pacific Asia, Africa and the Middle East, which benefit from further economic growth and job opportunities, but they will also feel serious pressure on the environment. Research undertaken by the World Tourism Organization in 2016 [2] focusing on the forecasted fastest growing destinations is consistent with the expected growth of developing nations and emerging markets. In effect, not only will emerging markets become larger source markets due to increase in per capita income in these countries but also they will become more attractive destinations. International tourist arrivals in destinations of emerging the economies (Asia, Latin America, Central and Eastern Europe, Eastern Mediterranean Europe, the Middle East and Africa) will grow at double the rate (+4.4% a year) of that in advanced economy destinations (+2.2% a year), as expected by UNWTO experts.

As a result, the number of arrivals in emerging economies is expected to exceed those in advanced economies before 2020. By 2030, 57% of international arrivals will be in emerging economy destinations (versus 30% in 1980) and 43% in advanced economy destinations (versus 70% in 1980) [2, p. 14].

In light of the industry's growth forecasts and the new global context, the global community must pursue its commitment to securely and seamlessly enable the movement of legitimate travellers. To accommodate for the expected 2 billion international trips in the next 13 years, national authorities and global institutions need to fundamentally rethink the policy framework for sustainable tourism development and innovate the arrangement and implementation of future travels. The innovations and technological advancements of the past decades, especially in ICT have led to unprecedented connectivity and raised the expectations of travellers who wish to have a seamless, secure, efficient and personalized journey. In order to achieve a comfort travel with minimal bureaucratic barriers it is urgent to digitise all procedures on such three stages of a journey as:



booking and confirmation of the eligibility, departure and security, flight and arrival [55, p. 8].

However, digitalisation is needed not only for travelling itself. As tourists become more independent, connected and conscious of sustainability issues, the tourist destinations are requiring to embrace, and adapt to, their changing profile and priorities, and become better at promoting so-called smart destinations with appropriate marketing. New technologies moreover offer challenges and opportunities for all supply chains or clusters in a TRS. Digital transformation for the TRS is characterised by a fusion of advanced technologies and the integration of physical and digital systems, the predominance of innovative business models and new processes, and the creation of smart local products and services. Currently, even in developed countries tourism and recreation businesses are not taking full advantage of digital advanced technologies or the innovative business models offered by the collaborative economy. The state of the digitisation of the sector varies across destinations, particularly between high-tech services and more traditional areas of tourism and recreation, and also between countries and regions advanced in digitisation and lagged ones. There are also large disparities between large touristic companies and local SMEs engaged in the sector [56].

In recognition of the industry's significant role in driving pan-European job creation and economic growth, the European Commission has introduced various initiatives, particularly aimed at promoting sustainability, accessibility, culture, and at boosting digitising of the TRS<sup>1</sup>. The Virtual Tourism Observatory, the Digital Tourism Network, and the tourism managing tool, European Tourism Indicators System (ETIS), have been established to modernise European tourism and improve connectivity and competitiveness.

In several European tourist destinations local authorities in partnership with business are undertaking strategic efforts to digitization a local TRS and boosting investments into a pioneering initiative called "Smart Destinations". Its aim is to sustain a digital growth of this sector while enhancing the residents well-being. This initiative features cross-cutting issues such as introducing the innovative technologies, planning the development of sustainable infrastructures, developing of resilience strategies for localities which suffering large seasonal population flows, and aiming to pave the way towards circular economy. A key point which was acknowledged throughout the day was the importance of new technologies to provide valuable data by which more informed decision-making process can be set up and assessed, in contrast to the past decades. More generally the phenomenon of digitization and the deployment of Cyber-Physical Systems (CPS) technologies and the Internet of Things (IoT) is expected to increase

substantially over the next decades, holding great potential for novel applications, innovative products and services as well as new business models. CPS and IoT technologies increase the ability to predict behaviour and can thus be used to reengineer business processes, e.g. designing them more sustainable, using available resources more efficiently and effectively – in line with the concept of circular economy. "The Road2CPS Consortium" is an alliance of representatives of municipalities, regional authorities and scholars from Spain, Portugal, Italy, Hungary, and Austria, with the aim to develop the framework of smart destinations and sustainable tourism facilitated by digitization efforts. It is further deals with specific challenges faced by cities and regions whose economic and labour market profiles are marked by tourism and the corresponding opportunities offered by CPS and IoT technologies. CPS experts as well as end-users and businesses ranging from start-ups to large enterprises are invited to participate and contribute to implement disruptive innovations and to assess their impact on the local business ecosystems [57].

**Competition position of the Ukrainian TRS and directions of its further development.** Direct revenues of the Ukrainian TRS in 2016 amounted up to 1.4 US dollars or 1.5% of GDP, while the total contribution from the sector and connected industries amounted 5,6% of GDP (5.0 billion US dollars). The growth of the sector direct revenues is projected to increase by 4.2% in 2017, and an average growth of 2.8% annually for 2017-2027 (up to 1.9 billion US dollars or to 1,7% of GDP in 2027). The growth of the total revenues of TRS's ecosystem is projected to increase by 3.4% in 2017 (2.9% annually by 2027) and up to 7.0 billion US dollars or to 6.2% of GDP in 2027 [12, p. 268-269].

Protracted political and economic crisis since the end of 2013, annexation of the Crimea, military confrontation in the East of Ukraine has been leading to a significant decreasing of the TRS activity and significant loss of tourism potential of the country. Tourism sector of all Ukrainian destinations lost the Russian market which share was near 60% of tourist flow [33, p. 222]. According to estimation of experts from the Association of Tourism Business Leaders, the overall size of Ukrainian tourism losses from the beginning of 2014 is equal approximately 70-80% [58, p. 41].

Below are the data for 2016 for Ukraine and its six neighbouring countries, which show the share of these countries in Europe by area, and in parentheses – on revenues from international tourism<sup>2</sup>.

Ukraine – 5,9% (0,2%); Poland – 3,1% (2,5%);  
Romania – 2,3% (0,4%); Belarus – 2,0% (0,2%);  
Hungary – 0,9% (1,3%); Slovakia – 0,5%  
(0,6%); Moldova – 0,3 % (0,1%)

<sup>1</sup> For details see: [https://ec.europa.eu/growth/sectors/tourism/support-business/digital\\_en](https://ec.europa.eu/growth/sectors/tourism/support-business/digital_en).

<sup>2</sup> Source of the calculations: [https://en.wikipedia.org/wiki/List\\_of\\_European\\_countries\\_by\\_area](https://en.wikipedia.org/wiki/List_of_European_countries_by_area) and [2, p. 8].

Of course, the Ukraine's performance was adversely affected by the annexation of the Crimea and the fighting in the Donbass. However, even if you adjust the data for 2016 by adding the losses noted above (70-80%), you will still see how underused the tourist potential of Ukraine in comparison, for example, with Poland, Hungary and even Belarus. In order to assess the competitive position of the Ukrainian TRS, we compiled the table on the basis of data from The Travel & Tourism Competitiveness Report 2017 of the World Economic Forum [1], where The Travel & Tourism Competitive-

ness Indexes for 136 countries are represented (see Table 2).

In the Table 2 data on the components of this index, calculated for Ukraine, are presented in comparison with the corresponding data of the neighbouring countries, with the exception of Belarus, since it is not represented in the report. Based on the analysis of the indicators of this table, it is possible to identify the directions on which it is necessary to channel efforts aimed at a significant strengthening of the tourism and recreation sector in Ukraine.

Table 2

**Travel & Tourism Competitiveness Index, 2017 by Ukraine and neighbouring countries, score\***

Key components of the index	Ukraine	Hungary	Moldova	Poland	Romania	Slovakia
Business environment	3,7	4,2	3,8	4,5	4,4	4,0
Safety and security	3,5	5,7	5,4	5,7	5,8	5,6
Health and hygiene	6,6	6,6	6,1	6,2	6,1	6,5
Human resources and labour market	4,9	4,7	4,3	4,9	4,4	4,7
ICT readiness	4,2	4,9	4,3	5,1	4,7	5,4
Prioritization of Travel & Tourism	4,3	4,9	3,4	4,1	3,8	4,1
International Openness	2,9	4,2	2,1	4,1	3,9	3,9
Price competitiveness	5,2	4,7	5,4	5,5	4,7	5,0
Environmental sustainability	3,9	4,7	4,1	4,6	4,4	4,8
Air transport infrastructure	2,4	3,0	2,0	2,8	2,4	1,7
Ground and port infrastructure	3,0	4,4	2,5	4,3	2,8	4,2
Tourist service infrastructure	4,0	4,4	2,8	4,2	4,4	4,3
Natural resources	2,3	2,6	1,6	3,0	3,0	3,4
Cultural resources and business travel	2,1	2,3	1,2	2,8	2,3	1,5
<i>Total score / Rank among 136 countries</i>	3,5 / 88	4,1 / 49	3,1 / 117	4,1 / 46	3,8 / 68	3,9 / 59

\* Scores are on a 1-to-7 where 7 is the best score. For detailed definitions, sources, and periods, consult the interactive Country/Economy Profiles and Rankings at: <http://wef.ch/ttcr>

Strengthening and effective usage of potential for tourism and recreation is a significant component of development not only of the whole country but also of a specific region and local destination, as the availability of significant resources in this area and the return on their use make it possible to increase employment and income of the population and to receive significant revenues to the budgets of all levels. Taking in account the current process of power decentralization in Ukraine it is appropriate to shift the centre of gravity in efforts to ensure the development of a sustainable sector of tourism and recreation in the country towards regional and local levels. The recommendations of the Union of Economists of Ukraine [12] and a number of scientific publications suggest effective measures to remove the Ukrainian TRS from the crisis state (see, for example [33 – 40; 43; 46 – 50]). At the same time, it is expedient to add some suggestions on the development of the tou-

rist and recreational sector in Ukraine, taking into account the best experience of the European Union member states.

1. *Improve management and coordination of the development, promotion and implementation of tourism products at the regional level.* It is advisable to establish regional centres that have the competence for tourism development coordinating and implementing activities for the formation of appropriate infrastructure and marketing of the destinations and tourist products of the region as well as representing their interests at various central government agencies and abroad. This centres with a NGO status will join all stakeholders involved in (or affecting on) the regional value chains in the tourist and recreational sector (including: municipalities and regional governments, national parks management agencies, travel agencies, hotel business representatives, chambers of commerce, local food producers networks,

and educational institutions etc). The centres have to be actively involved in the marketing of local destinations and unique tourism products offered by this region for both external and internal tourists. With regard to the external tourists attracting, it is necessary to significantly expand the geographical horizons of marketing, to actively promote tourism products to markets and countries in which a significant growth of the population incomes is projected, for example, on some Asian and African countries where Ukrainian exported commodities and services are represented insufficiently [59]. It is important that all marketing activities of the centres are based on sustainability principles in order to use marketing skills and techniques for environmentally and socially oriented purpose, by understanding market needs, designing more sustainable products and identifying more persuasive methods of communication to bring behavioural change [60, p. 869].

*2. Season expansion for under-utilized regional TRS assets.* The essence of this proposal is the organization of off-season cultural, cognitive and sporting events to extend the tourist season (rehabilitation tourism can also be included in this area of activation of the sector). The implementation of this proposal requires the participation of all stakeholders in the regional tourism value chains, including regional and local administrations of culture and sports, chambers of commerce, local sports associations and teams. The first step in implementing this offer will be the identifying of unused assets and the creative searching for new ways to use them. The next step is to approve with all stakeholders the new direction of using these assets in a wider context. It is also necessary to decide on possible measures to obtain the necessary permits for the implementation of the respective activities (for instance, in national parks). The final stage of preparation for realization of the project of activating tourist and recreational activities during the off-season will be the development and implementation of relevant advertising and marketing plans, which is key to the success of the project.

*3. Improvement of ecotourism and environmental measures in the region.* The proposal is to improve the infrastructure of environmental tourism support and environmental protection measures (hiking, mountaineering, bird and animal monitoring, mountain bike, photo camping, camping, grasshopping, etc.), especially within the existing national parks of the regions. Participation in relevant activities in this area will attract the majority of stakeholders in the chains of the value of the tourist product. The governing bodies of national parks that exist in the regions are needed in this sense to establish and enforce national rules and conditions regarding which activities are allowed in the national park. Entrepreneurs will develop a product, provide services and operate in the open air in accordance with the framework established by the national park, and together with

them receive a portion of their income. The regional authorities should ensure the achievement of mutual agreement between the above-mentioned parties. In addition, the pattern of income distribution between national parks and enterprises that use their assets in joint activities should be reconciled.

*4. Linking local cultural assets with innovative digital tools / programs and creating new business models.* The proposal is to exploit local cultural resources with the use of innovative digital tools and information and computer technology to create new forms or models of doing business in the tourism sector. The proposed promotion will: (a) increase the level of publicity and awareness of the rich cultural heritage of Ukraine and the specific region; (b) promoting cultural tourism and encouraging participation in the creation of added value in this area by a wider range of stakeholders. The following key partners are needed to implement this proposal: regional / local authorities responsible for managing cultural heritage assets; entrepreneurs from various industries, who can use the brand associated with this cultural heritage; representatives of IT companies; social networking experts, social groups / organizations that can support the idea by introducing new forms of social innovation. Management and coordination of realization of this direction of activation of tourism activity (project) can be placed on the centres mentioned in clause 1.

*5. Application of ICT for thematic routes. Development of an innovative tourism program with an emphasis on cultural-historical heritage. Creating an online platform to support personalized travel services.* The idea of the proposal is to establish close cooperation between regional / local government bodies, universities, research centres and business in the process of creating modern ICT-based programs for thematic tourist routes. These measures will help: (a) to improve the capabilities of professional tourist guides, (b) to initiate the implementation of the concept of individual guides based on the interests of specific tourists, and (c) to set up a virtual tour management organization based on a public-private partnership. The following key partners are needed to implement the proposal: government bodies responsible for the development of culture and tourism, universities and academic institutions – to facilitate the resolution of the relevant legal aspects of the organization of thematic routes and access to open data, information sources; the private sector - to take the necessary measures for the current organization and management of the destination route. It should also be borne in mind that for the implementation of this direction guides with advanced skills are required as well as the issues of certification of this activity to be resolved. The implementation of the proposition requires the following steps: a) creating of an appropriate auxiliary structure with the necessary technical equipment - to maintain and up-to-date online plat-

form for personalized travel services; b) brand development of the routes and their promotion; c) collecting market data on demand for routes, analysing them; e) development of route content, with relevant data and auxiliary materials; and f) selecting and training of personnel for the implementation of the routes.

6. *Combining the history of the destinations and its cuisine to diversify the tourist routes.* Development of cooperative tourism projects for communication of localities, history and gastronomy. The idea of the proposal is to develop a gastronomic tourism strategy that will influence the development of tourism in the regions. The main goals of such a strategy are: the association of the history of the area with its specific cuisine or the accumulation of different cuisines (Ukrainian and national minorities); promotion of local dishes related to local legends, recipes, etc., and the combination of the above with famous cooks, local events, etc.; organization of gastronomic competitions in the cities of the region with the corresponding scheme of rewarding participants; development of new and modernization of existing tourist destinations related to agro-food chains of value creation. Various stakeholder groups, including regional authorities / local authorities, representatives of the hotel and restaurant business, producers of local food and wine and alcoholic beverages, research centres (in the field of history, anthropology, gastronomy), local higher education institutions and vocational training centres should participate in the development and implementation of such a strategy. It would be appropriate to establish a regional agreement on the food and beverages quality and price policy of all actors in the agro-food chains to create value in the tourism sector, as well as to strengthen cooperation with neighbouring regions and increase citizens' participation in the creation of co-operative projects for gastronomic tourism. Establishment of regional culinary centres, the main task of which will be to increase the knowledge of tourists and inhabitants about the possibilities of local cuisine, may become a specific organizational measure for the implementation of the above-mentioned strategy.

7. *Improvement of supply chain management system within tourist and recreational clusters.* Due to the lack of a well-established logistics and information system of the TRS in the regions of Ukraine, the promotion of regional tourism products is carried out in a disintegrated communicative environment. Clusters, the creation of which requires modern information provision and management mechanisms throughout the supply chain, as part of the creation of the value of a tourism product, is an important mechanism for the accumulation of tourist resources and their efficient use. This proposal concerns the necessary measures to ensure the sustainability of supply chains of tourist and recreational clusters that have developed or are being formed in the regions of the country.

The management of the chain of tourist services within the framework of regional tourist and recreational clusters involves the integration of the following key business processes: management of relations with consumers through the regional system of integrated marketing communications; informational service for tourists; management of orders execution; support of tourism products formation; monitoring and control of compliance with social and environmental standards in the process of providing tourist and recreational services and assessing the sustainability of the development of a tourist and recreational cluster based on a clear system of measurement the economic, social and environmental performance of the cluster; monitoring of risk factors in the activities of participants of the regional tourist-recreational cluster, development and support of implementation of preventive measures.

The current practice of creating and operating tourist and recreational clusters in the regions of Ukraine confirms the feasibility of introducing a management system aimed at ensuring the sustainability of supply chains in the activities of similar clusters in all regions. At the same time, experience in the formation of such systems in the country is absent, besides, there is a lack of necessary specialists who have knowledge and skills in the development and implementation of such control systems. Therefore, for the implementation of this proposal, it is necessary:

- to study, generalize and disseminate best foreign experience in the management of sustainable supply chains within touristic and recreational clusters, in particular in the European Union;
- to develop appropriate materials on the management of sustainable supply chains within the framework of tourist and recreational clusters and to provide open access to them via the Internet;
- to conduct a series of appropriate training in the regions for representatives of existing tourist and recreational clusters and specialists of regional governments and local self-governments which are responsible for the development of the TRS in the territories subordinated to it;
- to develop and include in regional universities the curricula on the supply chains management in the tourist and recreation cluster.

8. *To introduce a system of development of regional strategies of smart specialization in the regions with the potential for development of tourism and recreational activities.* The central element of the concept of smart specialization, which distinguishes it from the traditional schemes of innovation and industrial policy, is focusing on "entrepreneurial self-identification," which is a process by which entrepreneurs understand, what a particular product, service, or type of activity, can be produced or carried out on the territory with some competitive advantages and, possibly, at a lower cost, than in other regions. This process identifies priority areas of

activity in which the regions can specialize, in particular, measures to improve tourist and recreational infrastructure at the regional and national levels. Such strategies for smart specialization have been developed for the TRS in a number of European regions, in particular: Algarve (Portugal), Andalusia (Spain), Kujawsko-Pomorskie (Poland), Rhône-Alpes (France), Sicily (Italy), East Macedonia and Thrace (Greece) and others.

The European Commission in 2011 created a Platform to support the development of a strategy for smart specialization (S3Platform). This platform aims to help regions and states registered on it to design, implement and evaluate regional strategies for smart specialization, as well as assist regional representatives in identifying high value-added activities that offer the best chance to strengthen their competitiveness. Registration on the P3 platform is open to the regional and national authorities of the EU Member States, candidate countries for accession and the European Union's neighbours. Since 2014, the European Commission has established that European regions can receive funding from the EU Regional Development Fund only if there is a regional strategy for smart specialization registered with the S3 Platform (see: [61; 62]).

Studying the experience of the above-mentioned regions regarding the development of regional strategies for smart specialization with an orientation towards the TRS, as well as the registration of the respective Ukrainian regions on the European Platform to support the development of a strategy for smart specialization, will promote the dissemination of this tool in the practice of strategic management of tourism and recreation sector development in the Ukrainian regions. This will allow the regions to turn to European funds for funding in order to implement specific measures for the development of sustainable tourism and appropriate environmental measures. In addition, the presence of such a strategy in the region is considered as an articulated statement by local authorities and the business communities about the readiness to attract investment in the development of the TRS and provide appropriate preferences for private investors, including foreign ones.

**Conclusions.** For emerging economies as the Ukrainian one, the tourism and recreation sector represents increasingly essential opportunities for economic activity and employment diversification, and can show a strong capacity to compensate for weaker export revenues and taxes collected from stagnated traditional basic industries. However, the sector is still underdeveloped as jobs creator, investment attractor and innovation promoter in Ukraine.

The following suggestions aimed on sustainable tourism and recreation sector development in the Ukrainian regions are proposed in the paper: to improve management and coordination of the development, promotion and implementation of tourism products at the regional level by establishing appropriate regional cen-

tres with relevant competences; to design measures on season expansion for under-utilized regional tourism and recreation sector assets; to develop ecotourism and implement measurement of environmental consequences of TRS activities in a region; to linking local cultural assets with innovative digital tools / programs and creating new business models of tourism, fostering application of ICT for thematic routes and creating an online platform to support personalized travel services; to diversify the tourist routes by promoting new tourists products combined the history of the destinations and its cuisine; to improvement of supply chain management system within tourist and recreational clusters; to introduce a system of development of regional strategies of smart specialization in the regions with the potential for development of tourism and recreational activities.

#### **Topics for further investigating and discussing.**

The proposals contained in the paper are focused mainly on the regional and local level. Some researchers of this topic emphasize the priority of the central authorities regarding the development and implementation of a strategy and policy to support the development of the tourism and recreation sector. The author is in favour of the position that in the current conditions, a partnership between business and authorities at the local and regional levels has to play a crucial role in doing that while central authority has to create the appropriate institutional framework. Several topics are of great importance for further investigating of sustainable tourism and recreation issues. Among them are following that needed to highlight: Indicators and methods for measuring competitiveness and sustainability in tourism and recreation on regional and local levels; The public support of the technologies modernisation in tourism; Technology platforms for knowledge and tourist innovation networks (national and regional); Marketing of sustainable tourism.

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#### **Лях О. В. Формування сучасного сталого сектору туризму і рекреації в Україні**

У статті розглядається концепція сталого туризму на основі огляду літературних джерел, що відображають результати поточних досліджень за даною тематикою. Динаміка розвитку світового



сектору туризму та рекреації (ТРС) та тенденції його оцифрування досліджуються на основі вивчення наявних емпіричних даних та аналітичних звітів. Аналіз ситуації в ТРС України, існуючі проблеми та виявлення шляхів їх подолання, а також забезпечення сталого розвитку сектору, з урахуванням досвіду країн Європейського Союзу, дозволили запропонувати ряд відповідних заходів для забезпечення сталого розвитку туризму та рекреації на регіональному та місцевому рівнях.

*Ключові слова:* туризм, рекреація, сектор, стійкий розвиток, регіональний розвиток, інновації в туризмі, оцифрування, розумна спеціалізація.

#### **Лях А. В. Формирование современного устойчивого сектора туризма и рекреации в Украине**

В статье рассматривается концепция устойчивого туризма на основе обзора литературных источников, отражающих результаты текущих исследований по данной теме. Динамика развития мирового сектора туризма и рекреации (ТРС) и тенденции его оцифровки исследуются на основе изучения имеющихся эмпирических данных и аналитических отчетов. Анализ ситуации в ТРС Украины, существующие проблемы и выявление путей их преодоления, а также обеспечения устойчивого развития сектора,

с учетом опыта стран Европейского Союза, позволили предложить ряд соответствующих мер для обеспечения устойчивого развития туризма и рекреации на региональном и местном уровнях.

*Ключевые слова:* туризм, рекреация, сектор, устойчивое развитие, региональное развитие, инновации в туризме, оцифровка, разумная специализация.

#### **Lyakh O. Formation of the modern sustainable sector of tourism and recreation in Ukraine**

In the paper, the concept of sustainable tourism is explored through a literature review of current research on this topic. The dynamics of the global sector of tourism and recreation (TRS) development and trends of its digitising are investigated based on a study of available empirical data and analytical reports. Analysis of the situation with the TRS in Ukraine, existing problems and identification of ways to overcome them and ensure sustainable development of the sector, taking into account the experience of the European Union countries, made it possible to propose a number of appropriate measures for providing of the sustainable tourism and recreation sector development on regional and local levels.

*Keywords:* tourism, recreation, sector, sustainable development, regional development, innovations in tourism, digitization, smart specialization.

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## THE SPHERE OF EDUCATIONAL SERVICES IN THE CONTEXT OF WORLD GLOBALIZATION

**Formulation of the problem.** The becoming of an independent Ukrainian state inextricably is linked with the formation of a competitive economy based on the introduction of innovations, recognition of the immaterial knowledge of the field and educational services as a source of country's strategic intellectual and human capital.

The start and dynamical growth of the sphere of knowledge comes at the beginning of the third industrial revolution, which began in the middle of the twentieth century and continues nowadays. This period is characterized by such elements of technological progress as complex electrification, mechanization and automation of production, high-quality metallurgy, production of aluminum and plastic products, development of unified transport systems, jet technology, nuclear energy, microbiology, new types of construction and other innovations. In addition to the indicated signs of the third industrial revolution, this period is characterized by qualitative changes in the forms of organization of science and education. Science has become an industry of knowledge with a sharp increase in the level of secondary and higher education, which has created the preconditions for their merger into a single industry with the subsequent formation of the Knowledge Economy (KE) in developed countries, or "knowledge-based economy" [1]. Along with the KE there is a categorical notion of innovation economy (IE). It should be noted that these concepts in scientific research are often counted as interchangeable and identical, which cannot be accepted. Therefore, there should be a clear understanding of the fundamental differences and features of the KE, the first element of which is the inclusion of the education system as the basis for the formation and improvement of the intellectual and human capital of our country.

It is impossible to ensure the organic and sustainable establishment and development of a national KE, without studying the specific features, the emergence of the specifics and the mobile roots of such a global phenomenon. Without understanding that KE is guided by the production, distribution and use of knowledge and information, in the future, our country's economic growth and competitiveness cannot be achieved. The source of these positive changes should be the production of creative innovative ideas, rather than the production of goods. In order to attract these qualities, Ukrainian society should be associated with the harmonious

development of the education system as the main component of the KE.

### **Analysis of problems and recent publications.**

According to the Organization for Economic Cooperation and Development (OECD): "knowledge today is recognized as an engine of labor productivity and economic growth" [2]. It should be noted that the OECD is an international organization that brings together 35 countries of the world, most of them high-income countries and high human capital development index (HCDI) and are considered to be developed. The OECD treaty was signed on December 14, 1960 in Paris, but this treaty came into force on September 30, 1961, based on the European Organization for Economic Cooperation (EOEC) to coordinate the economic policies of the OECD countries and to agree on a program of assistance to developing countries.

Today, this organization unites most countries of the European Union, the United States, Australia, South Korea and Japan. After the collapse of the USSR, Estonia and Latvia joined the organization, and the OECD actively cooperates with countries that are not its members (in particular with Ukraine) within the framework of specialized programs and international events.

Practically, with the beginning of the organization, the theoretical foundations of the economic substantiation of the KE as a social phenomenon and the driving force of the country's economic prosperity began to emerge in the United States.

Historical prerequisites for the necessity of transition to KE are considered by J. Mokyr, who proposed his own approach to the classification of knowledge and researched the scientific and technological progress of mankind with a view to the past [3]. In his studies, J. Mokyr draws attention to the qualitative characteristics of the KE and proves its significance for the economic prosperity of the state system. Like J. Mokir, R. Delbridge connects the development of the intellectual and human capital of a society with institutional changes on the platform of the KE [4].

Consistent stages of the development of the concept of KE, institutional analysis of the formation of this model of the economic structure of society is studied in the work of E.V. Popov. This study outlines the basics for constructing a modern KA concept based on research by F. von Hayek, M. Scheller, F. Machlup, P. Druker, G. Kleiner, B. Milner and others. [5].

The theory of KE was reflected in the scientific research of such famous scientists as F. Machlup [6, 7],

D. Bell [8], V. Inozemtsev [8], Y. Korchagin [1], P. Drucker [9, 10].

The scientific basis for the use of knowledge for the production of economic goods and the role of human capital, a determining factor in the development of the modern economy, are highlighted in the works of modern scientists of domestic scientists: Antonyuk [11, 13, 14], Yu.Z. Drachuk [12], OI Amosha [13], O.F. Novikova [14], V.M. Heyets, V.P. Seminozhenko, B.E. Kvasnyuk [15], Kis S.Ya. [16] and others [22-26]. In these works it is stated: "Given the limited resources in modern economic conditions and the need to find effective mechanisms for compensating for their absence, priority is given to economic activity through processes aimed at increasing the share of intelligence or intellectualization, and the significance of this process increases with the assessment of existing and new possibilities of formation economic strategy of development of domestic enterprises, especially industrial enterprises, taking into account the consequences of economic and social phenomena".

Thus, V.P. Antonyuk remarks that the emergence of the concept of the KE is due to the increasing influence of intellectual capital on the economic development of the states in the macro-economic aspect, transforming it into the primary and driving force of the emergence of a new world economy [11].

The authors of the article [12] note that with limited resources in modern management conditions and the need to find effective mechanisms for compensating for their lack of - the priority place of economic activity are processes aimed at increasing the share of intelligence or intellectualization. Thus, according to the authors, the scientific sphere plays an important role in the functioning of the branches of the economy and society at the current stage of development of the KE in conditions of intensification of globalization and integration processes in the world.

The authors of the monograph "Human capital of the regions of Ukraine in the context of innovation development" of the Institute of Industrial Economics (IEP) of the National Academy of Sciences of Ukraine identified the role of the regions of Ukraine in ensuring the social and innovative development of the state. The monograph also substantiates the proposals for the development of regional innovation systems as the basis for the formation of KE.

It should be noted systematic, substantiated and fundamental researches of the scientific group of the IEP of the National Academy of Sciences of Ukraine concerning the development of theoretical and methodological principles of interdependence between human and sustainable development, the competitiveness of the regions and the Ukrainian state as a whole [14].

In the scientific paper [15] the essence and peculiarities of the knowledge economy in the conditions of accelerated globalization of world, economic and poli-

tical space are considered. The authors substantiate the factors influencing the implementation of KE in Ukraine, based on studying the experience of foreign countries that have chosen the way of KE formation, indicators and indicators for assessing the efficiency of such an economy. Based on existing educational, scientific, and technical potential, the authors substantiate the measures of the state policy, which promote the efficiency of economic transformations and the formation of the national innovation system of Ukraine as the basis of institutional support of the KE.

Kis S.Ya. in their studies shows that KE reveals a new role and place of human intelligence in modern society, when knowledge today is a decisive factor in economic development, an instrument of innovation, competition and economic success. It is emphasized that the main consequence of the growth of intelligence should be considered an increase in the number of tasks that the company's staff carries out using non-standard solutions, new ideas, proposals and other own and involved results of intellectual activity [16]. From the point of view that technology and innovation management is a social process, the development of intellectual potential should be based on the development of the individual of each individual employee, which is related to the following:

- any new introduction, innovations are unique and are the result of individual creativity;
- consumer requirements for the quality of new products are so high that the success of commercialization of innovations is largely ensured by the application of various knowledge;
- The research staff acts as a generator of ideas, his knowledge, skills and abilities, as well as personal qualities, are the initial stimulus for the emergence of innovations;
- creativity of workers requires stimulation and development, as they tend to become the source of innovative ideas, ways of solving problems or making emergency decisions.

Despite the fact that the ability to creativity is more often laid in a person from birth, manifestations of their full potential are possible only in conditions that promote their development and embodiment.

**The purpose of the publication.** To substantiate the necessity of transition of the Ukrainian economy to the KE platform in the conditions of the third industrial revolution and its prospects on the sixth technological path. This research presents a scientific justification for the fact that the first driving force of KEs should be the formation of a qualitative and competitive system of national Ukrainian education in all its possible dimensions – formal, non-formal and informal. In this case, informal education means intentional or conscious education, but not is institutionalized [16]. This form of education is less organized and structured than formal and non-formal education. Informal education can in-

clude educational activities in the family, in the workplace, in the local community and in everyday life on an independent, family or social basis.

**Introducing the main material.** The form of economic structure, based on the production and consumption of high-quality knowledge, it's called "Knowledge Economy". It be should note that the formation of a knowledge-based economy becomes a priority direction of strategic development of the most developed countries of the world, the basis of modernization, which influences the level of programs of national development.

The concept of KE, or the economy, created based on knowledge, is becoming more and more popular all over the world. However, it should be noted that the United States remains the pioneer in creating the KE as the highest stage in the development of a post-industrial economy in combination with an innovative economy. In the territory of Europe, the KE is partly formed, but European countries are pursuing a determined and persistent effort to formulate national economic structures, in which most of the gross domestic product (GDP) is provided by the activities of producing, processing, storing and disseminating information and knowledge.

According to the portal "Encyclopedia of Contemporary Ukraine", KE is an economy in which knowledge is the driving force of progress, is concentrated in human capital, when human are viewed not only as a factor of production (labor) but also as a result. The process of developing such an economy consists in increasing the stock of abilities and the set of human needs [17].

It is possible to agree with this definition in part, but it should be noted that the KE is still determined not only by the specified priorities. According to economic approaches, market relations in the emerging global markets for services, including educational, the concept of KE is changing. Thus, in many scientific sources, an KE means a certain state of the state's economy, characterized by the transition of knowledge into a category of goods, where the product itself becomes a carrier of unique knowledge, and knowledge becomes one of the main factors of production.

Famous Austrian economist Fritz Machlup, who migrated to the United States in 1933 and he was recognized as a lecturer at the Universities of Buffalo, Johns Hopkins and Princeton, in the late 1950s defined the core components of the field of knowledge as human activity [6].

Prof. F. Machlup was not only a well-known theoretician in the field of market organization of production, marginality in microeconomic studies, concepts and multipliers of foreign trade, but also possessed a unique gift in taxonomy. The task of taxonomy is the formation of principles and methods of classification and nomenclature of difficultly organized hierarchical systems. F. Machlup formulated a complex definition, measurement and interpretation of those activities that can be properly described as the production and distri-

bution of knowledge: "Knowledge-production" is any human or anthropogenic activity that is effectively designed to create, modify or confirm in the human consciousness, its own or someone else's, meaningful apperception or awareness that it may be.

F. Machlup, after processing statistical data, determined the amount of American society spending on the knowledge sector as of 1958. He also categorized these costs by product type and identification of major consumers [7]:

1. The total expenditure on the development of the knowledge sector amounted to \$ 136.436 billion, accounting for 29% of the country's GDP.

2. By type of product, this amount falls into five main sectors:

- education – \$ 60.194 billion (44.1%);
- research and development – \$ 10.990 billion (8.1%);
- Mass Media – \$ 38.369 billion (28.1%);
- information technology – \$ 8.922 billion (6.5%);
- Information services – \$ 17.961 billion (13.2%).

3. The second classification of expenses for the development of the knowledge sector identifies its main clients:

- the US government spent \$ 37.968 billion on this appointment (27.8% of the total);
- business – \$ 42.198 billion, or 30.9% of total expenses;
- other consumers – the remaining \$ 56.270 billion (41.3% of the total cost).

The scientist F. Machlup pays special attention to the education sector, as the first and main echelon of the field of knowledge. At that time, he proposed a proper cautious and ingenious sort of statistical data available at that time, based on which he carefully studied the current research of the expected return on investment in human capital.

F. Machlup, being an elite educational policy analyst, noted that additional investments in education could not at once provide higher returns than investments in the country's fixed capital. However, he argued that the quality of education will be improved, its value will be reduced, and profitability will be increased by reducing the school age rating to fourteen years and improving school and university curricula at all levels of educational programs.

The third industrial revolution continued the formation of the fourth and fifth technological structures of the economy and provided the basis for the transition to the sixth technological structure of the post-industrial economy in the developed countries of the world. With the beginning of the 21st century, the US, Switzerland, Sweden, Ireland, the Netherlands, Hungary, Canada, Belgium, Great Britain, and South Korea are actively developing KE and the information society in a globalized world [18]. Today, these countries became the first in the top ten leaders in creating economic wealth based

on GDP, dominated by "knowledge" types of economic activity.

In his work [1] Yu. A. Korchagin conducts a comparative analysis of the second and third scientific and technological revolution in terms of growth and development of human capital. For the second industrial revolution with 2-4 technological structures of the economy, there is a mass vocational education, the growth of the duration and quality of life of people, the creation of scientific and technological centers and organizations, the growth of innovation, the formation of a civil society and democracy in developed countries. These processes contribute to the development of an industrial society with a high productivity of labor.

The third industrial revolution, which formed in the 21st century, has led to the transition of developed countries into the post-industrial economy with the rapid formation of the KE and the information society. At the

same time, the growth of intellectual and human capital contributes to accelerating the development of quality education and innovative business and science based on techno polises, silicone valleys, and replacement of the national wealth of human capital, the creation of the knowledge industry and the high quality of life of society.

Pioneers in the field of the theory and practice of forming the field of knowledge, and in the future KE, systematically, approached its goal – a qualitative change in the economic structure of mankind. Each historical epoch generated its own dominant means of production and the assessment of new knowledge. The main stages of the formation of KE in the XX-XXI centuries should be due to continuous research and the discovery of the following scientists, organizations and their research (Table 1).

Table 1

**The main stages of the formation of the Knowledge Economy [5]**

The author of the study	Country	Content of scientific research	The end of the study year
M. Scheller	Germany	The theory of purposeful acquisition of new knowledge	1924
F. von Hayek (Nobel Prize in Economics)	Austria	Consideration of new knowledge as a factor contributing to significant time savings in the production process	1945
K. Dawson	United Kingdom	Creating the first classification of knowledge	1962
F. Machlup	Austria / USA	The main provisions of the knowledge economy	1966
P. Drucker	Austria / USA	Creation of the theory of knowledge management	1968-1993
Michael Polanie	Hungary / USA/ United Kingdom	Introducing the concepts of explicit and conditional knowledge	1985
I. Nonaka	USA	Creating a theory of knowledge transformation	1995
F. Dretske	USA	Development of the theory of knowledge management	1995
G. B. Kleiner	Russia	Socio-economic aspects of knowledge economy	2004
B.Z. Milner	Russia	The issue of knowledge management	2004
V.V. Glukhov	Russia	Assessment of the production of new knowledge	2005
Headquarters Committee - Unesco	France	Report "To the Knowledge Society"	2005

Here is a brief explanation to the table. 1. The introduction of the idea and the terms "knowledge society" and "knowledge economy" is often attributed to American political scientist R. Lane. In a 1966 publication, he considered a hypothetical model for reducing the value of politics and ideology in an intensive growth of science and education in modern society. However, it should be noted that it is in the works of P. Drucker and the innovative work of F. Machlup that an idea is formed and the concept of the "knowledge economy" is being developed.

Subsequently, by the end of the twentieth century, foreign scholars P. Drucker, M. Polanie, I. Nonaka, A. Dretske projected theoretical aspects of the concept of EAs into applied aspects of the transformation and management of knowledge as a competitive commodity. They also improve and adapt the theory of knowledge management to the practical aspects of the already established dynamic EAs in their countries.

As you can see, only in the beginning of the XXI century problems of the formation of a society of knowledge begin to be considered by scientists in the post-Soviet space. Therefore, a thorough study of the experience of foreign researchers in the field of the peculiarities and advantages of the establishment of the KE is a particularly important driver of accelerating the transformational changes in Ukrainian society.

Table 1 shows no data on Ukrainian scientists who are investigating laws and the dynamics of the growth of KEs within the territory of our independent state, as this issue is discussed above. However, this trend of research is also relatively young for the Ukrainian scientific school.

Did the forecasts of the pioneers come true in the spheres of growth of sprouts of the field of knowledge? Is this the basic foundation for the formation of human capital? To find out this fact, first of all, it is necessary to analyze the complex indicators of the world economic

development, such as the Knowledge Economy Index (KEI) and the Knowledge Index (KI) [19].

The Knowledge Economy Index (KEI) characterizes the level of knowledge-based economy in countries and regions of the world according to the World Bank methodology.

The KEI Complex Indicator Calculation Methodology was developed by the World Bank Group in 2004 under the “Knowledge for Development” (K4D) program to assess countries' ability to create, accept and disseminate knowledge. It is anticipated that this index should be used by states to analyze the problem points in their policies and measure the readiness of the country to move to a knowledge-based model.

The basis for the calculation of the KEI is the “The Knowledge Assessment Methodology” (KAM), proposed by the World Bank, which includes a set of 109 structural and qualitative indicators, which are grouped into four main groups:

1. The index of the Economic and Institutional Regime characterized by the conditions of development of the economy and society as a whole, the economic and legal environment of the country, the quality of regulation, business development and private initiative, the ability of society and its institutions to effectively use existing knowledge and create new knowledge.

2. The index of Education and Human Resources, which assesses the level of education of the population and its persistent skills in the creation, dissemination and use of knowledge through adult literacy indicators, registered students and schoolchildren ratio to the number of people in the corresponding age, as well as a number of other indicators.

3. The index of the innovation system is the level of development of the national innovation system, which includes companies, research centers, universities, professional associations and other organizations that perceive and adapt global knowledge for local needs, as well as create new knowledge and new technologies based on these innovations. This index takes into account the number of scientists working in the

field of research and development (Research & Development – R & D), the number of registered patents, the number and circulation of scientific journals, etc.

4. The Index of Information and Communication Technology (ICT), which assesses the level of information and communication infrastructure development that should promote the effective dissemination and processing of information.

For each group of indicators, countries are rated from 1 to 10 points. The calculation takes into account general economic and social indicators that include indicators for the annual growth of GDP and the Human Development Index (HDI) of the country.

The Knowledge Index (KI) is the average of three of the following indicators - the Education Index, the Index of Innovation and the Information Technology and Communications Index. Are calculated these indicators for each country, group of countries and the world as a whole. The methodology makes it possible to compare individual indicators of different countries, as well as average indicators that characterize groups of countries. The researcher can compare the values of the given index for different groups of objects according to their individual indicators or aggregated indicators.

The World Bank Knowledge Assessment Methodology is an interactive tool for accessing the information system, which allows you to receive dynamic KEI and KI data for one country or group of countries in the format of charts and tables. Currently, under conditions of open access in the database, there are statistics on changes in the world ranking of countries in terms of development and creation of KE in the global market for the period 1995-2012. [20].

Particularly interesting from the perspective of this study is to analyze the data for certain representative sample of complex index KEI. In fig. 1 shows a diagram of the change of the KEI at three reference points for the collection of statistical data for 1995, 2000 and 2012. In the study, 9 countries were selected from 145 countries studied where the KEI: USA, Canada, UK, Sweden, Poland, Romania, Ukraine, Russia and Saudi Arabia.

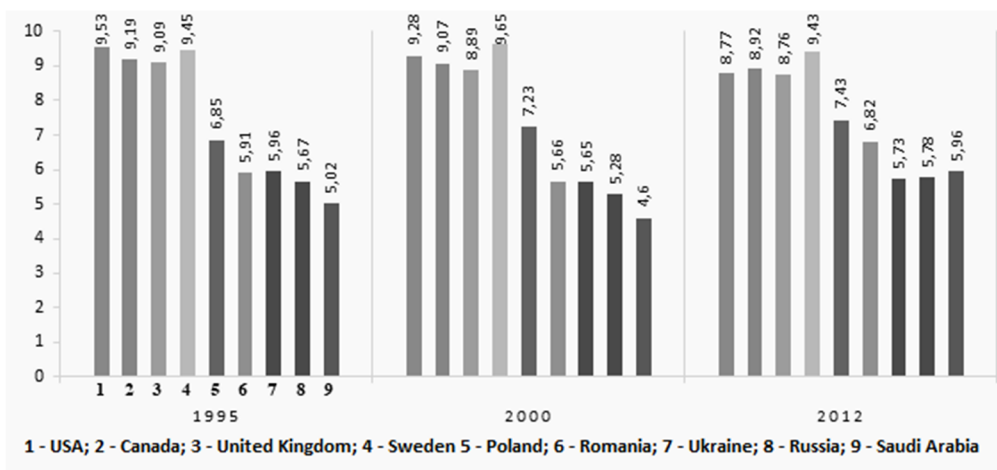


Fig.1 Analysis of the Knowledge Economy Index by the World Bank methodology

As you can see, the high value of the complex index of KEI is in countries with highly developed economic structures. However, at the same time, the United States, Canada, and the United Kingdom are beginning to lag behind in the dynamics of the KEI indicator from Sweden and other European Union countries. This fact confirms the sequence, purposefulness and determination of European leaders to the rapid formation of KE in its national economic space.

In 2005, the United Nations Educational, Scientific and Cultural Organization (UNESCO) published a report "To the Knowledge Society", which outlines knowledge-based contours. Among these contours [21]:

- active development of free access to knowledge;
- public participation in democracy;
- economics based on knowledge;
- creation of networks of knowledge and culture of innovation;

- free access to continuing education and training;
- use of scientific results in all spheres of public life;

- preservation of linguistic and cultural diversity.

Given these social changes, the essence of the information society lies in the fact that human civilization, after the agrarian and industrial stage of development, enters a new stage where information considered is the most valuable resource and its accessibility is the most important moment in this ideology. Information is just a tool of knowledge, when excessive information and its presence do not lead to increased knowledge. In the knowledge society, the most important point is "Learn to Learn," and new information technologies should contribute to the continuous improvement of personal and professional competence. At the same time, new technologies accelerate the creation and dissemination of knowledge everywhere, and education becomes the key value of society and KE.

It should be noted, that as of 2012, the team of the first ten countries - leaders in the IEE ranking, which included: Sweden, Finland, Denmark, the Netherlands, Norway, New Zealand, Canada, Germany, Australia, and Switzerland - qualitatively changed. The United States and the United Kingdom have lost leadership in the top ten leaders of developed KE countries.

They took the thirteenth and fourteenth place. It is a pity to admit, but our state in the period from 1995 to 2012 has passed from 52nd to 56th place according to the World Bank rating - the cost of KEI for our country is 5.73. This fact is even more disturbing for the perspective of the future Ukrainian state, if we analyze the data of the ten leading countries in improving the positions of the World Bank rating (Table 2).

Analysis of Table 2 allows us to conclude that most countries with underdeveloped economic arrangements make significant efforts to create KE. The World Bank and other world institutions are improving tools for monitoring innovation and development of KE in the

world. Ukraine needs urgent acceleration of the process of organic development of all branches of EA, and special attention deserves to increase the efficiency and quality of educational services as the key and main echelon of KE.

Table 2

#### Top ranking of countries with the best dynamics of KEI as of 2012 [20]

Country	Place in the rating (2000) / KEI	Place in the rating (2012) / KEI	Improve your rating
Saudi Arabia	76 / 4.60	50 / 5.96	26
Oman	64 / 5.28	47 / 6.14	17
Macedonia	73 / 4.76	58 / 5.65	15
Azerbaijan	94 / 3.61	79 / 4.56	15
Albania	96 / 3.52	82 / 4.53	14
Algeria	110 / 2.85	96 / 3.79	14
Rwanda	141 / 1.17	127 / 1.83	14
Belarus	70 / 4.89	59 / 5.59	11
Burkina Faso	133 / 1.82	124 / 1.91	9
Romania	53 / 5.66	44 / 6.82	9

**Conclusion.** Education and science are the main theoretical basis and structural factor in ensuring the economic development of the state. The dynamism and level of education are responsible for providing intensive economic growth in the transition to the "new" economy based on knowledge (neo economics) for differentiation between economically developed and developing countries. The quality of education is the main source and decisive factor in such growth. The key to this process is a human potential and, above all, education, competence, creativity of people and the conditions for their implementation.

The knowledge becomes the main source of competitive advantage in the 21st century. At the same time, it is hardly possible to speak about advanced educational attitudes in Ukraine, which is far behind the developed countries for the efficiency of the economy and the standard of living. Most people intellectually grow with education. This growth determined is by the quality of school and university education. The higher they are improved in terms of education, the better they are educated, and even more so their potential and competitiveness. The relatively low competitiveness of Ukraine's labor potential, recorded in the productivity and quality of work, innovation inhibition in most industries indicates significant disadvantages in the work of vocational schools, and above all the higher education.

Thus, in order to form a highly developed KE structure in Ukraine, it is necessary, first, to change the quality of education services sector. The field of educational services is a crucial tool and innovative driver for increasing Ukraine's competitiveness in the context of globalization of processes in the world and the formation of a global knowledge economy with markets and the transfer of innovative technologies.

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### **Сав'юк Л. О. Сфера освітніх послуг у контексті світової глобалізації**

У статті розглянуто історію виникнення, становлення та розвитку економіки знань у контексті глобалізації економічних процесів. Проаналізовано етапи переходу та трансформації галузі освітніх послуг у вирішальну складову економіки знань. Визначено основні сектори сучасної економіки знань та їх структурні та функціональні особливості. На основі комплексного індексу економіки знань, що розраховується методологією Світового банку, проведений аналіз сучасних тенденцій зміни рейтингу країн світу у формуванні національних економік знань. Згідно проведеного аналізу зроблено висновок, що країни із розвиненими економічними укладами продовжують тримати лідерські позиції у рейтингу економічних укладів, заснованих на знаннях. Однак найбільший темп динамічних змін у формуванні економіки знань належить країнам, що розвиваються, та бувшим країнам СРСР. Обґрунтовано необхідність переходу економіки України на платформу економіки знань в умовах третьої промислової революції та її перспектив у шостому технологічному укладі.

*Ключові слова:* сфера освітніх послуг, галузь знань, система вищої освіти, вищий навчальний заклад, конкурентоспроможність, промислова революція, технологічний уклад, економіка знань, індекс, рейтинг.

### **Сав'юк Л. А. Сфера образовательных услуг в контексте мировой глобализации**

В статье рассмотрены история возникновения, становления и развития экономики знаний в контексте глобализации экономических процессов. Проанализированы этапы перехода и трансформации отрасли образовательных услуг в решающую составляющую экономики знаний. Определены основные сектора современной экономики знаний и их структурные и функциональные особенности. На основе комплексного индекса экономики знаний, которая рассчитывается согласно методологии Всемирного банка, проведен анализ современных тен-

денций изменения рейтинга стран мира в формировании национальных экономик знаний. Согласно проведенного анализа сделан вывод, что страны с развитыми экономическими укладами продолжают удерживать лидирующие позиции в рейтинге экономических укладов, основанных на знаниях. Однако наибольший темп динамических изменений в формировании экономики знаний принадлежит развивающимся странам и бывшим странам СССР. Обоснована необходимость перехода экономики Украины на платформу экономики знаний в условиях третьей промышленной революции и ее перспектив в шестом технологическом укладе.

*Ключевые слова:* сфера образовательных услуг, отрасль знаний, система высшего образования, высшее учебное заведение, конкурентоспособность, промышленная революция, технологический уклад, экономика знаний, индекс, рейтинг.

### **Savyuk L. The sphere of educational services in the context of world globalization**

The article deals with the history of the emergence, formation and development of the knowledge economy in the context of the globalization of economic processes. The article analyzes the stages of transition and transformation of the educational services sector into the most important level of the knowledge economy. The main sectors of the economy of modern knowledge and their structural and functional features are defined. Based on the complex economic economy index, which is calculated in accordance with the methodology of the World Bank, an analysis was made of current trends in the ranking of countries in the formation of national knowledge economies. According to the analysis, it is concluded that countries with developed economic structures still occupy a leading position in the ranking of economic structures based on knowledge. However, developing countries and countries of the former USSR have the greatest rate of dynamic changes in the formation of the knowledge economy. The necessity of transition of the Ukrainian economy to the knowledge economy platform under the conditions of the third industrial revolution and its prospects in the sixth technological order is grounded.

*Keywords:* sphere of educational services, branch of knowledge, higher education system, higher educational institution, competitiveness, industrial revolution, technological structure, knowledge economy, index, rating.

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## FISCAL POLICY OF UKRAINE IN CONDITIONS OF DECENTRALIZATION: REVENUE OF LOCAL BUDGETS

The formation and development of The Institute of Local Government in Ukraine, provided with sufficient sources of funding for constitutional powers, determines the need to develop an updated format for relations between the State, local government and taxpayers (business and households).

The main task in the area of development of local government of Ukraine, which is simultaneously a significant problem, is the strengthening of revenue sources of local self-government bodies in Ukraine in order to create economically viable, competitive and self-owner United Territorial Communities (further – UTC).

Modernization of the model of local self-governance, which is a priority of Ukraine's current economic policy, requires the development of balanced, transparent and effective decisions on improving the process of forming the financial resources of UTC.

**Analysis of research and publications.** Methodological foundations, basic approaches, principles, conditions, criteria of decentralization of public administration are disclosed and substantiated in the writings K. Andersson, D. King, A. Larson, R. Musgrave, W. Oates, A. Nygren, R. Crook, A. Sverrisson, G. Hughes, S. Smith, G. Tabellini and other authors.

The issues of state regulation of the economy, in the conditions of changes in the basic principles of state administration, which caused by reformatting relations between the central government and local self-government bodies, are considered to the works of many leading Ukrainian scientists, particular, V. Besedin, T. Bogolip [1], T. Bondaruk [2], Z. Varnaliy, V. Vishnevsky, N. Deyeva [3], I. Luninf [4], V. Lyashenko, V. Oparin, V. Symonenko, V. Stolyarov and others. The writings of these authors discuss theoretical issues and provide practical recommendations on the field of public finance management, including the tax system.

**Topicality.** The basic principles, principles, and criteria, as well as the proportions, forms, and mechanism of accumulation of financial resources at different levels of government, are of particular importance in the process of transforming the relationship between the central level of government and local jurisdictions. Because any innovation in public administration needs financial support at all stages of their development, implementation, and administration. Accordingly, they require theoretical substantiation and the main vectors of

the transformation of the income base of local self-government, oriented on the formation of budgets of local self-government bodies of Ukraine, capable of providing accelerated regional development in all spheres of economic and other activities.

**The goal of the research.** The purpose of this publication is to identify certain areas of further improvement of the fiscal legislation of Ukraine on the basis of generalization of theoretical and methodological principles of decentralization of public administration, world experience in the formation of a resource base of jurisdictions of local importance, and subsequent revision of certain significant norms of accumulation of financial resources at all levels of the budgetary system of Ukraine .

**Presenting of the main material.** The issues of developing an effective multilevel budget system are crucial for any country in the world. However, in spite of the possibility of introducing a number of basic principles, conditions and criteria for the formation of inter-governmental fiscal relations, an ideal model of relations between the central level and local jurisdictions do not exist in practice. This is due to the diversity of public administration systems used in many countries around the world.

The basic principles and criteria of inter-budgetary relations are disclosed in the works of D. King [5], R. Musgrave [6] and W. Oates [7]. Many studies have shown that decentralization can lead to some improvement in the provision of public services by bringing the public closer to the decision-making process, thus enhancing the capacity of the governing bodies through the harmonization of voters' preferences in of the distribution of public resources [8]. At the same time, it is noted that decentralization in some - to the deterioration of the quality of service provision, the growth of corruption, destabilization of the macroeconomic situation and inhibition of economic growth.

Several types of research have argued that decentralization contributes to the fact that governments will take of the needs of residents in their territories [9-12]. Other researchers take to argue that decentralization is a complex and ambiguous phenomenon, but ultimately, positively affects the welfare of the local population [13].

It is noted that the results of decentralization will depend on the wider context, the format and extent of

the transformations, and the quality of public management. Decentralization contributes to reducing the level of regional inequality, reducing central level expenditures on the maintenance and development of infrastructure, road management, in particular, reducing corruption and improving the quality of democratic governance, both in large cities and in small municipalities.

Other researchers highlight the negative aspects of decentralization. For example, the introduction of participatory mechanisms in some Asian and Latin American countries has led to new forms of Corruptive rents at the local level, rather than a more transparent and equitable distribution of public resources as envisaged by the developers of the relevant state policy.

Critics of decentralization argue that local authorities are too corrupt and lacking technical, human and financial resources to provide a wide range of diverse community services that meet local needs. The propensity to wastefully, including the conduct of questionable economic experiments, may jeopardize macroeconomic stability [14-15].

The peculiarities of the formation of budgets of local government are determined by the model of the state system. In world practice, several such models are used. The Anglo-Saxon model, built in the UK, has been adopted in the United States, Canada, India, Australia and other federal states. The model is characterized by a high degree of autonomy of local self-government. In the countries of continental Europe (France, Italy, Spain) and in most countries of Latin America, the Middle East, a model that combines local self-government with local state administrations and is characterized by certain limitations of autonomy of local self-government. [16, p. 23-25].

Most of the countries use mixed models. But the overall global trend for the development of public administration models is aimed at optimizing the work of local self-government bodies on the basis of increasing their autonomy. The choice of a model of intergovernmental regulation is a rather complicated issue for each state. There are different approaches to classifying countries by types of intergovernmental regulation models. The most widespread classification is the similarity of intergovernmental regulation and the correlation between the role of central and subnational governance [17].

For example, in the Nordic countries (Denmark, Norway, Finland, Sweden), in which GDP per capita varies within 50-70 thousand US dollars. The United States, local self-government bodies play a significant role in financing social expenditures. Half of the total budget expenditure of these countries, or 25 to 35% of GDP, is financed from local budgets. At the same time, these countries are characterized by the largest share of financial support for the powers of local self-government bodies at the expense of taxes that remain at the disposal of local governance.

Instead, public administration systems in Austria, Germany, and Switzerland are characterized by the significant autonomy of budgets of different levels on the basis of their active cooperation. The share of local expenditure in total expenditures in these countries varies between 17-20% or 7-8% of GDP. But, in terms of providing local government functions at the expense of their own tax revenues, in Austria, they account for up to 20% of local expenditures, in Germany – up to 35%, and in Switzerland – more than 60%.

Other European countries, in particular, Belgium, Portugal, Spain, Italy, and France, whose GDP per capita is significantly lower than in other EU countries, at the level of 20 thousand dollars. The US maintains the dependence of local budgets on the central level budget. The share of local expenditure in total expenditures in these countries ranges from 20 to 50%, or from 6 to 15% of GDP. On average, from one-third to half of the budget expenditures of local governments in these countries is financed through local tax revenues.

The significance of local governments in industrialized countries is determined by comparing two indicators: the share of consolidated expenditures and the percentage of local expenditures to GDP. Table 1 presents statistical data on the relative weight of budgetary indicators of different levels of GDP in the context of individual European Union (EU) countries.

On average, in the EU countries, local authorities redistribute at the level of 10-11% of GDP by financing their own functions and powers. However, in the context of the EU, there are significant differences in the ratio of the share of expenditures of local governments in total expenditures and GDP. In both indicators, the Scandinavian countries (Denmark, Sweden, Finland) are leaders. The local governance of Denmark allocates more than 60% of all expenditures, accounting for more than 30% of GDP. They are followed by Italy, France, Germany and other countries - old members of the EU. In these countries, the share of local government budget expenditures in GDP fluctuates within 10%, or at the level of 25-30% of total government expenditures over the relevant period. Close this list Malta, Ireland, Greece, Cyprus.

At the same time, the potential of economic growth of jurisdiction, its competitiveness and attractiveness for placing investments can be characterized by the base of revenue, the proportions of distribution of financial resources between levels of the budget system.

Some researchers note that in the unitary countries, the level of centralization of budgetary funds is higher. Instead, a higher degree of decentralization is observed in federal countries, in particular in the United States and Canada. Much of the money in these countries is accumulated in the budgets of social insurance funds, local budgets and budgets of Federation members [18].

**Budget Indicators (Expenditure and Tax Revenues) on the governance levels in individual countries The European Union in 2015**

Country	GDP		Share of expenditures in GDP, %		Share of expenditures of local budgets in total expenditures, %	Share of tax revenues in GDP, %	
	Total, billion dollars USA	Per capita, USD USA	Total budget	Local budgets		Total budget	Local budgets
<b>Austria</b>	374	43724	51,6	8,6	16,7	43	1,4
<b>Belgium</b>	455	40106	53,9	7,2	13,4	44,7	2,1
<b>Denmark</b>	295	52114	54,8	34,9	63,7	50,9	12,6
<b>Spain</b>	1200	25864	43,8	6	13,7	33,2	3,3
<b>Italy</b>	1816	29866	50,4	14,5	28,8	43,6	6,9
<b>Germany</b>	3358	40996	44,0	7,8	17,7	36,1	2,5
<b>Norway</b>	389	74822	48,8	16,1	33,0	39,1	5,4
<b>Portugal</b>	199	19121	48,4	5,9	12,2	34,4	2,5
<b>Finland</b>	230	41973	57,7	23,6	40,9	43,9	10,3
<b>France</b>	2422	37675	57,0	11,4	20,0	45,2	5,9
<b>Switzerland</b>	665	80675	33,9	7,1	20,9	26,6	4
<b>Sweden</b>	493	49866	50,3	25	49,7	42,7	15,8

*Source:* Compiled by the author according to: 1) Eurostat. URL: <http://appsso.eurostat.ec.europa.eu/nui/setupDownloads.do>; 2) OECD / Revenue Statistics - OECD countries: 3) Comparative tables. URL: <https://stats.oecd.org/Index.aspx?DataSetCode=REV>; 3) IMF / World Economic Outlook Database-April 2016, International Monetary Fund. Accessed on 12 April 2016.

In the EU, on average, the central government redistributes 22-24% of GDP; The state government (Land, Canton) – 4-5% of GDP, local government at 12% of GDP, and social funds – 14-16% of GDP [19]. In general, the EU has a tendency to strengthen the role of local government in terms of redeployment of GDP with the simultaneous growth of their socioeconomic significance [20].

In Ukraine, according to the statistics of the International Monetary Fund [21], GDP per capita is estimated at 2 thousand dollars. USA. Bodies of local self-government finance at the level of 35-40% (12-14% of GDP) of aggregate consolidated budget expenditures. That is, taking into account that in Ukraine through the budget system, on average, 32-34% of GDP is distributed (without taking into account the Pension and other social funds), then an average of one Ukrainian citizen per year is at the level of 300-350 USD. USA financing of public services from the budgets of local self-government bodies of Ukraine. The rest, up to \$ 500 The United States is from the State Budget of Ukraine, half of which is intended to finance of local self-government bodies in the form of official transfers.

Due to taxes in Ukraine, only one-third of local authorities' powers are funded. The remaining financial needs of local government, mainly of a social nature (education, health care), is provided by a system of intergovernmental transfers in the form of subventions, special grants from the State Budget of Ukraine. The dynamics of revenue of local government, their structure, as well as the share of GDP are presented in Table 2.

Following the last reform of the intergovernmental fiscal relations in 2014 [22] The tendency to reduce the share of own tax revenues in financing expenditures at the local level has been observed in Ukraine. If in 2005-2010 the share of tax revenues of local budgets fluctuated at the level of 42-44%, then by the end of 2015, it declined to 33% or almost a quarter. However, in 2016, it was planned to increase funding for local expenditures at the expense of tax revenues of up to 40%. Similar tendencies are also noted in the structure of tax revenues of the consolidated budget of Ukraine. The share of tax revenues of the State Budget of Ukraine has a steady tendency to increase (from 75% in 2005 to 80% in 2015-2016).

As for the share of total revenues of local budgets of Ukraine in GDP, including tax revenues, the share of the first has a steady upward trend. Thus, in the interval (2005-2016), the share of total revenues of local governments of Ukraine in GDP relative to tax revenues to local budgets of Ukraine is outpacing: the share of tax revenues in GDP remained almost unchanged against the background of growth of aggregate local incomes in the amount of 3% of GDP, or 25%, from 12.2% of GDP in 2005 to 15.2% of GDP in 2016.

In Ukraine, the most important source of budget revenues of local government is traditionally the tax on personal incomes. More than half of the tax revenues of local budgets and a quarter of total revenues of local self-government bodies are formed at the expense of this source of revenue. However, statistical data indicate a tendency towards its reduction in the total revenues of local budgets of Ukraine. If in 2005 the share of personal

income tax in the total budget revenues was 30% (3.7% of GDP), then by 2016 only 21.8% (3.3% of GDP) is expected. An additional financial resource of local self-

government bodies was the share of corporate profit tax, with 10% of deductions remaining at the disposal of local authorities in Ukraine.

Table 2.

**The dynamics of budget revenues of local government of Ukraine  
for 2005-2016, million UAH**

	2005	2010	2012	2013	2014	2015	2016
<b>Total (excluding transfers).</b>	<b>30316</b>	<b>80516</b>	<b>100814</b>	<b>105171</b>	<b>101101</b>	<b>120480</b>	<b>152743</b>
Tax Revenues	23589	67576	85852	91191	87334	98218	131066
<i>Tax and duty on personal income</i>	<i>16487</i>	<i>51029</i>	<i>61066</i>	<i>64586</i>	<i>62557</i>	<i>54921</i>	<i>74689</i>
<i>Tax of Corporate profit</i>	<i>192</i>	<i>390</i>	<i>443</i>	<i>675</i>	<i>260</i>	<i>4277</i>	<i>4638</i>
<i>Excise tax</i>						<i>7685</i>	<i>10505</i>
Nontax Revenues	3542	8769	12636	12128	12258	20148	18999
Oter Revenues	3186	4171	2326	1852	1510	2114	2678
<b>Transferts</b>	<b>23358</b>	<b>78881</b>	<b>124460</b>	<b>115848</b>	<b>130601</b>	<b>173980</b>	<b>189543</b>
<b>Total</b>	<b>53660</b>	<b>159397</b>	<b>225274</b>	<b>221019</b>	<b>231702</b>	<b>294460</b>	<b>342286</b>
<b>GDP</b>	<b>441452</b>	<b>1120585</b>	<b>1459096</b>	<b>1522657</b>	<b>1586915</b>	<b>1979458</b>	<b>2262800</b>

**Structure of Revenues of Local Budgets of Ukraine, %**

<b>Total (excluding transfers).</b>	<b>56,5</b>	<b>50,5</b>	<b>44,8</b>	<b>47,6</b>	<b>43,6</b>	<b>40,9</b>	<b>44,6</b>
Tax Revenues	44,0	42,4	38,1	41,3	37,7	33,4	38,3
<i>Tax and duty on personal income</i>	<i>30,7</i>	<i>32,0</i>	<i>27,1</i>	<i>29,2</i>	<i>27,0</i>	<i>18,7</i>	<i>21,8</i>
<i>Tax of Corporate profit</i>	<i>0,4</i>	<i>0,2</i>	<i>0,2</i>	<i>0,3</i>	<i>0,1</i>	<i>1,5</i>	<i>1,4</i>
<i>Excise tax</i>	<i>0,0</i>	<i>0,0</i>	<i>0,0</i>	<i>0,0</i>	<i>0,0</i>	<i>2,6</i>	<i>3,1</i>
Nontax Revenues	6,6	5,5	5,6	5,5	5,3	6,8	5,6
Oter Revenues	5,9	2,6	1,0	0,8	0,7	0,7	0,8
<b>Transferts</b>	<b>43,5</b>	<b>49,5</b>	<b>55,2</b>	<b>52,4</b>	<b>56,4</b>	<b>59,1</b>	<b>55,4</b>
<b>Разом</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>

**Share of Revenues of Local Budgets of Ukraine in GDP, %**

<b>Total (excluding transfers).</b>	<b>6,9</b>	<b>7,2</b>	<b>6,9</b>	<b>6,9</b>	<b>6,4</b>	<b>6,1</b>	<b>6,8</b>
Tax Revenues	5,3	6,0	5,9	6,0	5,5	5,0	5,8
<i>Tax and duty on personal income</i>	<i>3,7</i>	<i>4,6</i>	<i>4,2</i>	<i>4,2</i>	<i>3,9</i>	<i>2,8</i>	<i>3,3</i>
<i>Tax of Corporate profit</i>	<i>0,0</i>	<i>0,0</i>	<i>0,0</i>	<i>0,0</i>	<i>0,0</i>	<i>0,2</i>	<i>0,2</i>
<i>Excise tax</i>	<i>0,0</i>	<i>0,0</i>	<i>0,0</i>	<i>0,0</i>	<i>0,0</i>	<i>0,4</i>	<i>0,5</i>
Nontax Revenues	0,8	0,8	0,9	0,8	0,8	1,0	0,8
Oter Revenues	0,7	0,4	0,2	0,1	0,1	0,1	0,1
<b>Transferts</b>	<b>5,3</b>	<b>7,0</b>	<b>8,5</b>	<b>7,6</b>	<b>8,2</b>	<b>8,8</b>	<b>8,4</b>
<b>Total</b>	<b>12,2</b>	<b>14,2</b>	<b>15,4</b>	<b>14,5</b>	<b>14,6</b>	<b>14,9</b>	<b>15,1</b>

Source: compiled by the author according to the State Treasury Service of Ukraine. - Electronic resource. - 2016. - [access mode]: <http://www.treasury.gov.ua/>.

However, in conditions of instability of the domestic economic situation in Ukraine, characterized by a decrease in volumes and reorientation of national production, job losses and real incomes due to unfavorable external conditions, as well as the global trend towards a reduction in corporate income tax, in other unchanged circumstances, it is difficult to expect the transformation of these sources of income from local budgets into a powerful financial lever of regional development.

The share of the ad valorem component of the excise tax that has been introduced since 2015 is gradually increasing. This is due to the low elasticity of demand for excisable goods, their stable, relatively uniform consumption within the territory of Ukraine, as well as inflationary processes.

Attention is drawn to the gradual increase of the revenue part of the budgets of local government by increasing official transfers in the financing of the local

government of Ukraine. The share of the subsidy article of sources of financing of the powers of local self-government bodies of Ukraine in GDP since 2005 has grown more than 1.5 times (from 5.3% of GDP in 2005 to 7% of GDP in 2010 and 8.8% Of GDP in 2015-2016), while the share of own revenue sources in GDP remained virtually unchanged, within 7% of GDP.

In view of the above, it is appropriate to highlight the tendency towards a gradual reduction of the capacity of local self-government bodies to fund delegated and powers at the expense of their own sources and tax revenues in particular. Instead, there is a growing burden on the State Budget of Ukraine in terms of financial support for local government. Among the explanations of such negative trends regarding the development of the income base of local government in Ukraine, which complicate the formation and implementation of the State Budget of Ukraine, may be unfavorable external conditions, which causes the unsatisfactory dynamics of key indicators of key economic activities. This, in turn, negatively affects the stability of the exchange rate of the national currency, stimulates the unwinding of the inflationary spiral, as well as causes an increase in unemployment and a reduction in the sphere of material production.

Among the internal factors should be the imperfection of fiscal planning, which is acutely manifested in the process of reformatting the Government and local budgets through the creation of UTC. At the same time, according to information from the Ministry of Regional Development, Construction and Housing of Ukraine in 2016, almost 400 UTC were created in Ukraine, which generated more than 40 billion hryvnias. Additional income. And from the State Budget of Ukraine in 2016 the budgets of UTC have transferred to UAH 3.5 bln. Intergovernmental transfers (basic grant, educational subvention, medical subvention, other subventions, and grants). For 2017, UAH 9.6 billion is foreseen. Consequently, it is planned to increase the financial possibilities of OTGs in the future due to targeted transfers from the State Budget of Ukraine without paying due attention to the development of their own revenue base of local authorities in Ukraine.

Compared to the EU member states and the OECD [23], Ukraine is ranked average in terms of the share of tax revenues from the state and local budgets in GDP. Starting from 2010 there has been a tendency to increase the tax burden on the economy due to taxes on consumption (value added tax and excise tax), which is credited to the State Budget of Ukraine. Significantly, more than doubled, the share of corporate income tax in the consolidated budget revenues of Ukraine decreased. Consequently, with the adoption of the Tax Code of Ukraine in 2010, there was a tendency to shift the tax burden to end users, that is, the broad segments of the population, while reducing the tax burden on capital [24-25]. At the same time, in the context of the current economic situa-

tion in Ukraine characterized by lower real incomes and narrowing of the space for small business entrepreneurship, the main directions of short- and medium-term tax policy should be somewhat refined with an emphasis on the expansion of their own Revenue base of local level administrations.

**Conclusions and suggestions.** The mentioned conclusions and observations provide an opportunity to formulate separate directions of tax legislation reform on the basis of balancing the interests of the state, local governments and taxpayers with regard to stabilizing the economic situation, as well as promoting sustainable development of the economic system of Ukraine.

Guided by the above, it is expedient to gradually shift the tax burden from mobile factors of production (capital and labor) to non-mobile (land, natural resources), as well as consumption of certain types of goods whose production is harmful to the environment (or consumption of which is harmful to health Rights), in combination with increased efficiency of tax administration and stimulation of investment activity, including by improving the standards of tax depreciation.

It is advisable to gradually increase the share of corporate profit tax retained at the disposal of local government of Ukraine, as well as take measures to improve depreciation policy, turning it into a powerful tool for attracting investment, especially high-tech. This, among other things, will help reduce the arrears (tax debt) on payment of national taxes, corporate income tax in particular, as well as stimulate the interest of local government of Ukraine in the development of production in their own territories, since tax revenue from taxation of profits of enterprises will remain at their disposal.

As for the excise tax, it should be noted that its main tax-payers are producers and importers of excisable goods. However, the production and customs clearance of excisable products in Ukraine are unevenly different from their consumption. Reducing the specific rates of excise duty paid by producers (importers) of excisable products with the simultaneous increase of the ad valorem component remaining at the disposal of local governments will strengthen the financial potential of local authorities in Ukraine.

Separately, attention should be paid to the need to implement specific measures aimed at increasing the number of UTC that demonstrate an excellent result in terms of managing their own resources, based on the wider use of performance indicators in the UTC budget, to reflect the objectives and results of public expenditure programs. To this end, it is advisable to implement medium-term programs for improving the quality of public finance management in Ukraine and UTC based on the assessment and monitoring of the UTC tax capacity, taking into account the introduction of transparent incentives for increasing the UTC own revenues base.

Accordingly, among the perspective of researches aimed at developing and substantiating recommendations for adjustments and clarifications of certain tax policy vectors in the context of decentralization of public administration in Ukraine, one should highlight developments aimed at improving depreciation and excise policy, the mechanism for calculating the income tax of individuals, as well as special Tax regimes that will enable businesses to intensify in depressed regions based on their needs in the workplace and investment resources based on observance of the principles of distributive justice tax burden.

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**Островецький В. І. Бюджетно-податкова політика України в умовах децентралізації: доходи місцевих бюджетів.**

У статті аналізуються основні тенденції процесу децентралізації державного управління, а також світовий досвід і вітчизняна практика формування доходів бюджетів різного рівня. Рекомендації та пропозиції щодо удосконалення механізму формування доходів бюджетів органів місцевого самоврядування, у тому числі, за рахунок удосконалення податкової амортизації, оподаткування доходів фізичних осіб та споживання підакцизних товарів обґрунтовано з урахуванням потреби щодо збалансування інтересів Держави, органів місцевого самоврядування та платників податків.

*Ключові слова:* органи місцевого самоуправління, децентралізація, доходи місцевих бюджетів, податки, регіональний розвиток.

**Островецкий В. И. Бюджетно-налоговая политика Украины в условиях децентрализации: доходы местных бюджетов**

В статье анализируются основные тенденции процесса децентрализации государственного управ-

ления, а также мировой опыт и отечественная практика формирования доходов бюджетов разного уровня. Рекомендации и предложения по совершенствованию механизма формирования доходов бюджетов органов местного самоуправления, в том числе, за счет совершенствования налоговой амортизации, налогообложения доходов физических лиц и потребления подакцизных товаров обоснованы с учетом потребности сбалансированности интересов государства, органов местного самоуправления и налогоплательщиков.

*Ключевые слова:* органы местного самоуправления, децентрализация, доходы местных бюджетов, налоги, региональное развитие.

**Ostrovetskyy V. Fiscal policy of Ukraine in conditions of decentralization: revenue of local budgets**

The article is considered the main trends of government decentralization process, as well as international experience and domestic practice of forming different level of budget revenues. Recommendations and proposals for improving the mechanism of formation of revenue of budgets of local governments, including by improving tax depreciation, taxation of individuals' income and consumption of excisable goods is suggested with account the needs of balanced interests of the state, local governments and taxpayers.

*Keywords:* local government, decentralization, local budget revenues, taxes, regional development.

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## COMMERCIAL BANKS AS A MECHANISM AGAINST FINANCING TERRORISM

In the process of globalization, the need to block financial flows to terrorist organizations is becoming more and more tangible. The fight against terrorist financing is becoming a national and supranational priority, and credit institutions are among the main mechanisms for committing such crimes, and are therefore covered by numerous regulations and institutions concerning their role in controlling and preventing them. The purpose of this study is to outline the commercial banks' place in terrorist financing processes by presenting their inherent characteristics within the scope of the Special Act on Measures Against Financing of Terrorism.

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Pursuant to the Law on Credit Institutions<sup>1</sup>, the Bank makes public borrowing or other repayable funds and provides loans or other funding at its own expense and at its own risk, which is sufficient to justify the suitability of an adequate risk management in the security sphere of the credit institution itself; of the interests of its clients. In this respect, commercial banks can be defined as institutions with a significant role in the socio-economic life of each country, their financial stability and effective management are among the main prerequisites for competitiveness and market growth, and their absence leads to a number of risks, including legal, operational and reputational ones.

In view of the issue under consideration, the activities of credit institutions, the implementation of related legislation, internal policies and work procedures are subject to constant monitoring due to the potential for them to be used for the purpose of criminalization in the Criminal Code - financing terrorism, which could also be a prerequisite for the eventual occurrence of risky situations. In addition, it is precisely the specific activity of credit institutions that the special legal framework – Law on Measures against Financing of Terrorism (LMFT) obliges them to regulate the measures for prevention against the said crime.

For the purposes of this paper, the "terrorist financing" category is under analysis. As an activity in the Criminal Code<sup>2</sup>, terrorism is associated with a crime related to the illegal use or the danger of using force or

violence by a person or organized group against people or property with the intention of exerting coercion or threat against the public or state organs - for example for ideological or political reasons. In the legal framework, "terrorist financing" relates to the "direct or indirect, unlawful and deliberate provision and/or collection of funds and other financial assets or economic resources and / or the provision of financial services with the intention of being used or conscious that they will be used wholly or partly for terrorism within the meaning of the Penal Code"<sup>3</sup>.

With a view to protecting the international financial system, the Financial Action Task Force against Money Laundering (FATF), as an organization that sets standards in countering money laundering and terrorist financing, formulates special recommendations to prevent terrorist financing focusing on key mechanisms used by terrorist organizations to transfer capital: money transfers, electronic transfers and non-profit legal entities. In addition, the special law applicable in a national aspect (LMFT), which aims to "Prevent and Disclose the Action of Individuals, Legal Entities, Groups and Organizations Focused on the Financing of Terrorism"<sup>4</sup>, indicates measures in respect of the persons liable, ch. commercial banks to counteract this type of crime as follows<sup>5</sup>:

- Customer Identification, Verification and Verification of Compliance with Restriction Lists;
- Implementation of additional identification and verification measures, follow-up on the basis of risk assessment;
- Blocking of cash, financial assets or other property;
- Prohibition to provide financial services, cash, financial assets or other property;
- Reporting in case of doubt or when implementing a measure under the LMFT.

In the relationships with their clients, credit institutions are obliged to apply the legal measures in cases where the participants in the operation (the account owner, the beneficiary) are from countries known to support terrorist activities and organizations. Charities, non-profit legal entities, companies with no real activity, and others without legal cause are often used for the pur-

<sup>1</sup> See Art. 2, para. 1 of the Credit Institutions Act (last amended SG No. 63 of 04.08.2017).

<sup>2</sup> See Art. 108a of the Penal Code (last amended SG 54 of 05.07.2017).

<sup>3</sup> See § 1, item 3 of the Supplementary Provision of the Act on Measures Against the Financing of Terrorism (last amended 01.01.2017).

<sup>4</sup> See Art. 2 of the Act on Measures Against the Financing of Terrorism (last amended 01.01.2017).

<sup>5</sup> See Art. 3, para. 1 of the Act on Measures Against the Financing of Terrorism (last amended 01.01.2017).

pose of terrorist financing. The law also includes cases where there is no comprehensive information about the parties and the reason for the operation, operations and transactions are executed without the presence of the client or using new technical means, etc.

When establishing the appropriate prerequisites for terrorist financing operations carried out through commercial banks, the blocking of all cash, financial assets and other property - property of the persons listed in the restriction lists (see Article 5 of the LMFT) ) irrespective of the place of their possession, as well as any cash, financial assets and other property held in possession of, held or controlled by the persons listed. Immediately blocking the funds of persons in full compliance with the EU's restrictive lists for the implementation of UN resolutions (Resolution 1267/2000 et seq.) And under the relevant EU acts as well as funds or other assets wholly or jointly owned or controlled, directly or indirectly, by persons on lists, terrorists, terrorist financing or terrorist organizations and others that are generated by the above mentioned funds or assets.

The above-mentioned essential features and normative justification of terrorist financing processes are sufficient grounds for each commercial bank to set up in its structure a specialized service for controlling and preventing the financing of terrorism to organize and control the implementation of the legal measures<sup>1</sup>. Consequently, in performing its core business, each commercial bank should monitor and prevent terrorist financing processes in accordance with national law and relevant international regulations and best practices by developing its own policy of prevention measures against use of the bank for the above purposes.

As an initial measure to prevent the use of the bank to finance terrorism, the processes of identification and assessment of bank customers, as well as those related to the monitoring of banking operations and the definition of some of them as suspect by Chief Operating Officer, ie the existing risk, are complex and require an adequate material base at the disposal of the bank, incl. specialized software applications, time resource, expert potential. The main goal is to "block" the relationship between credit institutions and criminals.

On the basis of the regulated and applicable in the banking practice measures against the financing of terrorism, each credit institution should write an internal policy, rules and procedures to prevent its use for the purpose of financing terrorism. In this connection and in view of the above analysis, the following may be formulated as exemplary principles:

- The Bank should not engage in relationships with persons who are known to have been convicted or charged with crimes such as terrorist financing;

- The Bank should not engage in any relationship with individuals, legal entities and groups believed to be related to criminal activities, members of criminal or terrorist organizations, or that they support politically or fund such organizations;

- The Bank must not open or operate anonymous accounts and accounts of fictitious names, perform fictitious transactions and transactions, and accept funds and property suspected of being acquired through or in connection with a crime or will be used to fund such.

Commercial banks should not enter into relationships and do not provide financial services, funds, financial assets and other property to the persons included in the list of natural persons, legal persons, groups and organizations to which the measures under the LMFT apply. In the event that a person included in the above list is a client of the bank, his funds, financial assets and other property are blocked. Payments and other dispositions with the blocked accounts, cash and financial assets are made with the permission of the Minister of Finance. In addition, when there are suspicions that certain operations or transactions are directed to the financing of terrorism, bank officers are required to immediately notify the specialized internal intelligence service for the control and prevention of money laundering and terrorist financing of all additional facts and circumstances famous. In the event of a suspicion of terrorist financing, the Bank shall notify the Ministry of Interior and the State Agency "National Security" (Article 9a of the LMFT). In addition, the Bank shall report immediately any significant suspicions of terrorist financing that are likely to have a significant reputation for the Bank or its financial position, such as cases involving senior government officials or amounts over the statutory certain dimensions.

The following report analyzes the SANS controlling activity of credit institutions in the field of "terrorist financing" on the basis of historical data publicly disclosed through annual reporting documents. Realizing its core business, incl. falling under the scope of the LMFT, commercial banks are subject to constant monitoring and control by the specialized administrative directorate "Financial Intelligence" of SANS, which has neither operational functions nor criminal detection functions but has a legal basis for collecting information without any limitation of banking, professional, professional or other secrecy as an intermediary unit for accelerating and facilitating the exchange of information between financial and law enforcement systems.

Based on the applicable legal norms, among the main functions performed by the Directorate, incl. and in respect of commercial banks<sup>2</sup>:

<sup>1</sup> See Art. 1 of the Law on Measures against Money Laundering (last amended 01.01.2017)

<sup>2</sup> See more art. 32e of the Regulations for Implementation of the State Agency for National Security Act (adopted with Decree of the Council of Ministers No 23 of 11.02.2008, promulgated in State Gazette, issue 17 of February 19, 2008, amended and supplemented SG .63 of 12 August 2016, SG No. 66 of 23 August 2016

- Organizing and conducting seminars, workshops and other forms of training related to the implementation of the LMFT on its own or jointly with the supervisory bodies of the credit institutions;

- Current and incidental control of the commercial banks for the fulfillment of the obligations under the LMFT, as well as the acts for their implementation, incl. drafting of acts of observation, acts for establishing administrative violations under the LMFTS and drafting of draft penal decrees;

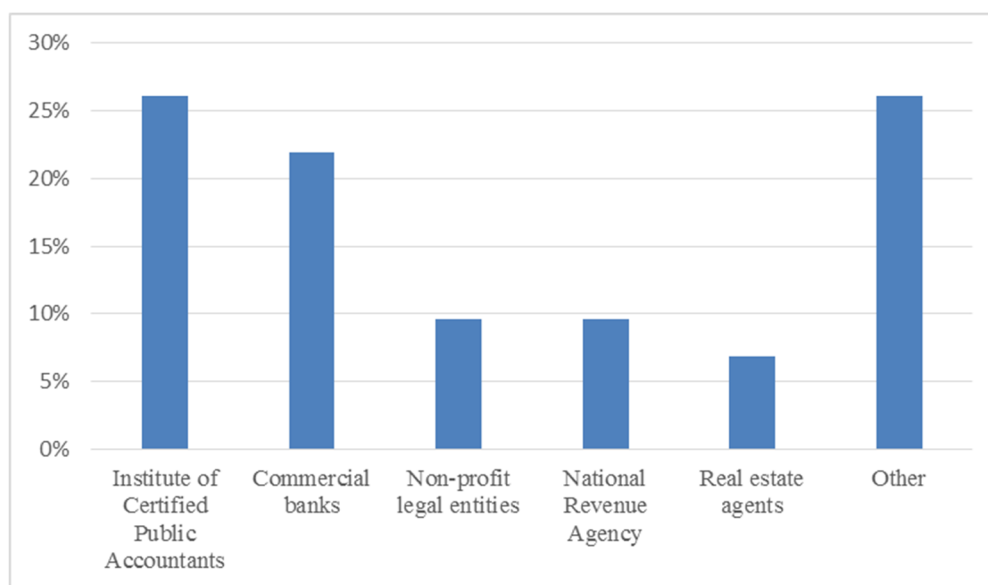
- Develop reports on violations by commercial banks, including an analysis of the breaches and proposals for the measures to be taken to erase the consequences of the violations and to prevent future violations;

- Interaction with other state bodies, carrying out inspections, incl. jointly with the oversight bodies (Bulgarian National Bank) on the activities of commercial banks in the implementation of measures against terrorist financing, as well as in the case of suspicion of financing of terrorism;

- Keeping registers of information received from commercial banks (including terrorist financing), ex-

change of information with security and public order services at national and supranational level, financial intelligence analysis, gathering of additional information, giving of conclusions, sending of files to the relevant state services, etc.

As stated above, the function of the Directorate for the organization and conduct of trainings on the implementation of the LMFT is a priority, as the educational level and the competences acquired are a factor for increasing the efficiency in the fight against the financing of terrorism. Summing up the information published in the annual reports of the FAS - SANS, for the period 2012-2016, the Directorate carried out a total of 73 trainings, resulting in the training of 2454 persons in the capacity of representatives of the Institute of Certified Public Accountants (ICPA), Commercial Banks, Non-Profit Legal Entities (NGOs), the National Revenue Agency (NRA), real estate agents and others. As illustrated in Figure 1, the number of trainings of commercial banks represented 22% in the structure of the trainings, which gave them a second position after the trainings of representatives of the ICPA (26%).



**Fig. 1. Structure of the trainings conducted by SAD FR-SANS in connection with the implementation of the LMML and the LMFT (2012-2016)**

Similarly, commercial banks also occupy 14% of the number of trained persons, compared to 33% for the leader – ICPM. Considering that the number of banks (including their employees) operating on the Bulgarian market is considerably smaller than the number of certified accountants, it can be assumed that for the FAS – SANS the commercial banks are priority institutions for the prevention of money laundering and the financing of terrorism, mainly because of their specific activity – operating not only on their own, but also on attracted

money, which poses a serious risk to their real origin. For the next 10% comparison, the number of trainings conducted by representatives of NGOs and NRA, followed by 7% by the real estate agents. The remaining 25% are outside the reach of the positioning, as they include all training with a share of less than 5% in the total number of courses, incl. investment intermediaries, management companies, insurers<sup>1</sup>, insurance intermediaries, financial institutions, pension insurance companies, Financial Supervision Commission (FSC), leasing

<sup>1</sup> See. by detailed Dochev, H., Challenges of new legal entities on the European internal market, Challenges of economic science and practice in the process of joining the European Union, Nis, 2007, p. 319-330.

companies, lawyers, postal operators, private enforcement agents, traders, notaries, state and local bodies.

On the basis of the information presented in Table 1, trends in training can be traced. Following the above considerations, the factual data showing the persistence in the training of two categories of institutions throughout the analyzed period, including the commercial banks

with two trainings and 50 trained persons in the first year – 2012 (the lowest values for the period) and five training sessions with 150 trained persons in 2015 (the highest values for the period). Concerning the others presented, trainings were carried out once (NRA – 2012) or a maximum of twice (NGOs and real estate agents – 2012 and 2014) throughout the time slice.

Table 1

**Trainings conducted by SAD FR-SANS in connection with the implementation of the LMML and the LMFT (2012-2016)<sup>1</sup>**

Institutions	2012		2014		2015		2016	
	Number of trainings	Number of trained persons	Number of trainings	Number of trained persons	Number of trainings	Number of trained persons	Number of trainings	Number of trained persons
1 Institute of certified public accountants	5	257	5	176	5	185	4	200
2 Commercial banks	2	50	3	76	5	150	3	56
3 Non-profit legal entities	6	213	1					
4 National Revenue Agency	7	278						
5 Real estate agents	4	113	1	14				
6 Other	7	233	8	266	3	110	4	77
<b>Total:</b>	<b>31</b>	<b>1144</b>	<b>18</b>	<b>532</b>	<b>13</b>	<b>445</b>	<b>11</b>	<b>333</b>

According to the applicable regulations, commercial banks are obliged to report to the FAD - SANS the so-called dubious operations. As such, financial operations are classified and, after further studies by bank employees, it is not possible to clarify their nature, which is sufficient to be assigned a higher risk, and to the category of "suspicious transactions". In case of suspicion of terrorist financing, the bank employee must:

- Delay the execution of the suspicious transaction, if possible, and immediately notify the bank branch line;
- Collect information on the essential elements of the operation, relevant supporting documents and other identification data;
- Indicate in chronological order all the details of the suspect case, including any circumstances that appear unusual, irregular or questionable;
- Keep all facts and circumstances secret;
- Disclose to the line the entire available information about the client and his operations by completing a special form.

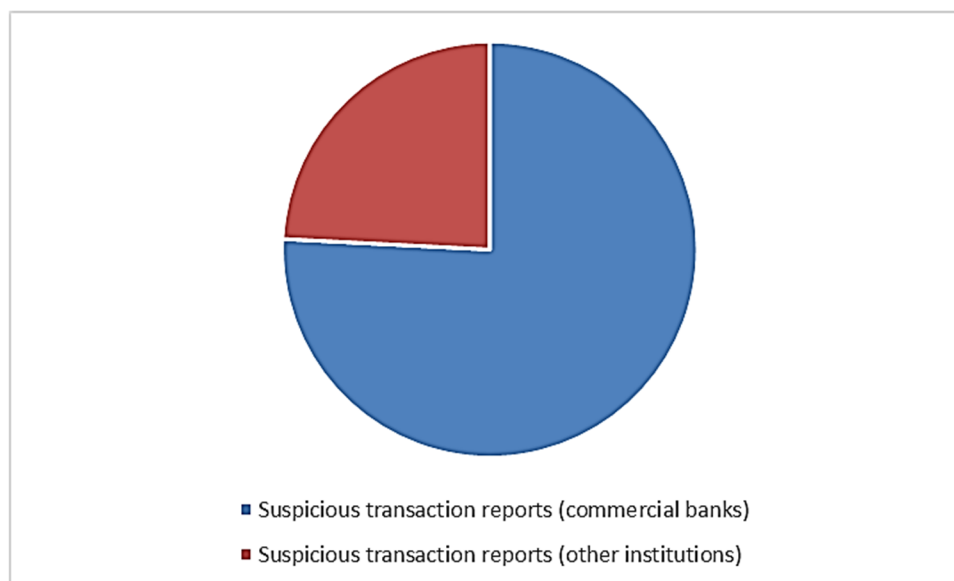
When the additional studies carried out by the specialized internal service for control and prevention of

terrorism financing can not establish a good reason or a logical economic explanation for the implementation of unusual behavior, the case is reported to SANS. The data and documents collected by the bank are used only for the purposes of the LMFT.

The official information sources indicate that 10930 suspicious transactions were reported for the period 2011-2016, 76% of which were commercial banks and the other from other institutions (see Figure 2).

As can be seen from Table 2, the number of reports on suspicious transactions under the LMML and LMFT from the commercial banks to the FAS - SANS ADS has an upward trend, in 2011 it is 1035 and in 2016 it is 2390, ie. there is over 130% growth within the observed time span. It should be borne in mind that in the structure of generally reported suspicious transactions by years, commercial banks' DSBs take values of 69% in 2012 (minimum) to 82% in 2015 (maximum), regardless of the above-mentioned upward trend the analyzed period, due to the fluctuations in the value of STR by other institutions.

<sup>1</sup> The information is summarized and processed by the author on the basis of published annual reports of the SAD FR - SANS (<http://www.dans.bg/bg/msip-091209-menu-bul/fidannualreports30052012-mitem-bul>).



**Fig. 2. Sources of suspicious transaction reports (STR) under the LMML and LMFT for the period 2011-2016**

*Table 2*

**Reports on suspicious transactions under the LMML and the LMFT for the period 2011-2016 (number)<sup>1</sup>**

Period	Suspicious transaction reports (commercial banks)	Suspicious transaction reports (other institutions)	Suspicious transaction reports (total)
2011	1035	393	1428
2012	1257	564	1821
2013	1592	641	2233
2015	2013	448	2461
2016	2390	597	2987
<b>2011-2016:</b>	<b>8287</b>	<b>2643</b>	<b>10930</b>

Realizing its main functions in the area of prevention against terrorist financing, FAS – SANS points out among the main indicators and risks (including in relation to commercial banks) concerning the financing of global terrorism the following<sup>2</sup>:

- Opening an account with false identification and using fake documents when ordering/receiving translations;
- Providing the same mobile phone numbers, addresses or job information to different people when opening accounts or ordering money transfers;
- Receiving cash transfers through fast pay systems from individuals with locations in countries around conflict zones;
- Use of mobile payment systems to perform transactions, account balance checking, access to electronic portfolios and other online services without the physical

presence of the client (sequential logging from a mobile phone or other device from different IP addresses from nearby locations or within them conflict zones);

- Fundraising through public funding platforms for extremist purposes, often camouflaged in the form of charity transactions;

- Financial transactions relating to antiques from conflict zones (including coins) put up for sale on the Internet, and in particular in the so- "Dark net" or social networks.

The above analysis is sufficient grounds, on a national scale, for the commercial banks to be constituted as a priority subject of permanent monitoring and control by the specialized administrative directorate "Financial Intelligence" of SANS in order to study, analyze and disclose information received under the procedure and at the conditions of the LMFT, as they are obviously

<sup>1</sup> The information is summarized and processed by the author on the basis of published annual reports of the SAD FR - SANS (<http://www.dans.bg/bg/msip-091209-menu-bul/fidannualreports30052012-mitem-bul>).

<sup>2</sup> URL: [http://www.dans.bg/images/stories/FID/ANNUAL%20REPORT\\_2016.pdf](http://www.dans.bg/images/stories/FID/ANNUAL%20REPORT_2016.pdf).

among the main options used for the purposes of money laundering and terrorist financing.

In summary, the main statement of the study provides the basis for the following conclusions:

**First.** Credit institutions are among the key mechanisms for terrorist financing, which is a prerequisite for the eventual occurrence of risk situations for the bank itself and for its clients. Each commercial bank should develop its own terrorist financing policy that contains adequate measures to counteract these crimes and their application to "block" the relationship between credit institutions and criminals.

**Second.** Measures to prevent the use of the bank for terrorist financing purposes should be aimed at: identifying customers and actual owners and taking appropriate action to verify their identification; customer assessment; monitoring customer operations; disclosure of information (reporting) about suspicious transactions.

**Third.** The activities of credit institutions are subject to constant monitoring in relation to the application of a number of regulations and institutions concerning the role of banks in complying with the legal norms against terrorist financing. In order to have an effect, it is necessary to develop and strictly implement policies both nationally and internationally, to be implemented in close cooperation and constant communication between the responsible institutions.

**Fourth.** On a national scale, commercial banks have been constituted as a priority subject of continuous monitoring and control by the specialized administrative directorate "Financial Intelligence" of the State Agency for National Security (SANS) in order to investigate, analyze and disclose information received under the terms and conditions of the LMML and as they are among the main options used for money laundering and terrorist financing purposes.

**Fifth.** For the period 2012 - 2016, SAD FR-SANS conducted a total of 73 trainings on the implementation of the LMML and LMFT with trained 2454 persons, including commercial banks with 22% of the total trainings and 14% of the total trainees. identifies them as priority institutions with regard to the prevention of money laundering and the financing of terrorism, mainly because of their specific activities – operating not only on their own, but also on attracted money containing a serious risk in terms of their real origin.

**Sixth.** During the period 2011-2016, 10930 suspicious transactions under the LMML and LMFT were reported to the SAD FR – SANS, of which 76% of the commercial banks (with over 130% growth within the observed time interval) and the rest from the other institutions. For the same period, notifications of payment

transactions in cash over BGN 30000, 99% (251600) were reported by the commercial banks, and their relative share varied between 98% and 99% during the same period, which is sufficient grounds for taking the necessary legal measures to prevent money laundering and terrorist financing.

In order to have an effect on the implementation of statutory, regulatory and internal commercial bank regulations on the prevention of terrorist financing as well as monitoring and control procedures in relation to their core business, close cooperation between credit institutions and competent authorities dealing with suspicious customers and financial operations. Supranational level policy for combating the financing of terrorism is determined by the activity of a number of institutions, including the Task Force on financial measures Anti-Money Laundering (FATF<sup>1</sup> - Financial Action Task Force on Money Laundering), the Committee of Experts on the Evaluation of Laundering money the Council of Europe (MONEYVAL Committee<sup>2</sup>), the Union for increasing interaction between financial intelligence units worldwide (GROUP EGMONT<sup>3</sup>), the Basel Committee on Banking supervision (Basel Committee of Banking supervision<sup>4</sup>), the world Bank, the International Currencies fund and others. For the implementation of international and national regulations regarding prevention against the financing of terrorism, a number of law enforcement, control and supervisory state institutions are operating in Bulgaria - Specialized Administrative Directorate "Financial Intelligence" of the State Agency for National Security (SAD FR - SANS), Ministry of the Interior, the Prosecutor's Office of the Republic of Bulgaria, the Bulgarian National Bank (BNB), the Controlling Agencies at the Ministry of Finance, etc. At the same time, the improvement and modernization of the national and supranational regulatory framework is a sine qua non for real countering the latest criminal practices for which priority is being given and to credit institutions.

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The above analysis is sufficient grounds, on a national scale, for the commercial banks to be constituted as a priority subject of permanent monitoring and control by the specialized administrative directorate "Financial Intelligence" of SANS in order to study, analyze and disclose information received under the procedure and at the conditions of the LMFT because they are obviously among the main options used for the purpose of financing terrorism. For this reason, the global policy regarding the fight against the mentioned crime places the activity of the credit institutions on the legal norms

<sup>1</sup> Financial Action Task Force on Money Laundering - the organization that sets standards in countering money laundering and terrorist financing.

<sup>2</sup> An organization responsible for Europe for the prevention of money laundering.

<sup>3</sup> See more <https://www.egmontgroup.org/>.

<sup>4</sup> See more <http://www.bis.org/bcbs/charter.htm#classification>.

and the focus of their activities in order to prevent their use for the implementation of criminal schemes. This is a good reason for credit institutions to set strict and transparent internal bank rules and procedures to be respected when selecting clients and executing financial operations and to prioritize the prevention of their use for the purpose of financing terrorism.

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#### Дімітрова Т. Комерційні банки як механізм проти фінансування тероризму

У процесі глобалізації необхідність блокування фінансових потоків у терористичні організації стає все більш відчутною. Боротьба з фінансуванням тероризму стає національним і наднаціональним пріоритетом, а кредитні установи є одним з основних ме-

ханізмів здійснення таких злочинів і тому охоплюються численними положеннями та інститутами, що стосуються їх ролі в контролі та їх запобіганню. Мета цього дослідження – описати місце комерційних банків у процесах фінансування тероризму, представивши їх невід’ємні характеристики в рамках Спеціального закону про заходи щодо фінансування тероризму.

*Ключові слова:* глобалізація, комерційні банки, тероризм, фінанси, механізм.

#### Димитрова Т. Коммерческие банки как механизм против финансирования терроризма

В процессе глобализации необходимость блокирования финансовых потоков в террористические организации становится все более ощутимой. Борьба с финансированием терроризма становится национальным и наднациональным приоритетом, а кредитные учреждения являются одним из основных механизмов совершения таких преступлений и поэтому охватываются многочисленными положениями и институтами, касающимися их роли в контроле и их предотвращении. Цель этого исследования – описать место коммерческих банков в процессах финансирования терроризма, представив их неотъемлемые характеристики в рамках Специального закона о мерах по финансированию терроризма.

*Ключевые слова:* глобализация, коммерческие банки, терроризм, финансы, механизм.

#### Dimitrova T. Commercial banks as a mechanism against financing terrorism

In the process of globalization, the need to block financial flows to terrorist organizations is becoming more and more tangible. The fight against terrorist financing is becoming a national and supranational priority, and credit institutions are among the main mechanisms for committing such crimes, and are therefore covered by numerous regulations and institutions concerning their role in controlling and preventing them. The purpose of this study is to outline the commercial banks' place in terrorist financing processes by presenting their inherent characteristics within the scope of the Special Act on Measures Against Financing of Terrorism.

*Keywords:* globalization, commercial banks, terrorism, finance, mechanism.

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## RESEARCH OF THE FOREIGN COUNTRIES EXPERIENCE IN REGULATION OF INVESTMENT PROCESSES IN BUILDING SPHERE

The market economy operates based on a free choice of priorities and investment directions. Ukraine's construction industry will face a sharp need for investment, if there is no economic incentive for investors and financial advantages of investing in construction will not manifest.

For the sustainable development of the construction industry, there is a need for continuous improvement of the applied approaches, considering both regional practice and foreign experience. Analysis of the experience of foreign countries in the field of state regulation and stimulation of investment in construction will help develop new, effective mechanisms for implementing state policy in the field of residential, industrial and infrastructure construction, establishing and expanding international cooperation in the construction sector, creating opportunities for attracting investment in housing and industrial construction, including foreign ones.

Let's consider foreign practice of state regulation of investment and construction processes relevant for borrowing or improvement in Ukraine in such developed countries as the USA, Great Britain, Germany, France and in the largest transition economies - China.

Government of Great Britain [1; 2] advocates attracting foreign direct investment into the country, accompanied by the introduction of advanced foreign technology and the growth of the number of jobs. The country has one of the most attractive investment regimes among the developed countries of the world.

Significant role in attracting foreign capital to the country are bilateral treaties of Great Britain with other countries to encourage trade and investment and similar agreements operating within the framework of the European Union.

The underlying legislative act regulating investment activity in the country is the Financial Services and Markets Act 2000, with the following changes.

In the UK, the mechanism of currency control contributes to the inflow of foreign investment. However, foreign firms created for importing and marketing on the London market products produced outside the "sterling zone" should be financed exclusively from their own funds. However, if the company being created is of serious interest to the UK economy, a foreign investor may receive British loans for the development of their business.

On the territory of the country a clear and fairly simple registration system of business, foreign investors can freely choose different objects of investment of their capital.

The British government has developed and applies to investors a system of financial incentives, unique for national and foreign companies.

Regulation of investment activity in Great Britain is carried out by special bodies, most of which are independent self-regulated organizations and authorized exchanges, the state only provides the appropriate regulatory framework. In particular, mutual investment trusts and openings, investment companies effectively combine small investments into large ones.

Factors that restrict the activities of foreign investors are the current system of taxation and currency restrictions. In recent years, in the UK, there is a tendency to more differentiated approach to assessing plans to expand investments by individual foreign firms and link them with certain obligations. Absorption of national firms by foreign capital is considered undesirable.

In the German economy [1; 3; 4; 5], foreign investment plays a much more important role than in other European countries. The country provides equal conditions of management to foreign and national investors. The German legislation does not impose any restrictions on the import and export of foreign capital, the participation of foreigners in the capital of established companies, or the employment of senior management positions in these companies by foreigners. The country has many enterprises with foreign participation, which actively use the scientific and technical achievements of parent companies located abroad.

Regulates investment activity in the country "Law on Credit Institutions", the Law on Investment Companies (KAGG). Investment companies are subject to control by the Federal Office for Supervision over Credit Institutions. The direction of foreign investment is regulated through the taxation system.

In the practice of regional investment, the term "social task" is used, which corresponds to the concept of "target program". In the new (eastern) federal states, the targeted rules "Improvement of the regional economic structure" were developed, which promoted investment through subsidies for infrastructure development from the federal and land budgets, as well as the European Regional Development Fund.



The attitude of France [1; 3; 6] to foreign investment is generally benevolent, although the position of the government from time to time is changing. Investing in foreign capital is not allowed or limited only in certain branches of the economy: mineral exploration, mining, pharmaceutical industry. Relations in the field of investment are regulated by the Code of the financial and monetary system. Investments in France and from France to foreign countries do not require special permission. At the same time, the procedures provide for the submission of a declaration to the Ministry of Economy and Finance.

A foreign company is subject to a national tax regime, loans and various kinds of benefits. There are no restrictions on the transfer of funds from foreign investors from the country.

With a general liberal attitude to foreign investment, France introduces a few restrictions on the rights of non-residents. First, it concerns foreign investment in certain industries - extraction, processing and import of oil. In addition, foreign investors cannot hold managerial positions in companies engaged in the specified activity. In France there is currency control, as well as special control, directly related to foreign exchange restrictions, in relation to foreign loans, domestic and foreign direct investment.

In 1977, France adopted a circular on direct French investment abroad and direct foreign investment in the country, which restricts the excessive impact of foreign capital.

The relationship between the state and the regions is based on a contractual basis within the national planning system. Each region concludes with the state scheduled contracts that bind both parties to a specific investment program. Then they are introduced into the national plan of the state as a priority. At the same time, trying to allocate additional funds to the most problematic regions. The implementation of such a policy is carried out in the form of restructuring of the regional economy. To do this, with the help of investment grants allocated by the state, assistance is provided to improve the regional infrastructure and create jobs in the priority sectors of the economy.

The main priorities of the American [1; 3; 4; 7] investment policy is attracting investment in the US, as well as stimulating foreign investment to create more jobs and economic recovery. In this regard, the main priority of the federal government, state and state level authorities, and the municipal level are the maximum support of potential investors and the creation of effective incentives for investing.

Relations in the investment field at the federal level are governed by the Public Law No. 110-49 "On Foreign Investment and National Security Act 2007" and related sectoral laws.

The regulation of investment activity is carried out on two levels: at the federal level and at the state level.

At the federal level, common rules are set, which must be respected by foreign investors in the US market. Local government authorities of each American state adopt laws regulating acts on the conditions of entrepreneurial activity of foreign investors in their territory. The federal government does not play an active role in defining the goals of economic development in a given region of the United States.

The US government provides equal conditions for the management of foreign and national investors. Foreign investors can freely invest in most sectors of the US economy, as well as withdraw capital and profits. The country has created the most effective system of investor protection, which consists of three lines of protection: the state, self-regulated brokers and brokers themselves. This is probably one of the reasons why the stock market in this country is very effective.

The state takes an active part in investment processes. Of gross investments in the US economy, the state's share is more than 20%, of which 12% goes to investment from the federal budget. The state's influence on investment activity is carried out with the help of financial instruments such as reduced rates of income tax, accelerated depreciation policy, preferential bank lending, innovative grants, etc.

The United States deliberately develops international cooperation in the investment sphere. For example, in the year 2013, the TFTA, or the Transatlantic Trade and Investment Partnership (TTIP), was being actively pursued as a free trade area between America and the European Union.

The Chinese Government [1; 8], starting to pursue economic reforms since 1978, pays great attention to attracting foreign capital to the country. Thanks to foreign investments, the issue of employment of the population is resolved, the transition to high-tech production is carried out, the economy is transformed into a market format and integrated into the world economy.

According to the current legislation, in China there are the following forms of investment: joint ventures, joint cooperative enterprises, enterprises with 100% foreign capital, operations in the stock market. In addition, the China has a mode of demarcation of foreign investment in the following categories: encouraged, resolved, limited, prohibited.

To provide a favorable investment climate, the Government of China established administrative and economic entities with preferential regimes, namely: special economic zones, zones of economic and technological development, free trade zones, border economic cooperation zones, and zones of scientific and technological development. In total, according to recent figures, more than 200 zones of preferential economic regime have been established on the territory of China. In some developed regions, technological parks are built, which accumulates investment flows to China. On concessional terms, it is also possible to create new enter-

prises based on old ones, which are considered unprofitable and subject to dismantling.

The liberalization of Chinese investment legislation is not only due to the application of a special regime for foreign investors, but also by improving the economic conditions for national enterprises.

China's economy is lent to the banking system. The main types of lending are commercial and political lending.

In commercial lending, interest rates on loans, as well as lending, are formed based on market principles.

Political lending is intended to serve as the main instrument for the implementation of state economic policy. To this end, three state-owned development banks were set up in China. At the same time, the main source of funds for political lending is the state budget. To finance the most important structural projects in the economy, created mainly by the branch principle, the budgetary funds and various forms of savings of citizens who are under the responsibility of the state are actively used [3; 9].

The analysis of housing financing systems in developed countries of the world (USA, England, Germany, France) shows that they are based on a variety of specialized financial institutions - construction and savings, mortgage companies, investment banks, credit unions, as well as on several financial technologies: construction savings, mortgage lending, a certain combination of other, public and private financing, as well as various mixed forms of public and private funding. In these countries the state possesses and active market instruments of state regulation of investment processes through mortgage markets, secondary loans using state (or semi-public) financial institutions.

So, in the United States, the process of providing mortgage loans to mortgage lenders by mortgage lenders takes place in the primary market, and in the secondary mortgage market, mortgage loans are sold to the investor (refinanced by them). The proceeds of the money mortgage companies are again put into circulation (issuing new loans), and their profit consists of fees for loans and payments, for their maintenance. This model implies the existence of a developed secondary mortgage market, which sells already issued mortgages. The model is attractive in that it solves the problem of long-term financial resources.

In Germany and France, the foundation of the primary market for a residential mortgage system is the construction and savings fund. The essence of financial assistance for construction savings is that the future developer of housing, with the consent of the building savings bank accumulates on the account for a deposit over several years, a certain amount of cash. Subject to the terms of the agreement, the depositor, in addition to the accumulated deposit and interest on it, receives the right to a bank loan in the amount approximately equal to the amount of accumulated deposit. The union of three

monetary sources – the owner's own contribution, the bank's loan and the state aid (bonus) allows the developer not only to start but also complete the construction project. The system of building savings is autonomous, that is, it does not require external borrowing. This distinctive feature is achieved by the fact that the time of using money, for example, A participant A, is equivalent to the time during which another person uses it himself.

Independence of the system from the financial market makes it possible to issue loans to participants at a lower market rate, while government subsidies enable target savings to compete successfully with market instruments. Through the system of building savings, the state realizes its own interests: forms a private housing fund, primary and secondary housing market, reduces the allocation to operation and repair of the state housing stock, solves the socially acute problem of providing housing for the population [10, c. 325, 326].

In Great Britain the system of construction societies successfully operates. The mechanism of their work is somewhat like the activities of German, but to obtain a home loan does not necessarily be a depositor of a construction company. In recent years, because of the liberalization of the banking legislation of Great Britain, the functions of these societies are becoming closer to the functions of commercial banks. Competition of the above structures leads to their convergence and reduction of loan rates [11, c. 91].

Summarizing the above, it should be noted that the activity of foreign investors in foreign countries is governed by national law, special laws or codes for foreign investment are absent, only some administrative regulations have been developed, as well as the relevant articles of separate laws. In the main, the legislation is aimed at liberalizing the investment regime and providing foreign investors with: no less favorable conditions than domestic ones; guarantees on the transfer of profits, and in the case of expropriation of their property – a full compensation; the possibility of resolving disputes between a foreign investor and the host investment state.

In general, the policy of foreign countries in the investment sphere pursues the following main goals:

- directing investments to restructure the economy to improve its efficiency;
- directing savings to the real economy sector investment;
- the formation of an efficient and controlled capital market;
- reduction and insurance of investment risks;
- improving the investment climate for domestic and foreign capital.

Legal guarantees to investors is an important criterion for a favorable investment climate.

The main methods of regulation of investment activity are:

1. *Direct*: tight regulatory regulations; reducing bureaucratic pressure on business, simplifying registra-

tion procedures; providing equal conditions of management to foreign and national investors; the choice of priorities is exercised by the state; effective system of investor protection; effective pooling of small investments into large ones; budget financing; direct administrative interference in the investment process by coordinating the plans of the largest corporations; creation of specialized financial institutions for the financing of housing construction.

2. *Indirect*: regulation of total investment through a policy of interest rate, monetary, tax and depreciation policy; Selective stimulation of investments in certain enterprises, branches and spheres of activity through credit and tax privileges; involvement in the construction of housing "long" funds of insurance companies and non-state pension funds; the use of various mixed forms of public and private funding.

In Ukraine, the relations that arise in carrying out investment activity in the construction industry are regulated, first of all, by the Laws of Ukraine "On investment activity", "On the regime of foreign investment", "On protection of foreign investments in Ukraine", "On institutions of collective investment", "On Leasing", "On Innovation Activity", "On Securities and the Stock Market". Also, the norms of economic, tax, currency, banking, customs, civil and land legislation, legal acts on the privatization of entrepreneurship, innovation activity, securities, stock market, etc., and international legal acts to which Ukraine is a party.

In accordance with Part 3 of Art. 12 of the Law of Ukraine "On Investment Activity" [12], regulation of terms of investment activity includes: submission of financial assistance in the form of grants, subsidies, subventions, budget loans for the development of individual regions, industries, industries; state norms and standards; measures to develop and protect economic competition; denationalization and privatization of property; definition of conditions of use of land, water and other natural resources; pricing policies; conducting state expert appraisal of investment projects; other activities.

The legal and organizational basis for attracting funds of individuals and legal entities to finance housing set the Laws of Ukraine "On investment activity" [12] "On financial and credit mechanisms and management of property under construction housing and real estate transactions" [13] "On collective investing" [14]. Investing in housing construction in Ukraine can be made only through the construction financing funds (the CFF) real estate funds (the background), collective investment, issue interest-free (target) bonds the developer.

The Construction Financing Fund is the money transferred to the Governor of the CFF in management that is used or will be used by the manager in the future under the terms of the Fund Rules and the participation agreements in the CFF [13].

The CFF is created by a financial institution to provide real estate construction at the expense of individu-

als and legal entities, to become the property of the CFF's trustees upon completion of the construction of the investment object. To secure the obligations assumed by him, the developer transfers to the CFF manager under the mortgage agreement the property rights to the real estate that is the subject of construction. Moreover, for each object (apartment), between the manager and developer concludes a contract of assignment of property rights and a contract of commission with the grace period. In case of violation by the developer of the obligations assumed, the manager has the right to change it or independently perform the functions of the developer.

Among the advantages of the CFF can be distinguished: clear legislative regulation; the necessity for the creation of the CFF of the complete package of permits for construction; protection of investors, envisaged at the legislative level; control of construction participants for the purposeful use of funds; minimized risk of double resale of apartments; funds attracted by the CFF are not subject to taxation; at liquidation of the CFF or bankruptcy of the manager, the funds of the trustees remain in the accounts and may be transferred to another manager; Legally there is the possibility of replacing a developer or manager in case of problems.

The main risks and disadvantages are: the developer can create a "pocket" fund manager; the risk of delaying the completion of construction or even its termination; increase in the value of the object through an additional payment (reward) to the manager; the model contract protects only the rights of the developer and the manager.

The Real Estate Fund (REF) is the funds received by the administrator of the REF in the management, as well as real estate and other property, property rights and income derived from the management of these funds, including property rights and claims acquired under contracts for participation in the construction financing fund [13].

The source of funding for REF is the sale of REF certificates, which can be purchased by individuals and legal entities, residents and non-residents, intending not only to buy real estate in their property, but also to earn on real estate transactions.

Formed assets received by a financial company in which the REF was created, from issued and placed securities – certificates, are directed exclusively to finance the construction of a property. Real estate transactions are considered separately from the total assets of a financial company. It is not allowed to secure own liabilities of a financial company due to borrowed assets. This mechanism allows owners of such certificates (investors) to have transparent, secured and guaranteed income. Restrictions imposed by the current legislation strictly determine the increase in the market value of the borrowed assets in time and determine the obligations of the financial company.

Advantages of REF certificates: the ability to accumulate funds from individuals and legal entities to finance the entire construction cycle; the money involved in the REF is not taxable; REF certificates are freely rotated in the stock market and their price may vary arbitrarily under the influence of real estate prices; The activities of the REF manager are governed by the REF Rules, which stipulate an obligation to provide the holders of certificates of REF income.

At the same time, REF certificates have several disadvantages: significant material costs for the creation of the REF itself (the need to complete the entire design and estimate documentation for construction and accumulate 1 million UAH of equity); a very complex and time-consuming procedure for obtaining a permit for the right to issue certificates of REF; the impossibility of combining different mechanisms for project management in construction, etc.

For investing and financing housing construction companies, developers can issue interest-free (target) bonds, on which the basic product is the unit of real estate – a metric unit of the area of the premises. When the developer presents to the investor to repay a certain number of bonds, corresponding to the project area of the investment object, the developer is obliged to transfer to the investor the given concrete object of investment. Based on an investment agreement (investment contract for construction), in the future, after the introduction of the housing construction object into operation, the registration of ownership of the object of investment.

The main positive features of this mechanism are optimization of taxation and minimization of costs, to negative – the lack of subordinate regulations on the mechanism of exchange of targeted bonds to an individually determined apartment.

Joint Investment Institutes (JII) – a corporate or unit fund that carries out activities related to the unification (attraction) of funds of investors to profit from investing them in securities of other issuers, corporate rights, real estate and other assets [121]. JII in Ukraine is not particularly popular due to the imperfect regulatory framework and the underdevelopment and low level of capitalization of the domestic stock market.

The following negative determinants that do not encourage foreign investors to enter the Ukrainian market are a significant lagging behind Ukraine from developed countries due to factors such as the perfection of the legislation for corporate business and the availability of high-level management, the development of information systems and disclosure of information, the availability of effective mechanisms for guaranteeing rights and the freedoms of investors, the level of their protection, the risks of acquiring stakes that are not controlling, the increase in the cost of exploring potential partners, and threats of loss of operational investment management.

The analysis of the state of legal regulation in the investment sphere of Ukraine, the development of the securities market and investment trends in the real estate market, and the practice of state regulation of investment and construction processes in Ukraine testify to the expediency of adapting the experience of developed countries to the methods of state regulation of investment activity in the construction sphere to Ukraine, which may become an essential direction of intensification of investment processes in the country.

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### **Шлафман Н. Л., Фроліна К. Л. Дослідження досвіду зарубіжних країн у регулюванні інвестиційних процесів у будівельній сфері**

У статті досліджено досвід зарубіжних країн у регулюванні інвестиційних процесів у будівельній сфері. Аналіз досвіду зарубіжних країн щодо державного регулювання і стимулювання інвестиційної діяльності в будівництві може допомогти розробити нові, ефективні механізми реалізації державної політики в галузі житлового, промислового та інфраструктурного будівництва, у налагодженні і розширенні міжнародного співробітництва в будівельній сфері, створенні можливостей залучення інвестицій у житлове і промислове будівництво, у тому числі іноземних.

Аналіз систем фінансування будівництва житла у розвинутих країнах світу (США, Англії, Німеччині, Франції) свідчить, що вони базуються на різноманітності спеціалізованих фінансових інститутів – будівельно-ощадних, іпотечних компаніях, інвестиційних банках, кредитних спілках, а також на кількох фінансових технологіях: будівельних заощадженнях, іпотечному кредитуванні, певного поєднання одного з іншим, державному та приватному фінансуванні, а також на різноманітних змішаних формах державного та приватного фінансування. У цих країнах держава володіє і дієвими ринковими інструментами державного регулювання інвестиційних процесів через ринки закладних, вторинних кредитів із використанням державних (чи напівдержавних) фінансових інститутів.

Проведений аналіз стану правового регулювання в інвестиційній сфері України, розвитку ринку цінних паперів та інвестиційних тенденцій ринку нерухомості, практики державного регулювання інвестиційно-будівельних процесів в Україні

свідчить про доцільність адаптації досвіду розвинутих країн щодо методів державного регулювання інвестиційної діяльності в будівельній сфері в Україні, що може стати суттєвим напрямом активізації інвестиційних процесів в країні.

*Ключові слова:* інвестиційна сфера, будівництво, державне регулювання, фінансові інститути.

### **Шлафман Н. Л., Фроліна К. Л. Исследование опыта зарубежных стран в регулировании инвестиционных процессов в строительной сфере**

В статье исследован опыт зарубежных стран в регулировании инвестиционных процессов в строительной сфере. Анализ опыта зарубежных стран по государственному регулированию и стимулированию инвестиционной деятельности в строительстве может помочь разработать новые, эффективные механизмы реализации государственной политики в области жилищного, промышленного и инфраструктурного строительства, налаживании и расширении международного сотрудничества в строительной сфере, создании возможностей привлечения инвестиций в жилищное и промышленное строительство, в том числе иностранных.

Анализ систем финансирования строительства жилья в развитых странах мира (США, Англии, Германии, Франции) свидетельствует, что они базируются на разнообразии специализированных финансовых институтов – строительно-сберегательных, ипотечных компаниях, инвестиционных банках, кредитных союзах, а также на нескольких финансовых технологиях: строительных сбережениях, ипотечном кредитовании, определенного сочетания одного с другим, государственном и частном финансировании, а также на различных смешанных формах государственного и частного финансирования. В этих странах государство владеет и действующими рыночными инструментами государственного регулирования инвестиционных процессов через рынки закладных, вторичных кредитов с использованием государственных (или полугосударственных) финансовых институтов.

Проведенный анализ состояния правового регулирования в инвестиционной сфере Украины, развития рынка ценных бумаг и инвестиционных тенденций рынка недвижимости, практики государственного регулирования инвестиционно-строительных процессов в Украине свидетельствует о целесообразности адаптации опыта развитых стран касательно методов государственного регулирования инвестиционной деятельности в строительной сфере, в Украине, что может стать существенным направлением активизации инвестиционных процессов в стране.

*Ключевые слова:* инвестиционная сфера, строительство, государственное регулирование, финансовые институты.

**Shlafman N., Frolina K. Research of the foreign countries experience in regulation of investment processes in building sphere**

The article describes the study of the experience of foreign countries in the regulation of investment processes in the construction industry. Analysis of the experience of foreign countries in the field of state regulation and stimulation of investment in construction can help develop new, effective mechanisms for implementing state policy in the field of residential, industrial and infrastructure construction, establishing and expanding international cooperation in the construction sector, creating opportunities for attracting investment in housing and industrial construction, including foreign ones.

The analysis of housing financing systems in developed countries of the world (USA, England, Germany, France) shows that they are based on a variety of specialized financial institutions - construction and sa-

vings, mortgage companies, investment banks, credit unions, as well as on several financial technologies: construction savings, mortgage lending, a certain combination of other, public and private financing, as well as various mixed forms of public and private funding. In these countries the state possesses and active market instruments of state regulation of investment processes through mortgage markets, secondary loans using state (or semi-public) financial institutions.

The analysis of the state of legal regulation in the investment sphere of Ukraine, the development of the securities market and investment trends in the real estate market, and the practice of state regulation of investment and construction processes in Ukraine testify to the expediency of adapting the experience of developed countries to the methods of state regulation of investment activity in the construction sphere to Ukraine, which may become an essential direction of intensification of investment processes in the country.

*Keywords:* investment sphere, construction, state regulation, financial institutes.

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## ALTERNATIVE METHODS FOR EVALUATING FINANCIAL SUSTAINABILITY OF AN ENTERPRISE

**Problem definition in general and its relation to important scientific and practical tasks.** At the present stage of economic development, it becomes evident that the financial security of a country can be achieved only by ensuring financial stability of such its components as industries, industrial complexes, enterprises, and organizations.

The financial stability of each separate enterprise allows the whole country's economic system not only to keep its potential, but also ensure further economic growth.

That is why economic stability, at the time of economic transformation and development of economic relations, becomes a prerequisite for company security and competitiveness. The importance of financial stability for building a competitive economy gave rise to this study and made it urgent.

**Analysis of latest studies in which the solution of the problem is initiated.** Today's problems of ensuring financially stable development of industrial enterprises were examined in works by V. Astakhov [1], S. Baranenko [2], A. Grachov [3], L. Kostyrko [4], L. Ligothenko [5], N. Mamontova [6], M. Kyzym [7], A. Folomev [8], J. Chinasi [9], A. Kroquet [10], F. Myshkin [11] et al. in which its scientific justification was made and approaches to solution of the problem were developed.

As domestic and foreign experience shows, the formation of scientific-methodological approaches to the improvement of means and mechanisms of the influence of standardization and certification on the competitiveness of an economy in the situation of globalization and integration became highly necessary, it will ensure efficient process implementation in future.

**Objective of the article:** to determine components of company's financially stable development, to develop a methodological approach to financial stability assessment based on a complex combination of qualitative and quantitative indices.

**Description of the main research material and justification of scientific results obtained.** Various approaches to defining the essence and meaning of economic stability have one thing in common: company's stability is affected by both internal and external operational factors and its achievement is the result of the implementation of a number of managerial actions aimed at reducing or stopping the negative influence of destabilizing factors; as a result, the company regains the state of equilibrium due to its own or attracted resources,

which ensures further progressive development by maintaining the profitability of its activities.

After analyzing the literature, it is suggested to consider company's financial stability as a result of its capability of maintaining the main parameters of its production and financial activities at a preset level under constant influence of internal and external factors.

It is pointed out that the company as an integral economic system comprises a great number of structural elements. Of the components the isolation of the components of financial stability should be based on the principles of balance and ensuring future growth of the production system itself. As company's financial stability is formed in the course of its production and financial activities and is maintained and reproduced at the stages of product realization and distribution, it is expedient, in our opinion, to isolate such functional components as production, management, innovation, marketing, financial and business (market) ones. Special attention here should be given to financial and business stability as the main indicators of company's effectiveness, quality and development prospects.

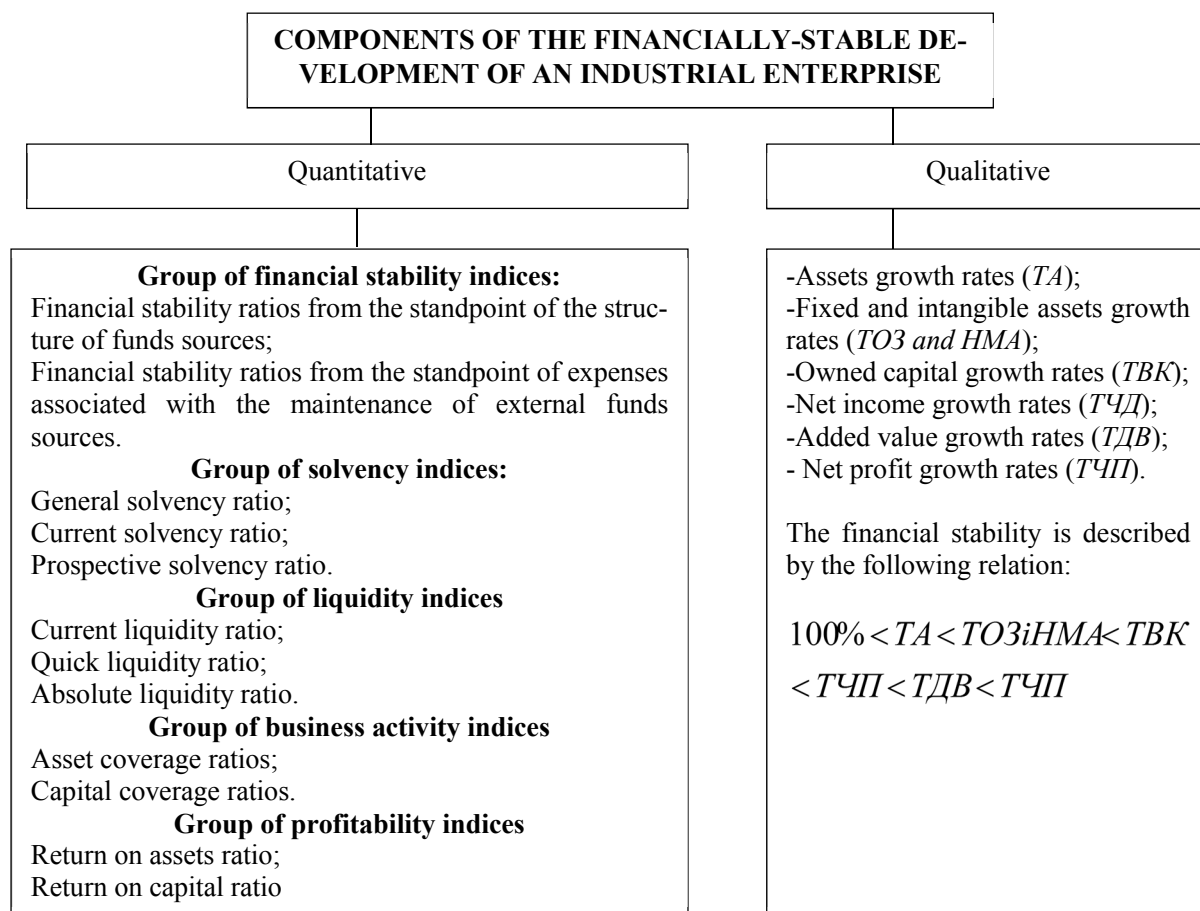
They serve as control sections in the system of economic stability control. The components of the financially stable development of an industrial enterprise are presented in Fig. 1.

The indices characterizing the degree of company's financial stability and development capability are, first of all, quantitative indices to which financial stability, solvency, liquidity, business activity, profitability indices should be attributed.

However, maintaining financial stability requires not only quantitative but also qualitative assessment. The efficiency of company's development and improvement of its financial stability is described by the following relation:  $100\% < TA < TO3;HMA < TBK < TЧП < < TДВ < TЧП$  (Fig. 1).

The analysis of the main procedures of the assessment of company's financial stability revealed the necessity of using fundamental analysis tools in addition to express-diagnostics methods, which allows to predict the emergence and evolution of destabilizing processes in a company and develop managerial decisions aimed at the restoration of disturbed equilibrium and ensuring steady development in future.

Financial stability acts as a complex characteristic of company's activity and is in functional dependence on a number of definite factors.



**Fig. 1. Components of the financially-stable development of an industrial enterprise (elaborated by the author)**

As indices determining the degree of company's economic stability have different orientation and effect on the general results of its activity, it is expedient to perform the quantitative assessment of the economic stability of an industrial enterprise using the weighted average sum of chosen criteria according to the following formula:

$$K_{FSi} = \sum_{i=1}^m A_i \left( \sum_{j=1}^n B_{ij} * G_{ij} \right), \quad (1)$$

where  $K_{FSi}$  – integral index of company's financial stability;

$m$  – number of financial stability components;

$j$  – number of the group of the indices that characterize individual components of financial stability;

$n$  – number of the criteria of the assessment of company's financial stability in the  $i$ -th group of indices;

$i$  – unit index of financial stability assessment of the  $i$ -th group;

$A_i$  – weighting coefficient which allows for the degree of significance of the  $i$ -th component in the structure of company's economic stability;

$B_{ij}$  – weighting coefficient which allows for the significance of the  $j$ -th index in the  $i$ -th component of economic stability;

$G_{ij}$  – standardized unit index of company's economic stability, which reduces chosen assessment criteria to the united system of measurements.

The analysis of the components of company's financial stability allows to assess its inner potential and reveal opportunities and development prospects in future, as well as define company's strong and weak sides compared with competitors.

Financial stability is a prerequisite of company's further development as it ensures timely and complete fulfillment of company's obligations to the staff, creditors, stockholders, founders, and the budget. Today financial stability is the main index of the assessment of economic stability and the degree of the balance of all company's subsystems.

The method of the calculation of company's financial stability was applied in practice using a financial ratios system taking nine material mining equipment companies of Donetsk region, Ukraine, as an example. The results are presented in Table 1.

As seen from the results of analytical calculations obtained during the assessment of the financial stability of the material mining equipment companies, virtually all ratios do not match standard values. This is associated directly with problems in product sale on the domestic market, increasing costs, production unprofitability, the absence of real possibilities of replenishing owned circulating assets, as well as



smaller stock of orders. However, it should be noted that the positive factor is the emergence of a weak tendency towards an increase of values in all the groups of financial condition indices.

A previous generalization of the results gives grounds to say that companies face such a situation when, on the one hand, reasonable assets management policy furthers the stabilization of cash flows (this results in a considerable reduction of bills payable and improvement of financial activity results) and, on the other hand, there is a systemic reduction in the financing of major activities, which leads to a loss of competitive positions.

That is, despite general improvement of activity indices one can say about the existence of hidden destabilizing factors which can provoke a crisis. Such a situation requires radical actions to determine, assess and neutralize such factors.

In the course of the analysis of factors ensuring the financial stability of material mining equipment companies and the field of their emergence, a method of the integral estimate of company's stability has been proposed, which allows not only to take into account actual values of its activities but also to assess its role in ensuring company's stable development, provides for an estimate of functional dependencies of the set of factors inherent in the particular production.

This approach makes it possible to get analytical information on business development dynamics, reveal problems in company operation and existing untapped reserves for overcoming external threats.

During testing integral estimate techniques, the status of financial stability, as concerns the companies in question, was found to be a short-lived phenomenon which is too sensitive to changes in operation environment.

Table 1

**Analysis of the condition and dynamics of the change of financial stability indices  
for material mining equipment companies in 2015-2016**

No.	Indices	At the beginning of the period	At the end of the period	index change dynamics over the period	Value at which company's financial security is attained
<b>1</b>	<b>1. Group of financial stability ratios</b>				
1.1	Absolute autonomy ratio	0,1021	0,0999	-0,0022	>0,5
1.2	Long-term financial independence ratio	0,2746	0,4061	0,2746	>0,85-0,9
1.3	Financial stability ratio	0,1137	0,1176	0,0039	>1,0
1.4	Ratio of the coverage of attracted funds with owned capital	0,1137	0,1109	-0,0028	>=1,0
1.5	Circulating assets coverage ratio	1,0889	1,6053	0,5164	>1,0
1.6	Long-term investment structure ratio	2,0582	1,2824	-0,7758	>0,5-0,8
<b>2</b>	<b>2. Group of solvency ratios</b>				
2.1	General solvency ratio	1,0889	1,6054	0,5165	>1,0
2.2	Current solvency ratio	0,1602	0,0234	-0,1368	>1,0
2.3	Expected solvency ratio	5,9386	7,1355	1,1969	>1,0
<b>3</b>	<b>3. Group of liquidity ratios</b>				
3.1	Current liquidity ratio	1,0889	1,6054	0,5165	>1,0-1,5
3.2	Quick liquidity ratio	0,8354	1,3119	0,4754	>0,5-1,0
3.3	Absolute liquidity ratio	0,0225	0,0043	-0,0182	>0,2-0,35
<b>4</b>	<b>4. Group of business activity ratios</b>				
4.1	Assets coverage ratio	0,6681	0,8425	0,1744	increase
4.2	Non-circulating assets coverage ratio	3,1808	6,5785	3,3987	increase
4.3	Circulating assets coverage ratio	0,8458	0,9662	0,1204	increase
4.4	Owned capital coverage ratio	6,5468	8,4364	1,8897	increase
4.5	Permanent capital coverage ration	2,4334	2,0748	-0,3586	increase
4.6	Attracted capital coverage ratio	0,7441	0,9919	0,2478	increase
<b>5</b>	<b>5. Group of profitability ratios</b>				
5.1	Return on assets ratio	-0,0623	0,1185	0,1808	increase
5.2	Return on capital ratio	-0,6102	1,1862	1,7964	increase

The percentage of financially stable companies has a clearly descending trend, which denotes the strengthening of destabilizing processes in the production of material mining equipment.

A detailed analysis of the causes of the disturbance of the financial stability of the companies in question showed that the loss of general balance occurred individually in each separate case, however, in general, they are variants of two totally different basic scenarios.

According to the first scenario, the loss of financial stability occurs suddenly, as a result of certain extraordinary events, and, as a rule, is accompanied by a loss of a considerable part of assets. The extent of the effect of destabilizing factors is such that the company cannot adapt to new conditions for a long time.

As a result, the consistency of cash flows is disturbed, production profitability decreases greatly, sales markets are lost, internal conflicts and relations with

business partners become more acute. The absence of a smooth system of corporate management leads to an increase in financial losses and bankruptcy risks in nearest future. According to the second scenario, the loss of financial stability occurs through a relatively slow increase of the deviations of the values of company's activity indices from their optimal values. This process is smooth and invisible at the beginning but, in case that no stabilization measures are taken in proper time, this may lead to an increase of uncontrollable yield reduction and even to direct losses from the main operational activity.

Under such circumstances the national producers can continue to work only by revising strategic objectives of activity and looking for new ways of growth.

*Conclusions.* In this way, the research and generalization of its results allow to state that the proposed method of the integral estimate of company's financial stability has considerable advantages, namely: capability of the complex assessment of company's financial stability; high flexibility which is demonstrated through the capability of taking into account the conditions and peculiarities of the operation of a specific company in the calculation of the integral index; allows not only to take absolute index values into consideration but also assess the direction and the degree of effect on the general economic results of company's activity.

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#### **Слецьких С. Я. Альтернативні методи оцінювання фінансової стійкості підприємства**

Обґрунтовано значення фінансової стійкості для забезпечення фінансового потенціалу та економічного зростання усієї господарської системи країни, визначено складові фінансово стійкого розвитку підприємства, запропоновано альтернативні методи щодо оцінювання фінансово стійкого розвитку підприємства.

*Ключові слова:* фінансова стійкість; стійкий розвиток; кількісні та якісні складові; комплексний методичний підхід; інтегральний показник.

#### **Елецких С. Я. Альтернативные методы оценки финансовой устойчивости предприятия**

Обосновано значение финансовой устойчивости для обеспечения финансового потенциала и экономического роста всей хозяйственной системы страны, определены составляющие финансово устойчивого развития предприятия, предложены альтернативные методы оценки финансово устойчивого развития предприятия.

*Ключевые слова:* финансовая устойчивость; устойчивое развитие; количественные и качественные составляющие; комплексный методический подход; интегральный показатель.

#### **Yeletskykh S. Alternative methods for evaluating financial sustainability of an enterprise**

The importance of financial stability for maintaining the financial potential and economic growth of the whole national economic system has been substantiated, the indices of company's financially stable development have been defined, a complex methodological approach to the assessment of company's financially stable development has been proposed.

*Keywords:* financial stability; steady development; quantitative and qualitative components; complex methodological approach; integral index.

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## RISK FACTOR IN FINANCIAL SECURITY PROVISION OF ENTERPRISES ON THE BASE OF MANAGEMENT OF AVAILABLE FINANCIAL RESOURCES

**Preliminary Findings and Conclusions.** The process of provision of enterprises financial security is closely connected with neutralization of risks, dangers and threats. Companies always hold their funds on their accounts in the banks, and demand balances they transfer on deposit in the bank to receive interest profit. In the conditions of crisis liquidity, soundness and solvency are declined in most of the bank institutions, other indexes can considerably get worse. Government whether liquidates such banks, or conducts procedure of refunding. Individual persons have the possibility to receive their lost money through the Deposit Insurance Fund, requirement of the enterprises to receive their own money in the liquidated bank can be satisfied through the court in the last turn. Thus, it is necessary to warn the risk, related with the unsuccessful choice of the bank (deposit risk), on the first stage by acceptance of the proper administrative decisions in relation to investment of the free capital.

In accordance with the article of 52 Law of Ukraine «About the system of Deposit Insurance Fund» [1], that determines «Satisfaction ranking and order of claims to the bank, payment of charges and arranging of payments», p.7 part, 1 «requirements of the other depositors, which are not related persons of the bank, legal entities, – clients of the bank, which are not related persons of the bank» will be satisfied almost in the last turn. The row of advantages have individuals, investing their funds on a deposit: presence of the Deposit Insurance Fund, sum of their deposits far less than sum of free capital, which enterprise can invest. Thus, it becomes more necessary to develop the measures on warning of deposit risks of enterprises.

**The last research analysis.** Question of risks, and also their management is studied by both domestic and foreign, scientists (L.A. Davyudova, V.K. Faltsman [2], S.V. Mochernyj, O.A. Ustenko, S.I. Chebotar [3], I.A. Blank [4], E.S. Stoyanova [5], V.V. Vitlinskyj, P.I. Verchenko [6], I.Yu. Ivchenko [7], L.N. Tepman [8], V.N. Kochetkov, N.A. Shypova [9], V.N. Viatkin, V.A.

Hamza, Yu.Yu. Yekaterynoslavskyj, Dzh. Dzh. Khemp-ton [10], A.M. Dubrov, B.A. Lagosha, Ye.Yu. Khrustalev [11], S.M. Neskorojev, O.O. Hrachova [12], V.V. Kozuk, V.M. Masiuk [14], A.A. Zhyhir' [15], L.M. Horbach [16], O.O. Het'man, V.M. Shapoval [19], O.V. Tumoshenko [20], O.B. Zhykhor, M.O. Shtekhan [21], V.V. Maliuha [22] etc). Research in the sphere of financial security is carried out by such authors, as: O.V. Malyk [18], O.V. Aref'ieva [23], O.Yu. Amosov [24], Yu.M. Petrenko [25], V.I. Fuchedzhi [26], K.S. Tymoshchenko [27], O.S. Kharchenko [28], L.A. Mohylina [29] etc.

Despite of the presence of the studies, in which is considered the possibility of providing of financial security by the management of financial risks, there are no researches of intercommunication of financial security and deposit risk exactly. It is not whether selected as a separate type of risk, or considered that it meets rarely enough and related to the wrong choice of the bank.

Also the analysis of the last publications testifies, that there is no sufficient attention for the management of the free capital. At the same time providing of financial security is closely connected with the overcoming of the risks, threats and dangers. Choice of the bank for investment of free capital on a deposit related to the special type of the risk (deposit risk). In modern literature there are a lot of studies of deposit risk in the banks, but crises of the last years and liquidation of considerable number of the banks mean that is necessary to take into account that enterprises may have losses in the case of unsuccessful choice of financial institution for investment of the free capital.

**The aim of the article** to consider the views of different authors about enterprises financial security and risk, definition of the opportunities of financial security provision on the base of deposit risk factor.

**Findings.** Financial security of enterprise is closely connected with the affect of risks. Let us consider their intercommunication and begin with the definition of risk (table 1).

Table 1

Approaches to the definition of the «risk»

Authors	Approaches to the definition of the «risk»
1	2
Davydova L.A., Faltsman V.K. [2, c.195]	The risk is a potential for temporary insolvency of the enterprise
Blank I.A. [4, c.82], Blank I.A. [4, c.82]	The risk is a possibility of occurrence of adverse events related to various types of losses
Stoianova Ye.S. [5, c.439]	Risk is understood to be a possible danger of losses, which ensues from a specific those or another natural events and types of activity of a man

1	2
Ivchenko I.Yu. [7, c.24]	The essence of risk is - the possibility of deviation from the intended purpose for which the chosen alternative is created; - the probability of achieving the desired result; - lack of confidence in achieving this goal; - the possibility of material, moral and other losses associated with the chosen in the terms of uncertainty alternative
Tepman L.N. [8, c.8]	The risk is the possibility of origin of unfavorable situations during realization of plans and implementation of budgets of enterprise
Kochetkov V.N., Thorn. N.A. [9, c.5]	Risk is determined as a value term of probabilistic event which conduces to the losses.
V.N. Viatkin, V.A. Hamza, Yu.Yu. Yekaterynoslavskij, Dzh. Dzh. Khempton [10, c.22]	The risk is the possibility of offensive of the event, which is undesirable to a certain subject, from the plural of variations of results, which can take place during the certain period of time, beginning from a certain initial situation
A.M. Dubrov, B.A. Lagosha, Ye.Yu. Khrustalev [11, c.10]	Risk is understood to be a possibility (threat) of loss by a person or organization of a part of their resources, receiving revenue shotfalls or appearance of additional charges, as a result of realization of certain production or financial policy
Malyk O.V. [18, c.41]	«...the «risk» is a situation of uncertainty of end result of choice among existent alternatives, as a result of the accepted decision, implementation of certain actions or coincidence, which can result in a positive, negative and neutral result, which probability of occurrence can be appraised»
O.O. Het'man, V.M. Shapoval [19, c. 254]	The risk is the opportunity of the value of any parameters of production, market financial system to deviate from a pre-defined target value by the amount that exceeds the tolerance of this parameter. The term "system" refers to any set of interrelated elements, which has a specific set of parameters

On the view of the foregoing, the risk is understand to be the likelihood of appearance of undesirable situation in the activity of enterprises, organizations, individuals, during the selection of the variants of decisions, that conduces to the loss of income, possibility of unforeseen losses, loss of solvency. Provision of enterprise financial security means the achievement of its

stable development, protection from external and internal threats, and consequently, it is necessary to create a system of risk-management, to develop the measures on decline of risk level.

We then consider approaches to the definition of financial security (table 2).

Table 2

### Approaches to the definition of financial security

Authors	Approaches to the definition of financial security
Amosov O.Yu. [20]	«Enterprise financial security was proposing, that it should consider as a measure of harmonization in time and space of companies economic interests with the interests of related business environment, operating outside the enterprise»
Petrenko Yu.M. [25, c. 16]	«The financial security of enterprise is defined as the state of the economic relations of the company, which is within the available financial instruments provides the achievement of the ultimate goals and objectives of the adopted financial strategies, and can be expressed in the quantitative and / or qualitative parameters, in accordance with the principles and selected management practices»
V.I. Fuchedzhi [26, c. 6]	«...enterprises financial security is protection of companies against the threats, it is characterized by financial position and is provided by the balance of available financial resources»
Tymoshchenko K.S. [27, c. 29]	«According to the logic of constructing of «the business entity financial security» definition ... its most extensive formulation could be as the stable ability of a enterprise to ensure their own financial interests. The most narrow formulation of the definition of "legal entity financial security" is as follows: enterprise financial position, which is characterized by resistance to internal and external dangers and threats»
Kharchenko O.S. [28, c. 26]	«The financial security of the enterprise reflects the achievement of the certain state of the enterprise for financial protection from the real and potential threats with external and internal nature, wich is determined by quantitative and qualitative parameters of its solvency and financial stability, by the balance of financial instruments and methods of their management, by the supply of sufficient amount financial resources taking into account the formation of the complex of priority financial interests and creation of the necessary financial preconditions for sustainable growth and development in the short and long-run periods provided continuous monitoring of financial security and the formation of complex preventive measures and control means»
Malyk O.V. [18, c. 26]	«...we suggest to consider the definition of enterprise financial security as state, that is characterized by security of financial interests of enterprise, provision of sufficient volume and balanced use of resources, presence of steady dynamics of increase in current and perspective periods, which is achieved by development and realization of rational financial strategy of enterprise, by flexibility in the acceptance of financial decisions, timely reacting on external and internal dangers and threats and effective management of the financial risks of enterprise»
Mohylina L.A. [29, c. 5 - 6]	«... dynamic financial position of the enterprise characterized by its stable protection of priority financial interests from identified endogenous and exogenous threats and the ability to ensure the implementation of their financial interests, missions and objectives, as well as their own development by sufficient amount of financial resources»

Based on the foregoing we offer the following definition of financial security on the base of management of free capital, it is the company's ability to resist internal and external threats in the sphere of financial interests on the base of free capital management to ensure financial stability, solvency, liquidity and efficiency of its operations on acceptable level of risk

Exploring issue of financial security, partly agree with Malyk O.V. [18, p. 40 - 51] that primary attention should be paid just for the financial risks. According to the author: "The financial risk is the possibility of a negative result of measures taken for ensuring enterprise financial security. From this it has become evident that the main objective of the financial risks management is to ensure the financial security of the enterprise during its operation and development, in what methodological connection of financial risk and financial security consists at the level of enterprise"[18, p. 41].

Neskorodev S.M. and Hrachova O.O. in their study financial risk determine as "... this is type of risk arises in the financial and economic activity of the subject when the causal and consequence results or measures of its achievement differ from its stated objectives and planning norms, and obtained deviations have the value character" [12].

O.B Zhykhor, M.O. Shtekhan believe that «... the financial risk is a specific economic category, which arises in the course of economic activities and represents the probability of profit decline, loss of capital, bankruptcy under the condition of uncertainty of the financial, industrial and economic factors». [21]

Maliuga V.V. considering the issue of financial risks insurance, gives the following definition: «... the financial risk is the probability of damage during the operations in financial and credit activity» [22].

Stoyanova noted that the financial risks associated with the probability of losses of financial resources (i.e. money) [5, p. 442].

V.V. Vitlinskyj, P.I. Verchenko noted that "Financial risk is understood to be risk arising during the financial business or financial transactions. The financial risks are:

- currency risk;
- credit risk;
- investment risk" [6, p. 28].

At the same time, the authors include to the main types of investment risk follows: innovation, selective, interest, country, operational, time, risk of legislative changes, unstable legislative framework, liquidity risk and the risk of inflation.

Stoyanova [5] divides the financial risks into two types: risks associated with the purchasing power of money (inflationary, deflationary, currency, liquidity) and risks associated with capital investment (investment risks). The author considers, that investment risks are: the risk of lost benefits, reducing of return risk (interest

and credit risks), the risk of direct financial losses (exchange risk, selective risk, bankruptcy, loan).

The authors: S.V. Mochernyj, O.A. Ustenko, S.I. Chebotar included to the financial risks such types: credit, interest rate, investment [3, p. 200-292].

Kochetkova V.N. Shypova N.A. divided risks in their study as follows: «Financial risks are divided into Trading risks. This type risk is associated with the loss because of payment delays, refusal of payment during the transport of goods, shot delivery, nondelivery of goods, etc».

«There are such types of Financial risks, which are associated with the probability of loss of financial resources (i.e. money):

- 1) risks associated with the purchasing capacity of money;
- 2) risks associated with the investment of capital, investment risks.

The risks, which are associated with the purchasing capacity of money, are the following types of risks: inflation, deflationary, currency risk, liquidity risk».

«Investment risks include the risks of the following subtypes:

- a) the risk of lost profits;
- b) the risk of decline in yield;
- c) the risk of direct financial losses. "

«The risk of decline in yield includes the following types: interest and credit risks».

«The risks of direct financial losses include the following varieties: exchange risk, selective risk, the risk of bankruptcy» [9, p. 12-15].

Authors S.M. Neskorodyev and O.O. Gracheva [12] divided the financial risks into internal and external. According to the authors, the external financial risks include such kinds: inflation, deflationary, currency, tax, deposit; and internal types of risks are investment, business process risks and other risks (risks of unused capacity, emission, structural).

O.V. Tymoshenko [20] gives generalized classification the financial-risks insurance: shortfall (loss) of the profit (income), in the case of reduction of specified profitability level, the risk of destruction or damage of the means of production, exchange risks, foreign exchange risks.

The authors O.B Zhykhor, M.O. Shtekhan [21] also divide financial risks into internal and external. Internal financial risks are investment (credit, dividend, portfolio, temporary, selective, capital, individual), operational (liquidity, profitability, financial sustainability, turnover), other (structural, emission, unused capacity). External financial risks are changes in legislation, government, inflation, deflationary, currency, deposit, tax, market, interest.

O.V. Malyk divides financial risks into internal, external and mixed. The author said, that internal risks are selective, investment, innovative, deposit, credit, the risk of decline of financial soundness, insolvency, lost

of profit, liquidity, risk of bankruptcy. External risks are inflationary, percent, currency. Political and lawful, tax, criminogenic, informative risks belong to the group of the mixed risks.

The analysis of above literature indicates that the subject of risks is fairly widespread, but deposit risks in structure of finance risks mark out a few authors of these studies. They are S.M. Neskorohev, O.O. Hrachova, O.B Zhykhor, M.O. Shtekhan and O.V. Malyk. We will consider deposit risk as essential in provision of enterprise financial security on the base of the management of free capital, it follows from its definition.

«Deposit risk. This risk reflects the possibility of deposits default (nonpayment of deposit certificates). It is quite rare and is associated with the incorrect assessment and inappropriate selection of commercial bank for deposit operations of the company. However, the cases of deposit risk realization are met not only in our country, but also in countries with developed market economy» [4, p. 436].

«Deposit risk is the probability of deposits default, nonpayment of deposit certificates, changes in the conditions of the deposit agreement or in the rules of such services provision by banks» [12].

«Deposit risk (deposit risk) is the risk of the possible deposits default (fully or partially) due to the bankruptcy of the bank or another financial institution. It is associated with the incorrect assessment or inappropriate choice of the bank (or another financial institu-

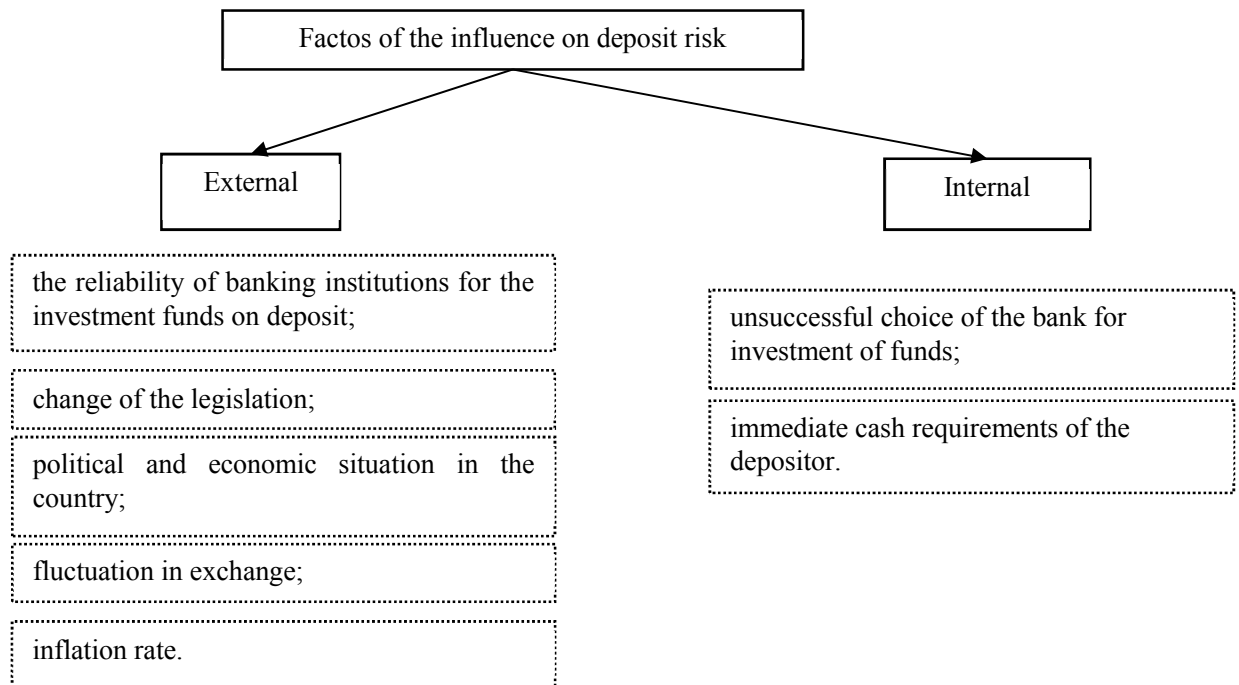
tion) for the implementation the deposit operations of the enterprise» [13].

«Deposit risk is mostly associated with unsuccessful choice of the bank for deposit operations» [14]. This definition does not reveal its essence and indicates to the cause of the deposit risks appearance and this definition is the most common for the majority of the authors.

«The deposit risk is one of varieties of risk of the financial investment and is the probability of of deposits default at the unsuccessful choice of commercial bank for realization of deposit operations by the enterprise. This type of risk has considerable influence on the level of enterprise financial security, as it results in the considerable decline of liquidity and, as consequence, solvency of the companies» [18, p. 47].

«Deposit risks associated with the threat of deposits default, nonpayment of deposit certificates» [21].

In our opinion, the most complete deposit risk is defined by the author O.V. Mayk, but it can be completed, namely deposit risk of companies is an opportunity not returning money, which were received by the bank from the legal entities and executed by the deposit agreement, and the probability of loss of anticipated profit as intrerst, when the contract terms changes, changes in the exchange rates and the impact of other social and economic factors. To develop measures for the reduction of the deposit risk, we will consider the factors that affect it (Figure 1), there are external and internal among them.



**Fig. 1. Classification of the factors affecting the deposit risk of the entities**  
[original development]

External risk factors include the following types:  
– the reliability of the banking institution, in which companies contribute their funds on the deposit;

– change of the legislation;  
– the political and economic situation in the country;

- fluctuation in exchange;
- inflation rate.

The internal risk factors include:

- an unsuccessful choice of bank for investment;
- immediate cash requirements of the depositor,

which may lead to early withdrawal of deposits and the loss of anticipated profits as interest.

We will consider separately the impact of each factor on deposit risk.

Reliability of the commercial bank is the probability to perform their functions at any stage of development timely and continuously, and in spite of external and internal environment factors. Reliable Bank has the following features: timely transfers money from deposit, cash withdrawal from current accounts (timely payment of salaries, pensions, scholarships and social assistance), conducting continuous and balanced policy on active operations, the ability to repay loans obtained from other banks.

Changing in legislation, political and economic situation in the country can have both positive and negative effects.

Fluctuations in exchange affect those depositors, who has existing currency deposits, and conduct payments in foreign currency. Increased exchange rate will have a positive impact for those who have deposits in dollars, euros or other currency because the hryvnia equivalent rise and vice versa. However, the growth rate of foreign currency against the national will affect negatively on the importer and requires a diversion of funds from deposit accounts.

Company management can not influence on the external factors, they should be only taken into account. In our opinion, there are such internal factors, which influence the deposit risk. They are an unsuccessful choice of the bank for investment and immediate money requirements of the depositor. Financial resources demand may be predicted by planning and making-up a payment calendar. Choice of the bank for a capital investment we offer to make to the depositors legal entities on the base of their own analysis and methods of the reliability and stability assessment of banks.

In a view of the above, we can offer the following tools to ensure financial security on the base of free capital management by taking into account deposit risks:

- diversification of deposit portfolio by types of deposits, by banks and currencies;
- developing long-term plans to determine the amount of necessary funds and to prevent the early withdrawal of deposits;
- exchange rates forecasting of deposit agreements;
- the use of active deposits, i.e. deposits with a minimum fixed part, with the opportunity of the replenishment and withdrawal, which allows to prevent the loss of interests, which arises when enterprise choose a fixed-term deposit;

– continuous planning, forecasting, dynamic adjustment of the plans to determine the maximum amount that can be used to place money on the deposit;

– application of the system of deposit insurance for individuals and legal entities;

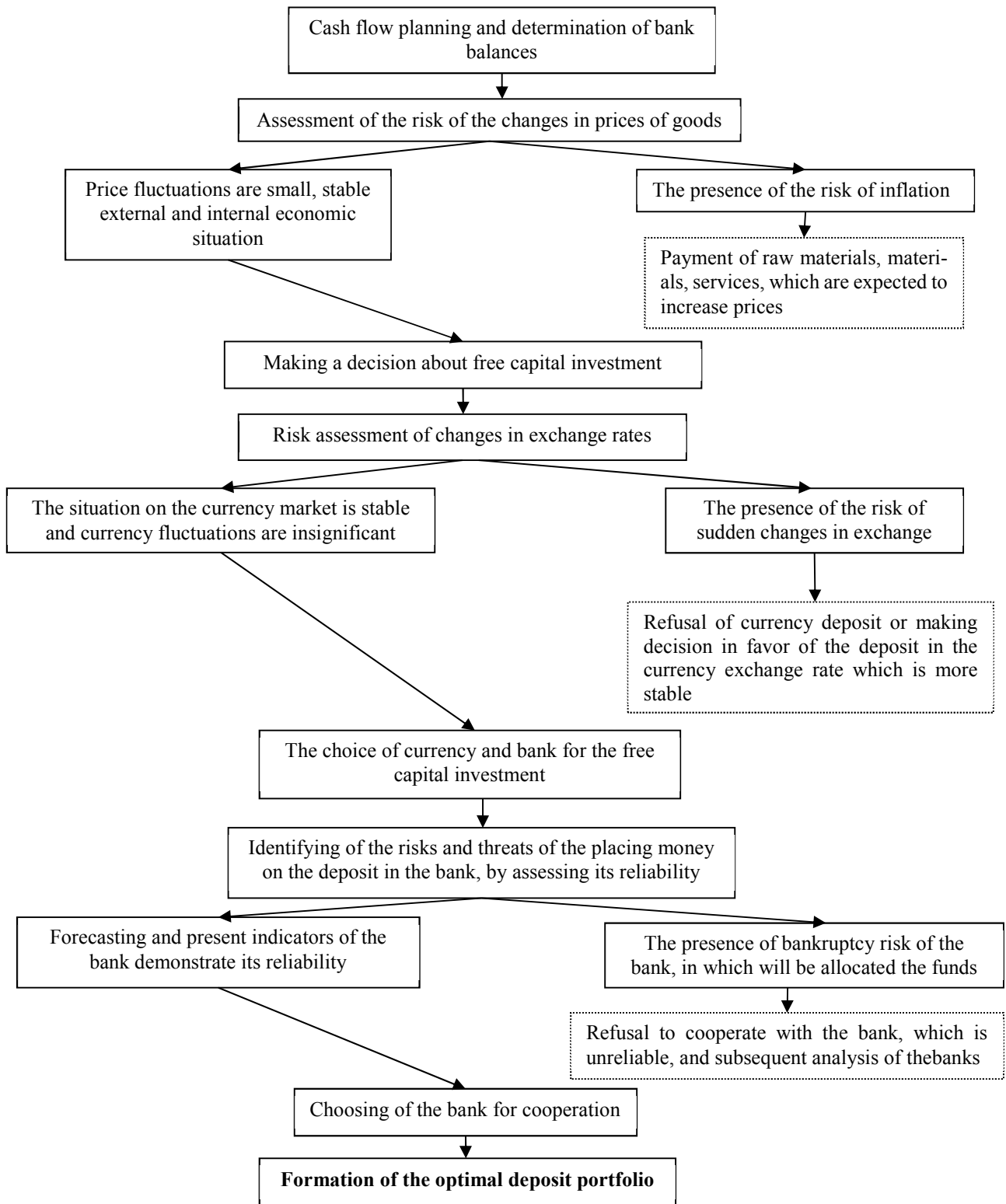
– determination of bank reliability in which the company will invest. Choosing of the bank in which the company will invest money is the most important factor of influence on the deposit risk of legal entities. Classification of financial institutions by groups conducted by the National Bank of Ukraine, ratings of various agencies are modern tools of the financial state of the banks assessment, but the priority criterion for choosing the bank for cooperation must be thorough independent study of the reliability of the financial institution and forecasting key indicators that will allow to limit deposit risks of the entities.

The overall scheme for managing deposit risk at the enterprise can be represented as follows (Figure 2).

**Conclusions.** Thus, legal entities must take deposit risks into account in order to ensure financial security through the management of free money. Consideration of depositary risks and factors influencing them makes it possible to develop a series of measures to reduce or avoid them, to create the most optimal deposit portfolio with a "risk-return" position. Crisis phenomena lead to destabilization in the financial sector, in particular, in the banking sector. Since companies are simply forced to keep funds in their accounts with banks, the choice of the bank and the reliability of the banking institution are the determining factors for the impact on the deposit risks of legal entities. Hence, the analysis of the reliability and financial stability of banking institutions is determined by the most effective instrument for ensuring financial security on the basis of free cash management.

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**Fig. 2. Management decisions scheme regarding allocation of funds on deposit \***  
[original development]



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#### **Петришева К. Г. Врахування фактору ризику у забезпеченні фінансової безпеки підприємств на основі управління вільними грошовими коштами**

У статті розглянуто взаємозв'язок ризиків та фінансової безпеки, запропоновано визначення депозитних ризиків юридичних осіб. Також, у статті наведено фактори, що впливають на депозитні ризики юридичних осіб, їх можна поділити на зовнішні та внутрішні. До зовнішніх факторів можна віднести: надійність банківської установи, в яку підприємство вкладатиме кошти, зміна законодавчих актів, валютних курсів, рівня інфляції, стабільність політичної

та економічної ситуації в країні. Внутрішні чинники, що впливають на ризики депозитної діяльності: негайна потреба в коштах самого вкладника, невдалий вибір банку для вкладення коштів. У статті запропоновано комплекс заходів щодо забезпечення фінансової безпеки підприємств на основі управління вільними грошовими коштами, найбільш дієвим інструментом є попередження прояву депозитного ризику, а саме: аналіз та прогнозування надійності банку, в який підприємство вкладатиме кошти.

*Ключові слова:* фінансова безпека, ризики, депозитні ризики, грошові кошти, надійність/

**Петрищева Е. Г. Учет фактора риска в обеспечении финансовой безопасности предприятий на основе управления свободными денежными средствами**

В статье рассмотрена взаимосвязь рисков и финансовой безопасности, предложено определение депозитных рисков юридических лиц. Также, в статье рассмотрены факторы, которые влияют на депозитные риски юридических лиц, они делятся на внутренние и внешние. К внешним факторам относятся: надежность банка, в который предприятие вложит денежные средства, изменение законодательных актов, валютных курсов, уровня инфляции, стабильность политической и экономической ситуации в стране. Внутренние факторы, которые влияют на риски депозитной деятельности: острая необходимость в денежных средствах самого вкладчика, неудачный выбор банка для вложения средств. В статье предложен комплекс мер по обеспечению фи-

нансовой безопасности предприятий на основе управления свободными денежными средствами, самым действенным инструментом является предупреждение проявления депозитного риска, а именно: анализ и прогнозирование надежности банка, в который предприятие будет размещать средства на депозит.

*Ключевые слова:* финансовая безопасность, риски, депозитные риски, денежные средства, надежность/

**Petrischeva K. Risk factor in financial security provision of enterprises on the base of management of available financial resources**

Interdependence of risks and financial security is considered in the article, determination of legal entity deposit risk management is offered. Also factors, which influence on the legal entity deposit risks, are considered. They are external and internal factors. External factors are reliability of the bank, in which entity will invest funds, changes in legislation, change of foreign exchange rate, inflation level, political and economic stability in the country. Internal factors, which influence on risks of deposit activity, are acute need of funds of depositor, incorrect choice of the bank for invest of the funds. There are some measures for the provision of enterprises on the base of management of available financial resources, the most effective one is the prevention of deposit risk. They are analysis and prediction of bank's reliability, in which legal entity will invest funds.

*Keywords:* financial security, risks, deposit risks, financial resources, reliability.

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## THE ESSENCE OF COMPETITION IN THE ELECTRICAL POWER SUBSECTOR

### Introduction

The term competition comes from the Latin word *concurrere*, which means "to run together". A literal translation does not exactly reflect the essence, but draws attention to operating in a common field. It is the primary characteristic of a market economy. The achievement of competitive advantage is the key issue in the strategic management of any business operating in market conditions. It is engrained in the functioning of contemporary businesses. For that reason very often businesses are considered competitive, when they are characterized by ability and flexibility to adapt to constantly changing functioning conditions and can make decisions which ensure a competitive advantage [Lyashenko, Osadcha, Galyasovskaya, Knyshek 2017, pp. 20-25; Pająk, Kamińska, Kvilinskyi 2016, pp. 204-217].

Analyzing the genesis of the term of competitiveness one may in the first instance encounter its international scale. The term has for the first time been introduced into the political vocabulary in a macroeconomic context. It described a characteristic of a given state's economic system in comparison to that of other countries. Literature indicates that American economists, as a result of strict competition between American and Japanese businesses, made attempts to determine the degree of competitiveness of rivaling economies [Wziątek-Kubiak 2003, p. 9].

When presenting the essence of competitiveness, it is necessary to conduct a broad analysis of its genesis, the origin of the word and its meaning to the history of economics and key definitions of the term. The issue of competitiveness is associated with the need to show reasons why certain businesses achieve success and others, operating in the same environment, do not. Currently operating businesses deal with increasingly difficult and more complicated development conditions, which not all are capable of handling.

An analysis of the causes of this state of affairs requires first of all to define the terms in the field in question.

A thorough analysis of the causes can be found in the report on the study conducted by the Committee for Competitiveness published in 1985. The authors of individual sections associated the term of competitiveness with the effectiveness of the entire economy in raising the standard of living. Taking into consideration the subject matter of international trade, the terminology of

competitiveness has been consolidated. It was concluded that it signifies the degree, in which the country's economy is able to produce goods and services which meet the requirements of international markets, while also maintaining and increasing the actual income of its citizens [Świtalski 2005, p. 165-169].

An interesting interpretation can also be found in the 1995 official documents of the British Ministry of Trade and Industry, which assumed that the ability to produce the right goods and services with the proper quality, at an adequate price and within the specified time is a sign of competitiveness. It boils down to satisfying the needs of the buyer in an efficient way and more effectively than other businesses. Unfortunately, this definition is only limited to microeconomic aspects, attributing success to only large businesses which are the only ones with the possibility of achieving huge benefits. The definition has been updated in the years 1996-1997. A modernized version defines competitiveness as the ability of businesses, trades, branches of industry, regions and countries or transnational groups of countries to achieve relatively high profitability and high engagement of production factors. Additionally, this definition comes with a provision, that all the above takes place in conditions of continued participation in international rivalry, especially in a long-term perspective. [Świtalski 2005, p. 165 and further].

In Polish economic literature the term of competitiveness has for the first time been used by S. Flejterski, who defined it as an ability, through the use of attractive prices and additional qualities, to design, produce and sell goods in larger quantities than the competition [Flejterski 1984, p. 391].

M. Stankiewicz and A. Noga have also spoken on the topic of competitiveness, claiming it to be a phenomenon, whose participants engage in a rivalry to achieve similar goals. This means, that the actions of some hinder or prevent the achievement of goals by others. Therefore, the phenomenon of competition is defined as an act or process of individuals striving to achieve such benefits, towards which others strive at the same time, in the same conditions, and on similar terms. Its essence is based on eliminating the businesses operating in the same field and taking over their customers. [M. J. Stankiewicz 2005, p. 19; A. Noga 1993, p. 9].

According to U. Płowiec competitiveness means: "profitability of production higher than the currently applicable rate of interest and significant chances of long-

term development as a result of a company's willingness to innovate in terms of technology and organization, thereby enabling the achievement of appropriate profits and leadership in a given field of industry". [Płowiec 1994, p. 10-11] W. Bieńkowski, on the other hand, states that competitiveness "is the ability to fight for economic survival in conditions of increasingly strict competition. An expression of this willingness is the ability of a business entity to sustain itself on the market throughout an extended period. In the macro perspective, it is an ability to grow in conditions of an open economy, the effect of which will be such a structure of economy and export, which is able to keep up with the changes in international economy and international export" [Bieńkowski 2000, p. 96].

According to G. Hamel and C.K. Prahalad competitiveness is created in the space between ingenuity and the goals of managers. Companies try to function as best as possible on markets, which in most cases are not attractive. They strive towards the highest quality of their products, in order to reach first place, to be better than the competition. It can therefore be said, that competitiveness is the ability of continued development, growth of productivity and effective development in an environment in which newer, cheaper and better products are offered [Jelonek 2003, p. 32].

M.J. Baker and S.J. Hart, on the other hand, believe that competitiveness most of all depends on the fulfillment degree of demand criteria by product related factors. Competition is viewed as a source of development for the organization or as a factor of success which depends on economic and cultural conditions. Simultaneously, very often competition is associated with a factor which makes it difficult for buyers to make purchase decisions [Penc 2003, p. 310].

Competitiveness means the ability of a business enterprise to achieve and maintain an advantage on the market. It should not be associated with competitive advantage, as this is achieved by the correct utilization of resources and skills. However, it is a complete set of characteristics which determine an organization's success in the given moment. Competitiveness is the potential, possibilities and ability of a given market entity to handle the rivalry of other entities operating on the same market. This means, that an organization is able to survive in a given environment for a long time. Its competitive ability, therefore, manifests itself in undertaking actions which allow to develop entrepreneurship, innovativeness, investment and efficient allocation of resources [Janiuk 2004, p. 170]. A full list of terminological definitions of competitiveness is presented in Table 1.

Table 1

## Selected definitions of competitiveness

Author	Definition
G. Hamel, C.K. Prahalad	Ability to gain – thanks to high product quality – first place in the opinion of customers
D. Faulkner C. Bowman	Ability of a company to achieve the leading position in a given trade
M. Gorynia	Current or future competitive position determined by a company's ability to compete
J. Burnewicz	Ability to oppose the competition
M.J. Stankiewicz	Ability to effectively, efficiently, beneficially and economically achieve one's goals on the market arena of competitiveness
M. Lubiński	Ability of sustainable development over a long period and pursuit of maintaining and increasing the market share
B. Godziszewski	Ability to compete, i.e. operate and survive in a competitive environment
E.Jantoń-Drozdowska	Ability of an enterprise to increase the efficiency of internal functioning through strengthening and improving its market position
M.K. Nowakowski	A company's ability to cope with competition from other entities, maintain and increase its market share and, as a result, achieve corresponding profits
J. Skalik	A measure of ability to gain an advantage over other market players – participants in a given sector

Source: own elaboration based on [Gorzelany-Dziadkowiec 2014, p. 11].

Competitiveness, therefore, is a multifaceted term which is relative in nature. As a theoretical category, it is not easy to apply in a study of economic processes, as it requires comparison with other entities. Empirical studies regarding competitiveness is, therefore, preceded by determining the measures and their weights, as well as selecting research methods which are adapted to

the analyzed entity. Theoreticians dealing with the issue of competitiveness do not define this category, arguing that the term itself is imprecisely formulated and there is no confirmation of the occurrence of correlations at a statistically relevant level on an empirical basis [Conway, Nicoletti 2006, p. 29].

Analyzing the theoretical term of competition it is worth noticing that it contains elements of a static (evaluation of competitiveness at a specific moment in time), as well as dynamic nature (analysis of factors which determine competitive ability over a longer period, emphasizing the ability to improve it). The essence of conducting a comprehensive assessment of the competitiveness of a business is the specification of dynamic factors which constitute a determinant of its development directions in a changing environment [Bakier, Weredyk 2000, p. 38]. It is a difficult measure to carry out in practice, therefore, for the sake of simplification, it is assumed that the competitiveness of a business is the present (achieved) and future (prospective) market position resulting from the mutual relations between the ability to strengthen and use its competitive ability, and factors and mechanisms which occur in the environment and influence the business. On the other hand, the competitive ability of a business is its development potential necessary to realize the adopted competitive strategies and increase its value over a longer period. The proper development potential enables to develop and implement innovations considered to be a source of a company's competitive advantage [Podczarski 2016, p. 55 and further].

The primary evaluation process of evaluating the competitiveness level of a business is a comparison of its actual results with those expected by customers. Based on the results of that comparison it is possible to distinguish three types of competitiveness:

- normal competitiveness – if the results are equal to the expectations of those participating in such interactions, recipients or suppliers. In such a case they are not motivated to abandon relations with a business. This state is maintained until other, more attractive businesses take decisive actions in order to take over the existing customers, service users, service providers or suppliers of a given business;

- below normal competitiveness – when the actual evaluation results fail to meet expectations. In this case a situation occurs, in which customers take action to withdraw from interactions with a given business and establish relations with a different, more attractive one. They may also, intentionally or unintentionally, discourage others from cooperation with such a business.

- above normal competitiveness – when the actual evaluation results are higher than expected. Stakeholders who have a basis for such assessments make efforts to strengthen their relations with a business, often intentionally or unintentionally encouraging others to establish cooperation. Therefore, the number of parties willing to cooperate increases [Stankiewicz 2005, p. 44].

Occasionally, competitiveness is not directly defined, rather only classified. Such classification incorporates primarily the following groups of criteria: actions or outcomes, assessment range, assessment performance

time, area of occurrence, parties in market relations, observation duration and competitiveness level [Noga 1993, p. 37]. The first of the above criteria distinguishes factor-based and outcome-based competitiveness. It constitutes determination of a business's ability to take actions which form a basis for its effective competition, such as: a sufficiently quick response to changes in the environment, ability to use a company's own resources, ability to take advantage of favorable environmental configurations, rationality level of decision processes and other factors which build the competitiveness of businesses in a long-term perspective. Therefore, outcome-based competitiveness determines the outcome of competing, including: the market share level, product sales share level, financial results of businesses compared to the leaders and their results [Pach-Gurgul 2012, p. 203 and further].

Another criterion relates to the assessment range, which distinguishes systemic and operational competitiveness. The former means specific technical abilities, which are relevant from the perspective functioning in a given market. On the other hand, operational competitiveness applies to a wide range of the company's behaviors in relation to other entities. They are associated with the company's mission and vision, considered in an assessment range taking into account occurrences on the market.

The criterion of assessment performance time can be used to distinguish ex post and ex ante competitiveness. Substantively, ex post means the current competitive situation, while ex ante is the prospective competitive position defined as the company's ability for further operation in the future. In terms of terminology, ex ante most often means the competitive potential. The effective strategy is an analytical category which enables the transition from the ex ante potential to actual, ex post competitiveness [Nagaj 2016, p. 245 and further].

Based on the area of occurrence criterion it is possible to classify competitiveness on markets as an outcome of specific groups of products and services, preferred-developing products and services, a concrete, specific type of resources, specific territory, country, group of countries, continents, where it is possible to distinguish competitiveness of a business in an internal, national market or the international market [Stankiewicz 2005, p. 39].

According to the observation time criterion we can distinguish static and dynamic competition. The former is simply the competitiveness level of a given entity at a specific point in time. Dynamic competitiveness defines changes in the operation of a given enterprise, its dynamic within a given period.

The parties in market relations criterion may serve to distinguish between "input" and "output" competitiveness of a given business. Competitiveness evaluated at the "input" of a given entity is the ability to effectively

realize goals associated with supply transactions. Competitiveness assessed at the “output”, on the other hand, is the company’s ability to realize goals associated with sales transactions [Gorynia 2000, p. 92].

The final criterion is the generally understood competitiveness level, assessed by four groups of stakeholders: holders of shares or stocks, customers, buyers, employees, certain suppliers. Each of those groups evaluates the company’s operation using criteria corresponding to their interests: owners are interested primarily in the business’s value, customers are interested in the value of the offer, employees assess work and pay conditions, while suppliers assess the company’s operation – the scale of its activity [Gorynia 2000, p. 94].

Competition in individual markets may strive towards one of four forms of primary market structures: perfect competition, oligopoly, monopolistic competition or monopoly.

In a market of perfect competition there are an infinite number of businesses offering the same product or service. There is no product differentiation process, and the price (so called Equilibrium Price) is the same for all businesses and consumers. In such a market advertising is used exclusively to highlight differences in the perception of goods by customers. Businesses achieve va-

rying levels of profit depending on their manufacturing and distribution costs.

Oligopoly occurs, when several businesses provide a specific product or service. Because a business manufactures the same or a very similar product, the differentiation of a higher level of offered services/goods is key to price increase. In such a case, the company strives to be the leader in one of the abovementioned features, which is intended to attract customers, for whom that feature is important [Pach-Gurgul 2012, p. 184 and further].

Monopolistic competition is characterized by the occurrence of many competitors who are able to differentiate the market offer. A range of competitors focus on a selected market segment. They are the most capable of satisfying the customer’s needs in that selected segment.

A monopoly, however, is a market structure in which one company satisfies the whole supply of goods or services in a given region. A monopoly may be a result of a legal resolution, patent, license, economies of scale or other factors.

Market structures provided above differ significantly in terms of characteristics essential to the market, such as methods of competition between active entities. Those differences are presented in Table 2.

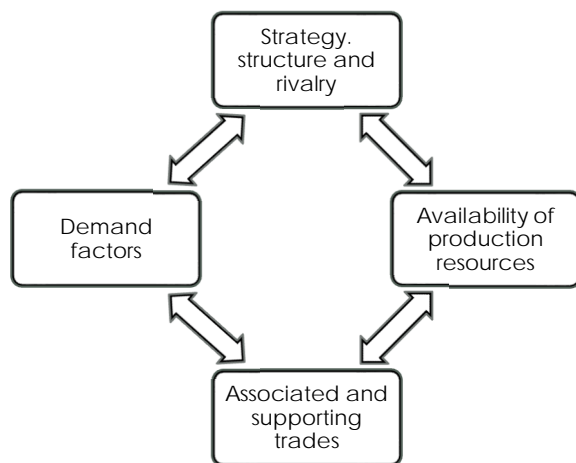
Table 2

Market structures present in a market economy

Feature	Perfect competition	Monopolistic competition	Oligopoly	Monopoly
Number of manufacturers/sellers	Infinitely large	Many (but few offering varied products)	Few	One
Company’s market share	Small	Rather small	Large	Very large
Product variation	Homogenous products	Products vary slightly	Identical, standard or slightly varied products	No close substitutes exist, unique product
Market information	Full knowledge about the market, products and prices	High level of market obfuscation; limited knowledge about the market	High level of market obfuscation	Large scope of information due to one manufacturer
Barriers to market entry	Low	Relatively low	High	Very high
Influence of manufacturers on the price	No influence	Significant, price control depends on product variation, number and closeness of competitors	Significant, limited by price interdependence, large in the case of price fixing	No competition
Competition methods	Price competition exclusively	Competition outside the price, based on promotion, quality, convenience in sales, etc.	As in the case of monopolistic competition, also through product variation	-

Source: own elaboration based on [Jonas 2002, p. 11-12].

Competition reveals the relations which exist between different entities operating in the same market. They are influenced by conditions within the organizations itself, as well as external ones, especially the changing competing conditions. The context of competition is illustrated in Figure 1.



**Fig. 1: Elements of the competitive context**

Source: [Porter, Kramer 2003, p. 86.]

Analyzing the content of the above figure, it is possible to indicate areas which shape a company's competitive position. Therefore, availability of production resources can be considered as: the possibility of acquiring qualified personnel, proximity and availability of scientific institutions and research centers, possession of the appropriate technical and technological infrastructure, availability of natural resources. Demand factors should primarily be understood as the size of the market, as well as correspondence of product standards with local norms, the level of education and knowledge of local buyers' trends. Another factor is a policy which encourages investment. Its purpose is to ensure protection of intellectual property, abolishment of customs barriers, liquidation of cartels or monopolies and prevention of their formation, as well as combating corruption. These are factors which increase the attractiveness of a given area to business. The final element of the competitive context are associated and supporting trades. Thanks to a strong infrastructure in the form of suppliers of high quality services and trades supporting business activity – a company's productivity is able to increase [Stankiewicz 2005, p. 89 and further].

Competitiveness exists when companies are forced to compete against each other, and a business is considered competitive, if it has presented the customer with a sufficiently attractive offer that the customer decided to make a purchase. However, in order to manage effectively and efficiently, one must clearly specify the object

and area of activity. This should be considered a process, which consists of several actions, such as:

1. Determining the constituents of competitiveness potential, i.e. the tangible and intangible resources necessary to function in a competitive market.

2. Indicating the competitive advantage understood as the possibility to utilize the potential which enables efficient functioning on the market through the creation of an attractive market offer and effective competing instruments.

3. Choice of competing instruments, i.e. means through which a business develops its market position in order to acquire buyers.

4. Measurement and assessment of the competitive position [Stankiewicz 2005, p. 89; Kamiński 2009, p. 235].

The effect of competing is the achieved position, i.e. the place held by a business compared with other competing entities. One of the methods which enables evaluation of the competitive position is diagnosis of the competitiveness potential.

The objective is to identify and evaluate the factors of competitiveness which lie within a company's resources. The diagnosis involves:

- determining primary areas of activity and a list of key factors of a given case;

- analyzing the areas, thematic fields and advantages which shape the main factors, together with their evaluation;

- answering the question regarding the essence and significance of the individual factors' impact on the competitive position;

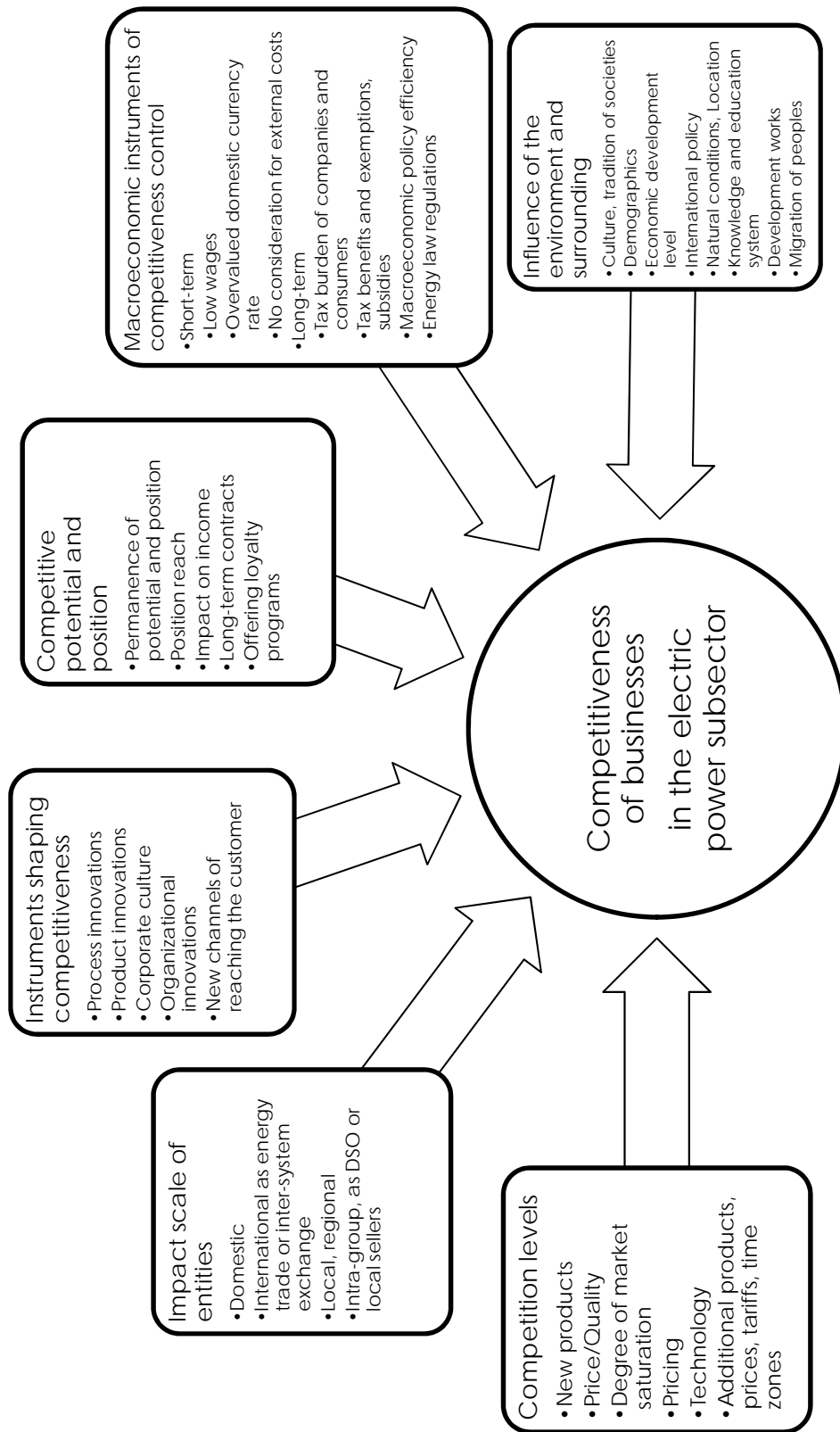
- conducting a qualitative and value-based assessment of individual factors [Pawłowski 2005, p. 28].

The conducted measurement may be different for every trade, as each branch of activity has its individual determinants which influence the key success factors. They are the determinants of the financial and competitive success of businesses.

An introduction to the subject matter of competitiveness and an attempt at defining this term can be presented in the form of a diagram, fractal, which distinguishes six primary attributes of competitiveness:

- 1) influence of the environment and surrounding;
- 2) the company's competitiveness shaping instruments;
- 3) the competitive potential and position of entities;
- 4) macroeconomic instruments of competitiveness control;
- 5) the levels of competition;
- 6) the impact level of entities [Świtalski 2005, p. 169 and further].

The characteristics of attributes presented in Figure 2 should be taken into consideration, when the competitiveness of an entity is analyzed.



**Fig. 2: Fractal of competitiveness**

Source: own elaboration based on [Świtalski 2005, p. 169 and further.].



## Conclusion

When analyzing the above text, it can be concluded that competitiveness is the ability to achieve one's objectives in the case, when their achievement makes it difficult to do the same by other businesses. It is a characteristic which defines a company's ability to continuously create growth, increase its productivity and effectively develop outlet markets in circumstances, in which competitors offer new, better and cheaper products. The presented overview of theoretical positions, essential to the matter in question, by authors of business competitiveness definitions indicates the complexity and multifaceted nature of the discussed subject matter. It is, therefore, a continuous, dynamic process, characterized by the fact of organizational entities achieving a superior position compared to other competitors on the market, which enables growth and long-term existence. Its sinusoid may be captured by analyzing the value of a given entity and comparing it to another, or the entire market in which it operates.

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### **Кінельський Г. Сутність конкуренції в електроенергетичному підсекторі**

Мета і сутність конкуренції полягає на досягненні, можливо, значного збільшення доходів від продажів для «пропозиції», а також вигід, пов'язаних з купівлею товарів та послуг для «попиту». Будучи учасниками конкурентного ринку, підприємства своєю поведінкою і діями хочуть придбати виробничі ресурси, найкращих компетентних працівників і управлінський персонал, а також нові ринки збуту. Це сприяє зміцненню їх конкурентної позиції. Конкуренція в цьому випадку спрямована на максимізацію доходів від продажів і, з точки зору покупця, максимізує вигоди від придбаних товарів чи послуг. Тому конкуренція визначає ставлення, яке має місце між учасниками ринку. У підсекторі електроенергетики ці відносини залежать від економічної області, в якій працює бізнес: вони будуть відрізнятися для підприємств, які виробляють електроенергію, і оптового ринку торгівлі енергією, різного для сфери розповсюдження, і зовсім іншого для роздрібних продажів електроенергії кінцевим користувачам.

*Ключові слова:* конкуренція, інноваційність, підсектори, електроенергія.

### **Кинельский Г. Сущность конкуренции в электроэнергетическом подсекторе**

Цель и сущность конкуренции заключается в достижении, возможно, значительного увеличения доходов от продаж для стороны предложения,

а также выгод, связанных с покупкой товаров и услуг для стороны спроса. Будучи участниками конкурентного рынка, предприятия своим поведением и действиями хотят приобрести производственные ресурсы, наилучших компетентных работников и управленческий персонал, а также новые рынки сбыта. Это способствует укреплению их конкурентной позиции. Конкуренция, в этом случае, направлена на максимизацию доходов от продаж и, с точки зрения покупателя, максимизирует выгоды от приобретенных товаров или услуг. Поэтому конкуренция определяет отношение, которое имеет место между участниками рынка. В подсекторе электроэнергетики эти отношения зависят от экономической области, в которой работает бизнес: они будут отличаться для предприятий, производящих электроэнергию, и оптового рынка торговли энергией, различного для сферы распространения, и совершенно другого для розничных продаж электроэнергии конечным пользователям.

*Ключевые слова:* конкуренция, инновационность, подсектор, электроэнергия.

### **Kinelski G. The essence of competition in the electrical power subsector**

The aim and essence of competition is to achieve a possibly large increase in sales revenues for the supply side, as well as benefits associated with the purchase of goods and services for the demand side. As participants in a competitive market, businesses by their behaviors and actions wish to acquire production resources, the best possible competences among labor and management staff, as well as new outlet markets. This contributes to strengthening their competitive position. Competition in this case is intended to maximize their sales revenues and, from the perspective of the buyer, maximize the benefits from purchased goods or services. Competition, therefore, determines the relation which takes place between market participants. In the electrical power subsector these relations depend on the economic area in which a business operates – they will be different for electricity generating businesses and the wholesale energy trade market, different for the field of distribution, and completely different for retail sales of electrical power to end users.

*Keywords:* competition, innovativeness, subsector, electrical power.

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## WORLD EXPERIENCE OF THE ELECTRIC POWER INDUSTRY RESTRUCTURING

**Problem statement.** According to the forecasts of the International Energy Agency, in the world primary energy consumption will increase by an average of 1.3% per year, which will lead to 46% growth to 2040 [1]. This is primarily due to the increase of the population, the growth rate of the economy, per capita income and the development of technologies that entail the availability of a large number of household appliances and equipment, as well as inevitably increase in demand for energy-intensive products – cars, air conditioners, etc.

The growth of industrial production and power consumption will inevitably lead to an increase in the amount of greenhouse gas emissions to the atmosphere, which in turn will lead to pollution and deterioration of the overall environment. In order to provide energy with ever-increasing demand and raise the level of energy security without allowing global climate change, the world energy system has to undergo a number of serious transformations. Taking into account the tendency of many countries of moving to a competitive electricity market, energy saving technologies and renewable energy sources, the relevance of this article is determined by the need to study the world experience of restructuring the industry with the aim of improving the global energy industry as a whole.

**Analysis of recent research and publications based on the problem under consideration.** Systematic approach and methodological basis for solving the problems of enterprises restructuring are highlighted in

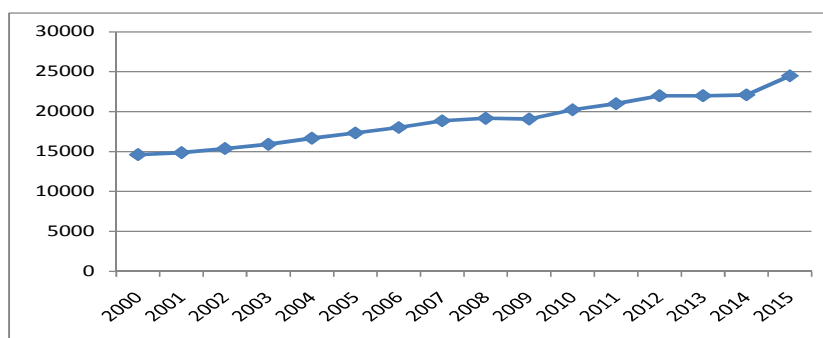
the works of V. N. Burkova, I. I. Mazur, V. N. Trenev, D. V. Sokolov, And M. B. Sokolowski, A. K., Tutunjian, M. J. Jenneskens, T. Rantalainen, M. Hammer. Issues concerning enterprise restructuring in the electricity industry are analyzed in detail in the works of A. A. Tukenova and V. V. Khlebnikov [2-6]. However, despite the high degree of theoretical development and practical use of the electric power industry restructuring methods, the need of development an integrated approach determines the relevance of research on this topic.

**The main aim** of this work is to analyze the world experience of restructuring the electricity industry.

**The research object** is modern methods of the electricity industry restructuring in different countries.

**Presentation of basic material of the research.** Energy is not only a fundamental branch of the economy, determining its real limits and opportunities, but also one of the most conservative industries. Since the cost of large power plants building is estimated at billions of dollars, and the project lifetime is at least 30-50 years, we can now confidently imagine what the world energy industry will look like in the middle of the century - as now, the foundation of our energy will be a fossil fuel, primarily hydrocarbon.

Over the past decade, electricity production in the world has grown by almost 1.5 times, reaching 24.5 billion kWh in 2015 (fig. 1).



**Fig. 1. World production of electricity for 2000-2015, billion kWh**

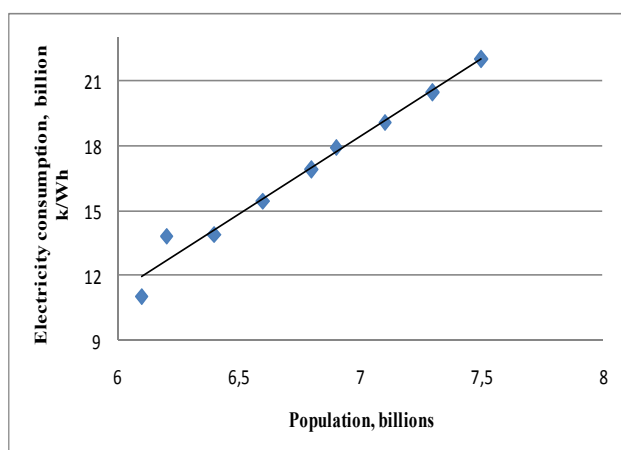
Note: compiled by authors on the basis of World Energy Statistics (Yearbook 2016) <https://yearbook.enerdata.ru/world-electricity-production-map-graph-and-data.html>.

The largest electricity producers in the world are China and USA, which generate about 5,649 and 4,297 billion kWh respectively and significantly outstrip other countries in this indicator [7]. Over the past decades,

there have been significant regional shifts in electricity generation. The share of developed countries has reduced significantly, from 73% in 1973 to 49% in 2016. At the same time, the share of the developing countries

of Africa, Latin America and Asia, especially China, grew from 3% of the world's electricity production in 1973 to more than 20% in 2016 [7].

An essential step during studying the pace of the electric power industry development is the analysis of factors, which influence the increase of electricity consumption. The first factor in increasing power consumption is global population increase. To assess this, we need to plot the global population and the energy consumption on the same figure (fig. 2).

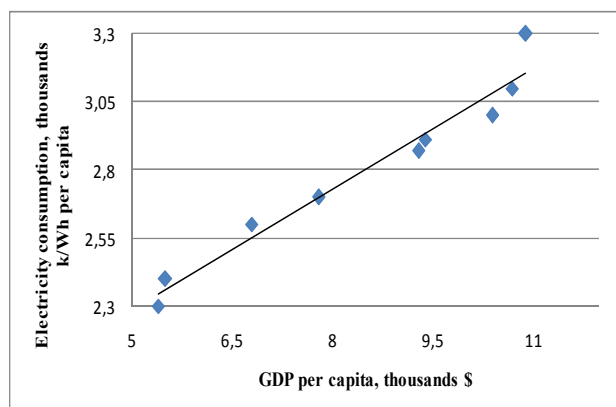


**Fig. 2. Electricity consumption and population growth**

Note: BP Statistical Review of World Energy, 2016 <https://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2016/bp-statistical-review-of-world-energy-2016-full-report.pdf>, Population.Pyramid.net <http://www.populationpyramid.net/ru/мир-земля/2015>.

The figure shows that the population of the planet increased during 2000-2016 from 6.1 to 7.5 billion people by more than 22%, and world energy consumption – from 11 to 22 billion kWh. There is a direct correlation between the growth of the population and the increase in electricity consumption. Another prerequisite for growth in consumption is an increase in the pace of economic development. To analyze how the growth of per

capita GDP affects the increase in power consumption we need to chart the next figure (fig. 3).

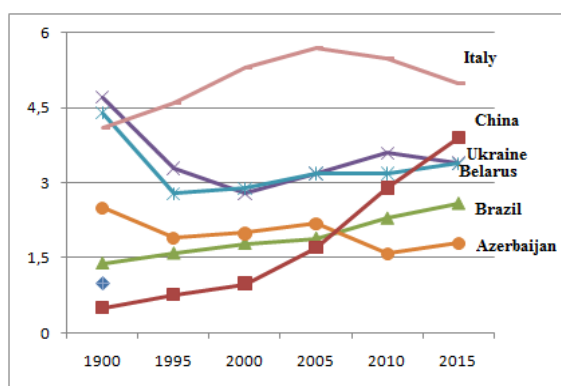
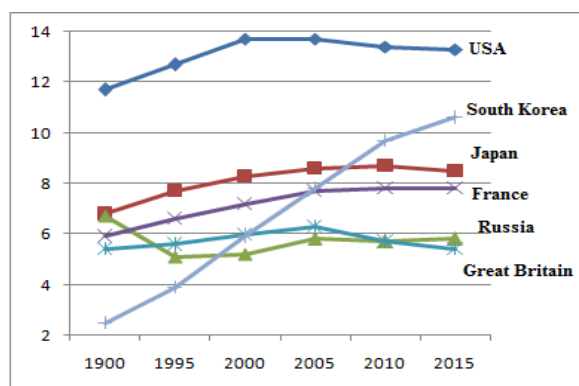


**Fig. 3. Electricity consumption and population growth**

Note: BP Statistical Review of World Energy, 2016 <https://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2016/bp-statistical-review-of-world-energy-2016-full-report.pdf>, Population.Pyramid.net <http://www.populationpyramid.net/ru/мир-земля/2015>.

Over the past 15 years, that per capita GDP has doubled, while energy consumption per capita increased from 2.3 to 3.3 thousand kWh per capita by more than 43.5%. Thus, we can conclude that GDP is growing more rapidly than the increase in electricity consumption per capita. In other words, the level of the country's economic development can cover production costs and electricity consumption. However, attention should be paid to the ecological component of this increase, since large incomes of the population can result in the availability of a variety of household appliances and equipment, which consume a large amount of electricity and have a detrimental effect on the state of the environment.

We need to analyze the structure of GDP growth and outline in which countries an increase in GDP per capita leads to a greater increase in electricity consumption, depending on the level of their economic development (fig. 4).



**Fig. 4. Dynamics of electricity consumption per capita by country, thousands kWh per capita**

Note: International Energy Agency (IEA Statistics © OECD/IEA, Energy Statistics and Balances of Non-OECD Countries and Energy Statistics of OECD Countries <http://www.iea.org/stats/index.asp>, <http://data.worldbank.org/indicator/EG.USE.ELEC.KH.PC>.

Analysis of per capita electricity consumption by countries for the period 1900-2015 showed a significant difference in the rate of increase in consumption, depending on the level of economic development of the country. So, against the background of insignificant economic growth of developed countries such as Japan, Britain, France, Italy and Spain, some of which have already reached the upper limit of domestic energy consumption, the demand for hydrocarbon fuel in large developing countries, primarily in China, has increased. Based on the analysis of the figure 4, all the above-mentioned countries should be divided into three groups according to the level of electricity consumption per capita:

1. Countries with rapidly growing energy consumption are mainly developing and some former socialist countries – South Korea, China, and Brazil.

2. Countries with a relatively stable high level of consumption and small fluctuations in energy consumption are almost all countries that have long embarked on the path of post-industrial development – Great Britain, France, USA, Japan, Italy.

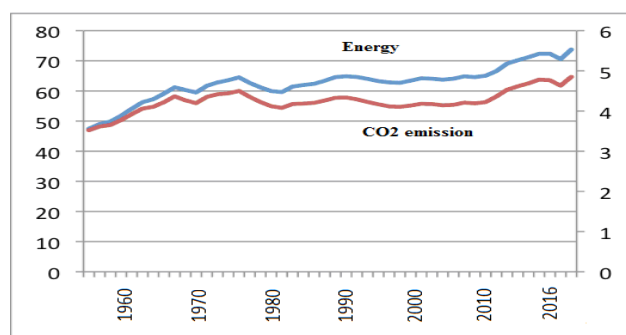
3. Countries with a reduction in energy consumption are countries that have not yet fully overcome the consequences of the crisis, in which the reduction in energy consumption was caused not by the introduction of advanced energy-saving technologies, but by the economic and structural crisis, mainly post-soviet countries – Russia, Ukraine, Azerbaijan, Belarus and etc.

The third factor affecting the level of energy consumption per capita depends mainly on the level of technology development and the constant increase in the number of cars per capita. So, the very high level of energy consumption per capita in the US and Japan is due to the exceptionally high level of increase in the number of cars among the population. Compared with North American indices in the industrially developed countries of Western Europe, per capita energy consumption is 2-2.5 times lower and grows poorly, mainly due to intensive introduction of advanced energy saving methods, technological innovations, active improvement of heating systems and insulation of premises, and gradual curtailment of the most energy-intensive industries – primarily the mining and metallurgical and large chemical industries.

It is also necessary to pay special attention on the environmental component of the power industry reform, since the main drawback of modern hydrocarbon energy is emissions of a huge amount, about 30 billion tons / year, of carbon dioxide, which is the main greenhouse gas, negatively affecting the planet's climate (fig. 5).

If we compare the growth of CO<sub>2</sub> emissions with increasing energy use, we will see that greenhouse gas emissions grew more slowly than energy consumption in the period from the 70s to the 90s, then the lines increasingly diverge. This discrepancy is the result of energy reform in many countries and changes in the struc-

ture of the fuel balance, where the share of nuclear power and natural gas has increased, compared to coal during the period under review. Since 2000, the two lines have been running approximately parallel, indicating that there is no further reduction in CO<sub>2</sub> emissions and a predicted increase in the concentration of greenhouse gases that enter the atmosphere when fossil fuels are burned during electricity generation. The increase in energy consumption can lead to catastrophic changes in the environment, affect the climate of the planet and worsen the state of the atmosphere as a whole. Therefore, it becomes obvious the huge scale of the efforts necessary for the successful reform of the industry. Obviously, huge efforts are required/necessary for the successful reform of the industry.



**Fig. 5. Dynamic of the primary energy consumption per capita (Mtoe) and CO<sub>2</sub> emissions (metric tons per person)**

Note: compiled by authors on the basis of BP Statistical Review of World Energy, 2016 <https://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2016/bp-statistical-review-of-world-energy-2016-full-report.pdf>.

Having a strategic importance, the electric power industry in all countries is subject of state regulation, because the enterprises simply can not cope with constantly arising difficulties by themselves. Therefore, all methods of restructuring must be ensured by state regulation in order to protect the most important interests of the industry, regardless of the degree of liberalization in a particular market. In countries with vertically integrated state monopolies, the main subject of regulation should be tariffs for electricity. In countries where electricity prices are set by the market, greater emphasis should be placed on providing equitable access to transport networks for all producers. The world experience in reforming the electric power industry shows the use of various mechanisms and ways of restructuring in different countries. However, all existing methods can be divided into the following five groups: organizational, method of combining markets, financial, fiscal and environmental:

1. Organizational method. This method by separating the monopoly functions from the competitive unit – the functional division of generation, transportation and sale of electricity – makes it possible to liquidate natural

monopoly structures and introduce competition into the production of electricity. This is due to the fact that recent advances in technology and production of generating capacities have led to the fact that medium-sized power plants proved to be quite competitive in comparison with large power plants that are part of the giant structures of existing vertically integrated companies. Therefore, smaller investors were able to build independent generating capacities and conduct their own commercial activities.

Such a way of reforming the electric power industry was used in the UK, where, as a result of the division of the monopoly company, private power generation companies and sales companies were formed, which allowed to build their own power generation capacities in order to increase the efficiency of meeting the demand for electricity and reduced the load of existing generating capacities. Also, examples of the most successful liberalization of the generation market can be found in Argentina, where through the disintegration and privatization of the largest electric power stations, strict regulation systems for permissible electricity transmission tariffs were created, and the total government revenues from the privatization of the electric power industry exceeded 10 billion dollars [8]. Due to vertical disintegration in many countries, it was possible to reduce electricity tariffs, so in some US states the price of electricity fell by 7.96% [9].

2. The method of combining the energy system. The need of reducing the high tariffs for electricity, as well as the internationalization of global markets, aimed at creating a single economic space, has set the task of many countries to reorganize their own energy facilities. To solve the problems, the method of combining the energy system was used, the main purpose of which was equalization of loads, smoothing of peaks and optimal use of different energy sources for electricity generation. In winter, more electricity is produced by wind farms located in the northern countries, which are part of this system, in summer – by solar power plants that operate in the southern countries. A vivid example of such system is the Scandinavian countries, where an efficient infrastructure for the functioning of the market was created resulted from the separation of public vertically integrated companies [10]. Thus, the result of the Nordic electricity reform was the creation of a common electricity market, the so-called Nord Pool, the successful operation of which improved the reliability of the region's energy systems, leading to a reduction in the significant difference in electricity prices in various regions.

3. Financial method. In our opinion, one of the most reasonable ways to support the use of renewable energy is the provision of investment preferences. Investment preferences may include the full amount of grants. Exemption from customs duties is due on import of equipment and components to it, imported for the im-

plementation of the investment project. State full-scale grants can include land plots, buildings, structures, machinery and equipment, computers, measuring and regulating devices for production using RES. In the event that investment obligations are in compliance with the contract, the property is granted to the investor in the property free of charge. For instance, each year the government of the USA allocates 67 billion \$ for the development of renewable energy technologies, and state R&D grants to enterprises that generate electricity using solar, wind and geothermal energy rather than fossil fuels. In a number of countries, such as France, Germany, Luxembourg and the Netherlands, an accelerated depreciation rate is applied that grants eligible businesses the opportunity to write off investments in energy efficiency projects faster than other investments, which makes it possible to reduce arrears in a short period of time.

4. The fiscal method. The government of the country should pay special attention to non-traditional, clean energy sources, and introduce energy-saving technologies. The combination of financial-tax and industrial policies is aimed at improving the structure of production and raising its level, which is possible when certain laws and tax incentives are adopted. Preferential taxation as the main instrument for stimulating the development of renewable energy is used in many developed countries, such as Germany, the United States and France, where the most effective way to ensure energy conservation is to adopt laws on tax incentives. In this way it is possible to provide tax rebates on the costs of acquiring equipment or services leading to energy savings. In a number of countries, such as Belgium, Denmark and France, a state fund for investing in energy-saving measures has been established. As a rule, the interest rate set by the fund is lower than under normal commercial conditions, which is equivalent to a concessional loan.

5. The ecological method. This method, first of all, includes the introduction of energy saving technologies and the transition to renewable energy sources – solar, wind, hydro power of rivers. The advantage of renewable energy is due to the fact that they do not lead to a change in the climate of the planet and to global warming, in contrast to fuel fossils, which, when burned, emit harmful substances into the atmosphere.

World experience shows that the developed countries began to support and stimulate non-traditional energy, through the implementation of federal development programs, within which various privileges and preferences for this sphere are provided. Today, in the United States, there are already three cities that have completely switched to renewable energy – Aspen, Burlington, Vermont. Germany produces about 14% of energy in installations using biomass, geothermal and solar energy and plans to increase this share to 25-30% by 2030 [11]. The economic use of geothermal sources is

common in countries such as France, Italy, the USA, New Zealand, and Iceland. For example, in Iceland, five thermal geothermal power plants are successfully functioning, due to which 26.5% of electrical and 90% of thermal energy is produced in the country [11]. In the newly industrialized countries of South-East Asia, much of the energy-saving measures are financed by the state itself, which most often installs energy equipment that corresponds to the non-industrial sphere, allocates targeted interest-free loans or subsidies to the owners of residential buildings for the acquisition of materials in accordance with existing standards of energy saving technologies.

**Conclusion.** The analysis of the global use of electricity has made it possible to identify the dependence of electricity consumption on the population and the level of economic development, as well as the effect of increasing energy consumption on the state of the environment. Based on the identified problems, the world experience in the restructuring of the electric power industry was studied and methods for reforming the industry were proposed. These methods were combined into five groups: an organizational one, a method of consolidating markets, financial, fiscal and environmental. The carried out researches in the field of tools of reforming the electric power industry will, firstly, lead to the construction of such a system of electricity markets that will create incentives for competition, improve efficiency, and also contribute to the development of the industry, and secondly, the considered environmental methods of reforming the industry will reduce environmental pollution, by switching to energy-saving technologies and renewable energy sources in order to improve the energy security and environmental friendliness of the industry.

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#### **Шабаліна Л. В., Булавка О. Д. Світовий досвід реструктуризації електроенергетичної галузі**

У статті виявлено фактори, що впливають на споживання електроенергії в світі. На основі вивчення світової досвіду реструктуризації електроенергетичної галузі виділено п'ять груп методів щодо підвищення її ефективності: організаційний, консолідації ринків, фінансовий, податковий та екологічний.

*Ключові слова:* реструктуризація електроенергетики, перехід на поновлювані джерела енергії, енергозберігаючі технології, навколишнє середовище, тариф на електроенергію.

#### **Шабалина Л. В., Булавка Е. Д. Мировой опыт реструктуризации электроэнергетической отрасли**

В статье выявлены факторы, влияющие на потребление электроэнергии в мире. На основе мирового опыта реструктуризации электроэнергетической отрасли выделены пять групп методов повышения ее эффективности: организационный, консолидации рынков, финансовый, налоговый и экологический.

*Ключевые слова:* реструктуризация, электроэнергетическая отрасль, возобновляемые источники энергии, энергосберегающие технологии, окружающая среда, тариф на электроэнергию.

#### **Shabalina L., Bulavka E. World experience of the electric power industry restructuring**

The article reveals the factors affecting the electricity consumption in the world. Based on the study of the world experience in the restructuring of the electric power industry, five groups of methods are identified to improve its efficiency: organizational, consolidation of markets, financial, tax and environmental.

*Keywords:* restructuring of the electric power industry, transition to renewable energy sources, energy-saving technologies, environment, and electricity tariff.

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## THE REFORMING OF HOUSING AND COMUNAL SERVICES MARKETS IN THE CONDITIONS OF THE ECONOMIC CRISIS IN UKRAINE

One of the important reasons for the under-filling of the national budget is the lack of an in-depth market research directly related to the end user. Each of these markets makes insignificant financial injections into the national budget and the development of the country as a whole. However, one should pay attention to the fact that a huge number of markets that work with the end user together constitute a significant part of the country's budget. The actuality of the problem of studying the above-mentioned markets is that very little attention has been paid to them during the market economy research. A person decides the main problems associated with his life activity on these local markets. The development of local markets contributes to the creation of additional jobs, the availability of goods for the end user.

In the process of studying local markets it is advisable to pay attention to the functions they perform in a single economic system of interaction of all participants in this market. Among these we can highlight [1;2;7-11]:

1. Bringing the product through the provision of services by the subjects of the local market to the final consumer (trade, transport, distribution, delivery services, etc.);

2. Filling of market niches, not occupied by subjects of global, national and regional markets by creating own business (rent, repair, home appliances, rendering of services on repair of a dwelling, hairdressing, cooking, etc.);

3. Optimization of logistics chains of higher-order markets in terms of transferring to subjects of local markets inefficient for large enterprises of work with the localization of individual works and operations (rough handling, service of goods, manufacturing of small batches of spare parts, processing of goods, storage and distribution and t etc.)

4. Increasing the efficiency of reproduction of capital involved in market processes on the global and national commodity markets by accelerating its turnover (delivery to the consumer, improvement of its qualitative conditions through service, reducing claims, appeals and increasing demand);

5. Local markets play an important connecting role between the actors of global and national markets and consumers in terms of solutions to the problems of changing demand. It is the subjects of local markets, be-

ing closest to the consumer, are able to capture the demand for change, respond flexibly to it and implement feedback with the actors of global markets.

More attention should be paid to the definition of geographic market boundaries, because this criterion is a key to the local market. In determining the above limits, the following factors are taken into account [3]:

- the physical and technical characteristics of the goods, including its shelf life and implementation, as well as the adaptability of the product to the climatic conditions of the region and transportation;

- the possibility of establishing technological connections between producers and consumers of goods, including the possibility and feasibility of establishing a service (technological, guarantee, subscriber) service in this territory (in the region);

- the level of distribution costs for the delivery of goods to the region, the implementation and degree of their impact on the price of goods;

- The level of trade infrastructure development in the region necessary for the promotion of goods, including: wholesale trading bases, retail outlets, warehouses, loading and unloading complexes, berths, refrigerators, etc.;

- specific features of the legislative framework or specific regulatory restrictions in force in the area in respect of this product (for example, sanitary norms or environmental requirements) - increased duties, special additional requirements for the product or, for example, packaging;

- the presence of strong protectionist barriers (regulations) that prevent the penetration of goods to this market (regional or state)

- market regulation (profitability regulation, product intervention, privileges, etc.)

- The level of technical, financial and administrative barriers (restrictions) in terms of promoting goods from other regions, countries to this territorial market (local taxes, trade surcharges, licensing, quotas, etc.).

- the presence of strong dominant (monopoly) competing structures in the region, capable of creating powerful artificial barriers to the promotion of goods to this territory, the region in the form of anti-advertising, the failure of sales networks in the implementation or warehouse structures in storage.

One of the most important and most problematic markets is the housing and communal services market. It includes the following local markets:

- the heat energy, its production, transportation and supply, services for the centralized heating market;
- centralized hot water supply market;
- centralized water supply market;
- centralized water disposal market;
- the market for the maintenance of houses and local areas;
- market for the removal of domestic waste;
- market for removal of large-sized waste;
- market for recycling and (or) burial of waste.

Despite the fact that all the above-mentioned markets are local, their full regulation takes place at the national level. In addition, prices for centralized water supply, disposal, and heat supply services are set for all country, without taking into account the needs and characteristics of each region. This is one of the reasons for the colossal debt for housing and communal services in the country. The lack of interest of monopolistic organizations rendering services and local governments in energy saving, saving resources and maintaining technological networks in proper technical condition due to price regulation at the national level leads to the impossibility of reducing prices at the local level.

Special attention should be paid to the market of services for the maintenance of the house and the local area. The unsatisfactory technical condition of residential buildings, the lack of regular and high-quality cleaning of adjoining areas are the factors that have become the most important reason for the dissatisfaction of the population with housing and communal services. The conducted researches allowed to draw a conclusion that the state of fixed assets of housing and communal services has reached a level at which it will be impossible to prevent technogenic accidents in the near future [4].

This situation in housing and communal services has been developing for decades and is due to a number of fundamental reasons [5]. Among them one can distinguish: imperfection of the regulatory framework, the maximum level of wear of objects of communal infrastructure, and, consequently, the high cost of their maintenance. The imbalance of tariff policy on the part of local self-government bodies has led to additional expenses at the enterprises of housing and communal services complex. In the conditions of an acute financial deficit, the old and emergency fund increases annually, the level of wear of communications of water supply, networks and generating capacities responsible for heat supply increases. Planned repair of the housing stock, networks and equipment is almost completely replaced with emergency repairs.

At the end of 2016, the debt for the maintenance of houses and adjoining territories in Ukraine amounted to 2.4 billion UAH [6]. In the conditions of a rigid monetary deficit the enterprises rendering services are not able to fulfill their duties to the full. First of all, this affects the absence of maintenance, which led to the technical condition of residential buildings in this position.

As a consequence of the accumulation of debt, one can note:

- Inability to provide a full range of services due to lack of funds for each residential building separately due to incomplete payment of services;
- Actual understatement of cash receipts from each house separately as a result of payment of VAT from the total amount of charges, and not from the amount paid by the residents;
- Lack of company profits, the impossibility of development, and, as a consequence, the lack of replenishment of the local treasury at the expense of the income tax;
- The need for staff reduction, which entails a reduction of deductions to the local treasury, the country's treasury, as well as the pension fund.

Considering the above, it should be noted that without immediate reform of the housing and communal services sector, we will see further deterioration of the housing stock, an increase in the number of emergency houses, an increase in the number of man-made accidents in the country's housing stock.

When drawing up a strategy for reforming the housing and communal services, it is necessary to pay attention to the fact that services are provided locally and should be regulated, first of all, by local self-government bodies. The interest of enterprises providing services in the timely receipt of funds; of local government in the satisfaction of the population; of the population in timely and qualitative reception of housing and communal services will allow to formulate a rational policy of rendering priority services to the population at the local level. Limiting state influence both on the formation of prices for managing housing stock, and on water supply, disposal, and heat supply services will allow local authorities to take into account all the specifics and needs of the locality on which they find themselves, as well as the needs and interests of the end user. As a result of handing over some of the state powers in pricing for housing and communal services to local governments, it may allow to improve the quality of life of the population and satisfy their priority needs.

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#### **Ляшенко В. І. Реформування ринків житлово-комунального господарства в умовах економічної кризи в Україні**

Стаття присвячена дослідженню існуючих проблем локальних ринків України. У статті визначено

границі локальних ринків, їх проблеми, проблеми житлово-комунального господарства України. Запропоновано можливі шляхи вирішення проблемних моментів галузі. Обумовлено необхідність термінового реформування галузі і неефективність реформ, які проводяться в наш час.

*Ключові слова:* житлово-комунальне господарство, житлово-комунальний сервіс, реформування, утримання будинків та прибудинкової території, локальні ринки.

#### **Ляшенко В. И. Реформирование рынков жилищно-коммунального хозяйства в условиях экономического кризиса в Украине**

Статья посвящена исследованию существующих проблем локальных рынков Украины. В статье определены границы локальных рынков, их проблемы в условиях экономического кризиса, проблемы жилищно-коммунального хозяйства Украины. Предложены возможные пути решения проблемных моментов отрасли. Обусловлена необходимость срочного реформирования отрасли и неэффективность реформ, которые проводятся в наше время.

*Ключевые слова:* жилищно-коммунальное хозяйство, жилищно-коммунальный сервис, реформирование, содержание домов и придомовой территории, локальные рынки.

#### **Lyashenko V. The Reforming of housing and communal markets in the condition of economic crisis in Ukraine**

The article is devoted to research of the problems of local markets of Ukraine. The paper identified the geographical limits of the local markets, their problems in the conditions of economic crisis, the problems of housing and communal services of Ukraine. The possible ways of solving the problem moments of industry. The need to reform the sector and the ineffectiveness of the reforms taking place in our time are caused.

*Keywords:* housing and communal services, housing and utilities, reforming, maintenance of houses and local area, local markets.

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## INCREASING THE EFFICIENCY OF THE ORGANIZATION OF MARKETING ACTIVITY OF COAL ENTERPRISES

**Problem Statement.** Research suggests that several factors influence the efficiency of the organization of the marketing activity of industrial enterprises, among which are escalation of the competition for the markets, spending spree, severization of requirements of customers for quality of service.

The enterprises of the national coal industry function under complicated mining and geological conditions, having high coal production and cleaning cost, resulting in a low profitability of coal mines.

Inspection of a number of coal-mining enterprises speaks for non-effective organization of the marketing activity due to imperfect system of contractual relations with consumers, with no regard for the peculiarities of servicing various categories thereof. At the same time, performance of the coalmining enterprises depends on the impact of such financial and economic conditions as debts for coal products sold, change of contractual relations between consumers, restriction of financial resources, irregular demand for coal (profit or deficit). In this regard, there is observed a tendency of spending spree for the organization of the marketing activity and reduction of volume of sales of coal products.

Thence, in the present environment of economic management problems of improving the efficiency of the organization of the marketing activity of coal-mining enterprises become increasingly important, taking into account the consequences of the irregular demand for coal products.

**Analysis of recent research and publications.** In the scientific literature, there are many definitions of the terms «sales» and «marketing activity of the industrial enterprise». On the basis of analysis and generalization of approaches of various scientific schools, the term «sales» is systematized according to 7 classification criteria: marketing communication; type of commercial activity of the enterprise; distribution; the process of wholesale trade organization; selling goods; organization of market relations between market participants; process of direct communication between the seller and the buyer.

Most researchers argue that the marketing activity appropriately identified with the concept of «sales» in its broad sense. A number of scholars point out that sales activities are carried out in order to obtain maximum profits through a system of forecasting, analytical, or-

ganizational, marketing, information, control and other measures, etc.

Scientific approaches to the definition of «marketing activity of the enterprise» is classified in 6 groups: the process of organizing trade activities; distribution; process of marketing activity; a system for organizing the sale of goods, its delivery to the consumer and after-sales service; the type of organizational and economic activity aimed at increasing the efficiency of product sales; system of formation of demand, stimulation of sales and organization of commodity exchange.

Thus, based on the analysis of scientific sources revealed that, as a rule, sales activity is identified with the term «sales» and is understood as a combination of processes of demand formation and effective distribution channels, organization of marketing communications, distribution, sale of finished products for the purpose of profit and satisfaction needs of consumers.

Research shows that various factors affect the sales activity of the company. Scientists include such factors as «... the internal environment: the competence of workers; financial position of the enterprise; feature of goods and services; the scale of production; external environment: legislative framework; competitors, solvency of buyers; resource support; distribution channels; the nature of demand» [1, p. 466].

There is the assertion that «... the orientation of production to meet consumer demand requires improved management of sales of products, taking into account the development of the domestic economy, on the one hand, and the characteristics of a particular production – on the other» [2, p. 34].

In the work [3] it is suggested in the management of sales policy of the enterprise to consider the factors of the macro environment, immediate environment, the internal environment and assess the marketing risks.

Scientists distinguish two groups of factors of influence on the marketing policy of the enterprise: endogenous – the characteristics of the goods, sales potential of the enterprise, the strategy of the enterprise; exogenous – elements of the market, political, socio-cultural, economic, legal [4].

On the basis of generalization of approaches of domestic and foreign scientists, it is established that the main directions of improvement of management of marketing activity of an industrial enterprise are as follows:

- formation of a sales and intermediary network [5; 6, p. 147];
- creation of a rational structure of distribution channels of products [7; 8, p. 79; 9, p. 77];
- development of sales policy of the enterprise, creation and implementation of an effective marketing policy of distribution at the enterprise [8, p. 80; 10, p. 92].

As a result of a research it is revealed that scholars have scholar disputes about the forms of public-private partnership that are practical for coal mining industry. As a rule, scientists refer concession and corporate development of the mine field to public-private partnership in the coal mining industry [11-14].

Despite a wide range of scientific research and developments on the use of public-private partnership in the national coal mining industry, the problem of sales development of the coal-mining enterprises with due account for current trends of development of institutional environment is rather neglected. Considering special

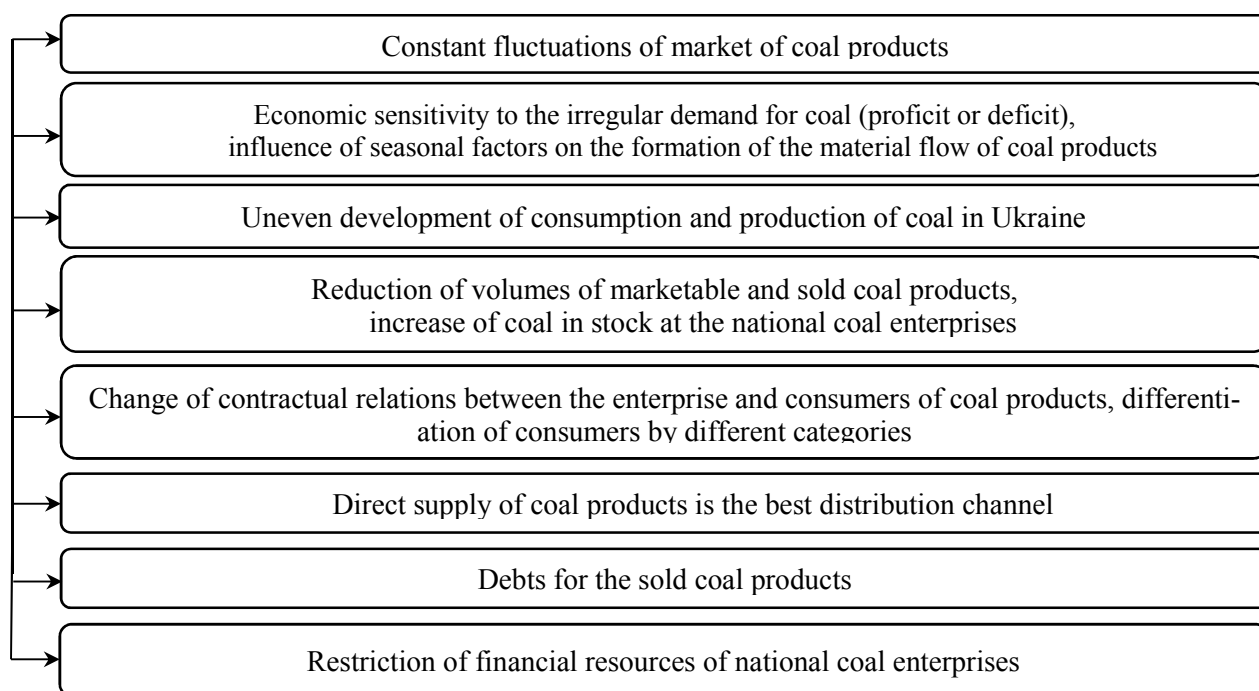
urgent character of such problem under modern conditions of managing coal-mining enterprises, it requires further scientific research. All of this considerably determined the choice of the topic of this research and its objective.

**Research objective** is the development of theoretic aspects, scientific and methodological approaches and practical guidelines for the improving of the marketing activity of coal-mining enterprises in the conditions of irregular demand.

*The object of the research* is the procedure of organization of the marketing activity of coal-mining enterprises under modern conditions of economic development. *The subject of the study* is theoretical, scientific-methodical and practical principles for improvement of the marketing activity of coal-mining enterprises in the conditions of irregular demand.

**Presentation of basic material of the research.**

The performance features of coal mining enterprises in terms organization of the marketing activity were studied (Fig. 1).

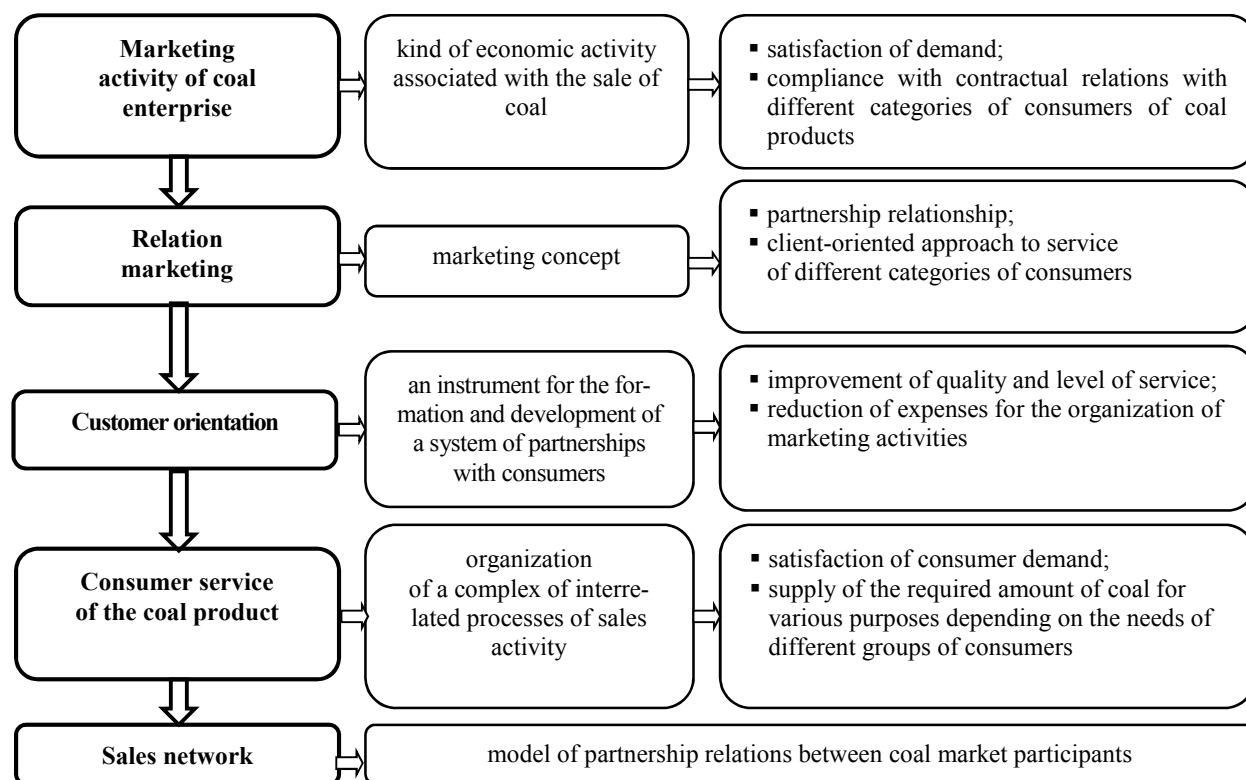


**Fig. 1. Specific features of the organization of marketing activities of coal enterprises**  
(compiled by the authors)

The essence of the concept «marketing activity of coal-mining enterprise» is specified, taking into account the specifics of its performance and detected changes and development trends of the institutional environment. It is determined that the fundamental components of the concept «marketing activity of a coal-mining enterprise» is the conclusion of contracts with different categories of consumers of coal products, based on the

specifics of their service and observance of terms of contractual relations (Fig. 2).

The author's interpretation of the term «relation marketing» as a marketing concept is given, content of which is shaping partnership relations when organizing of the marketing activity of coal mining enterprise based on client-oriented approach to servicing different categories of consumers of coal products.



**Fig. 2. Conceptual apparatus concerning the content of terms** (author's development)

The content of the term «customer orientation» as an instrument for shaping and development of partnership relations between coal mining enterprises and consumers in the context of the concept relation marketing has been improved, what raises quality and level of service, reduction of expenses for the organization of the marketing activity.

It is offered author's definition of the concept «consumer service of the coal product» meaning organization of a complex of interrelated, consistently carried out processes of the marketing activity and transportation aimed to satisfy through the delivery of coal required for production (wholesale) further sale of coal in order to make profit (average wholesale) and household needs (small-scale wholesale). It is offered a customer-oriented approach to servicing consumers of coal products based on differentiation thereof, which unlike the existing one, considers annual demand level of different groups of consumers and determine their peculiarities. This shall facilitate prompt response to changing consumer demand and market conditions, improve quality and service level, reduce handling time of coal products, increase in volume of product shipment to consumers.

The meaning of the term «sales network» is specified meaning a model of partnership relations between the participants of coal market (coal producers and different categories of coal consumers: thermal power plants, middleman etc.) during organizations of the marketing activity.

Scientific and methodological provisions are developed, according to which the necessity of improving the organization of sales activities of coal mining enterprises was substantiated. It is proved that the organization of sales activity of the coal mining enterprise should be carried out through the implementation of a complex of such measures:

- analysis of the market conditions for coal;
- SWOT-analysis of competitors and consumers;
- formation of a base of potential consumers and a portfolio of orders;
- forecasting volumes of coal shipment to different categories of consumers;
- development of sales plans for coal products and strategic marketing programs;
- registration of applications for the supply of coal and determination of payment terms;
- the conclusion of contracts for the supply of coal products to large, medium and small-scale consumers;
- development of a method for selecting efficient sales channels;
- organization of customs procedures at the shipment of coal products for export and registration of relevant documentation with the use of information technologies;
- accounting and analysis of sales costs;
- control of payment by consumers for shipment of coal.

Network approach to organization of the marketing activity of coal mining enterprises is proposed, which main point is the development of three models of sales networks (Table 1).

The first model is based on the achievement of agreements between coal-mining enterprises and thermal power plants. At the same time, the latter control the supply of coal products, forming the price of coal, which can be considered as an investment resource in the development of coal-mining enterprises.

The second model of the distribution network is the formation of an electronic exchange platform, the main purpose of which is to provide services for the centralized conclusion of exchange contracts through the conduct of electronic exchange trading in coal products.

The third model of the distribution network is the creation of a syndicate based on the agreement of coal-mining enterprises of different forms of ownership with the aim of organizing, controlling and regulating joint marketing activities on the basis of public-private partnership.

The volumes and structure of coal consumption in Ukraine are analyzed, the patterns of instability of demand for coal are investigated. The expediency of differentiation of consumers of coal products in large-scale (metallurgical, coke-chemical plants, thermal power plants), medium (intermediary organizations) and small-scale (boiler-houses heat supply of social sphere of cities and population) is grounded on the volume of their annual demand.

Table 1

**Advantages and disadvantages of the proposed models of sales networks**

Models of sales networks	Advantages	disadvantages
<i>Direct Sales Channel</i> – formation of partnership relations between the coal mining enterprise and a thermal power station on the basis of contracts for the supply of coal products	The optimal level of coal prices through the organization of direct deliveries	<ul style="list-style-type: none"> <li>• narrow-mindedness of coal grade;</li> <li>• possible disruptions in the shipment of coal to the TPP due to unforeseen force majeure (for example, an accident at a coal-mining enterprise);</li> <li>• high level of influence on this model of partner relations of crisis phenomena in the national and global economy, the unstable political situation and the deterioration of the financial and economic state</li> </ul>
<i>The second model</i> – the formation of an electronic exchange platform for the sale of coal products.	Establishing an optimal price based on the real balance of demand and supply for coal products based on market conditions	<ul style="list-style-type: none"> <li>• inconsistency of commodity exchange trade in Ukraine with generally accepted international standards;</li> <li>• absence of interest of coal market participants in conducting transparent business and guarantees from the stock exchange</li> </ul>
<i>The third model</i> – the creation of a syndicate as a form of partnership between coal-mining enterprises of different types forms of ownership	organization of the continuous process of purchasing coal in coal-mining enterprises and its deliveries to the TPP; establishing long-term relationships with regular consumers of coal	<ul style="list-style-type: none"> <li>• the syndicate may set prices on the coal market;</li> <li>• insufficiently effective control over prices for coal;</li> <li>• high level of risk in the organization of production and sales activity of coal-mining enterprises (no coal supply at the TPP – no flow of financial flows between the syndicate and coal-mining enterprises);</li> <li>• occurrence of unforeseen force majeure circumstances;</li> <li>• constant fluctuations of the market situation for coal</li> </ul>

*Offered by authors.*

The coal industry in Ukraine is characterized by uneven shipping of coal products to consumers in days and months. Different regularities of demand for coal for each group of consumers are revealed. At the same time, the peculiarity of the organization of sales activity of domestic coal-mining enterprises is constant fluctuations, that is instability of demand of large and middle-

average consumers for coal production. The calculations show a high level of seasonal fluctuations in the demand of medium-sized consumers for coal. Demand for coal products of large-scale consumers has weak seasonal fluctuations. The results should be taken into account when developing the programs and plans for the sales activity of the coal-mining enterprise.

The client-oriented approach to servicing consumers of coal products is improved on the basis of their differentiation, which, unlike existing ones, is based on taking into account the volumes of annual demand of different groups of consumers and their specific features. Implementation of this approach will allow to establish long-term economically advantageous relations of coal-mining enterprise with consumers, reduce the level of risks and losses due to timely response to the occurrence of possible force majeure during transportation and sale of products and expenses for sales activity in general, as a result of a decrease in the number of downtime.

The necessity of combining system, functional and process approaches to service of consumers of coal products in the context of the concept of marketing of mutual relations, the introduction of which will promote synergistic effect through improving the quality of service, reducing the time for delivery of coal, increase of sales volumes, is substantiated.

As a result of the statistical analysis of the dynamics of the main indicators of sales activity of the enterprises of the coal industry (*Table 2*), the main trends of its development were identified:

- reduction of consumption and production of coal;
- increase in the level of consumption over extraction, that is, shortage of coal, as a rule, coking and anthracite;
- reduction of volumes of extraction, finished, commodity and sold coal products of state coal-mining enterprises;
- coal gas surplus of gas mark;
- increase in the level of unprofitableness of coal mining in Ukraine;
- the implementation of export-import operations on the sale of coal products, which leads to a negative balance.

Table 2

#### Dynamics of basic indicators of marketing activity coal enterprises of Ukraine

Indexes	Years					
	2007	2009	2012	2014	2015	2016
Coal consumption in Ukraine, mil. t	71,0	63,0	73,3	53,9	45,3	43,2
Volume of coal production in Ukraine, mil. t	58,9	55,0	65,7	45,9	29,9	29,5
Volume of export supplies of coal, mil. t	3,7	5,3	6,1	7,1	0,6	0,5
Amount of imported coal supplies, mil. t	13,2	7,9	14,8	14,7	14,6	15,6
<i>Indicators of production and sale of coal products by state coal enterprises</i>						
Coal production, mil. t	42,2	38,4	24,9	12,9	6,7	6,0
Finished coal products, mil. t	28,6	25,4	17,8	9,7	5,0	4,4
Commodity coal production, mil. t	28,2	25,0	17,5	9,5	4,9	4,3
Realized coal production, mil. t	28,1	25,4	17,4	8,4	4,4	3,9
Volume of coal remains in warehouses, ths. t	1188,8	1979,4	2114,8	1968,1	1997,8	2014,2
<i>Economic indicators of state coal enterprises</i>						
Total cost, mil. UAH	17749,1	22083,9	32725,1	28397,0	30234,2	31295,4
Costs of marketing activities, mil. UAH	171,1	261,8	615,1	154,4	138,5	107,6
Expenses on sales of 1 t of commodity coal production, UAH	6,6	8,6	25,3	9,2	8,9	7,1
Cost of 1 ton of commodity coal production, UAH	442,8	728,1	989,4	1713,9	1963,0	2354,7
Price 1 t of commodity coal production, UAH	296,0	441,9	629,7	1009,4	1181,3	1260,7
Unprofitable coal production, %	-33,2	-39,3	-36,4	-41,1	-39,8	-46,5

*Offered by authors.*

Based on the calculation of the correlation coefficients of Pearson, Spearman and Fechner, the density and direction of correlation between volumes: consumption and production of coal in Ukraine are determined; export and import of coal products; full cost and sales costs; the cost price and the price of 1 ton of commodity coal products.

The factors influencing the organization of sales activity of enterprises of the coal industry, which are

systematized into two groups: exogenous (political, institutional, financial, market, economic, informational) and endogenous (financial-economic, informational, technological, marketing), are investigated.

The inertial and optimistic scenarios of the development of sales policy of coal-mining enterprises with the use of statistical methods are developed. The obtained results can be used in the development of strategic guidelines for the formation of sales networks in the domestic coal industry.



In order to evaluate and select the optimal coal distribution channel, it is suggested to use the hierarchy analysis method (T. Saati method), which allows quantifying the importance of the criteria and taking into account the specifics of the functioning of the coal mining enterprises and the institutional environment.

The justification for choosing the optimal distribution channel for coal products should be based on an algorithm that includes 8 steps:

- the definition of the target;
- selection of criteria and their systematization by groups, establishment of parameters of evaluation of sales channels;
- determination of the significance of the selection criteria, matrices of pairwise comparisons according to the criteria;

– the calculation of the efficiency of each of the alternatives – a direct or indirect channel for the sale of coal products;

- analysis of the results of the choice;
- achievement of the set goal.

The implementation of these steps will allow you to determine the number of criteria and parameters for evaluating each channel. The most important criteria for choosing the optimal distribution channel for coal products, which are systematized into groups, are determined:

- economic ones: throughput of the sales channel
- the volume of sales of coal products; reduction of the costs of organization of sales activities;

– organizational: timeliness of payment for coal shipped; establishment of long-term partnerships with consumers due to increase of the level and quality of service, reliability of deliveries; flexibility of payment; the possibility of control over the processes of sales activities;

– market: the possibility of adaptation to constant changes in the market situation for coal and institutional environment;

– information: the possibility of obtaining the necessary information and the use of modern information and communication technologies.

The direct channel for the sale of coal is the optimal channel, since it has the highest efficiency (0.661) compared to the indirect one. This is confirmed by the results of calculations using the expert method on the basis of the ballroom and the analytical and evaluation method.

According to the analysis of the sales system of the coal enterprise, it is proved that the direct channel of coal production is given the greatest advantage. This is due to one of the differences in the operation of coal-mining enterprises – almost 90% of sales are direct deliveries to large-scale consumers, with whom are long-term contracts. The algorithm for solving the problem of choosing the optimal coal distribution channel is implemented using the MS Excel software toolkit.

It is proved that in calculating the optimum volume of supply of coal products to large-scale consumers it is expedient to consider the following factors: annual demand for coal; the price of 1 ton of commodity coal production; expenses for the organization of sales activities (expenses for servicing consumers and transportation of coal); inflation rate; Risk factor for marketing activities.

The volume of the supply of coal products to large-scale consumers is proposed to be calculated according to the formula:

$$Q = \sqrt{\frac{2 \times V \times (1 - \frac{\delta}{100\%}) \times (C_1 + C_2)}{C_3 + (U \times (1 + \frac{i}{100}) \times \beta)}}, \quad (1)$$

where:

$V$  – annual demand for coal products, t;

$\delta$  – price discounts in cases of increase in the volume of the batch of delivery, %;

$C_1$  – expenses for the organization of consumer service processes, UAH;

$C_2$  – expenses for transportation of coal products, UAH;

$C_3$  – storage costs of coal reserves in warehouses, UAH;

$U$  – the price of 1 t of commodity coal production, UAH;

$i$  – inflation rate, %;

$\beta$  – risk factor for marketing activities.

Taking into account the specifics of the organization of sales activity of coal mining enterprises, contractual relations are an effective form of public-private partnership. The system of contractual relations is considered as a set of interrelated elements (objects, subjects, functions, methods, principles, tools) for organizing a continuous process of concluding and fulfilling the terms of contracts for the supply of coal products.

In the organization of contract activities of a coal-mining enterprise with consumers of coal products, there is a certain specificity that needs to be taken into account. It is established that when making contracts for the supply of coal products to large-scale consumers it is expedient to include such an item as 30-50% prepayment or postponement of payments for coal shipped for a certain period. At the same time, account should be taken of the fact that consumers' payment for coal shipped may not be timely. In this case, the consumer company must pay a fine

The amount of payment to be paid by large-scale consumer for coal shipped is increased by the amount of fine for late execution of its monetary obligations and calculated by the formula:

$$M = S \cdot (1 + \chi + t \cdot \delta), \quad (2)$$

where:

$S$  – the amount of debt that the consumer is obliged to pay for the coal shipped;

$\chi$  – index of inflation for all time of delay;

$t$  – the number of days for which overdue payment;

$\delta$  – penalty calculated as a percentage of the amount of debt for each day of delay.

Due to the fact that large-scale consumers require significant volumes of coal, railway transport is used for shipment. Formation of schedules of transportation is carried out taking into account the time in the road and time of unloading of cars.

Differences in the contract for the supply of coal products to medium-sized consumers should be 100% prepayment as a payment condition and the choice of the type of vehicle, depending on the volumes of shipment. The peculiarity of the contract for the supply of coal to small-scale consumers is a 100% prepayment for the services provided «coal plus delivery» or «coal without supply».

It is substantiated that it is expedient to include the following points in the stages of preparation of contracts for the supply of coal products:

- forecasting volumes of shipment of coal products to consumers;
- collection of applications for coal;
- coordination of terms of delivery, payment terms for coal;
- formation of transportation schedules taking into account the time in the road and time of unloading of cars or motor transport;
- the choice of the type of transport, the conclusion of contracts for transport services with the cargo transport department or a motor transport enterprise;
- concluding contracts for the supply of coal products to consumers;
- application of penalties from large-scale consumers in cases of their untimely refusal of delivery or delay of payment for the coal shipped.

These contractual work processes should be implemented through the entire complex of management functions: forecasting, planning, organization, accounting, control, analysis, regulation.

It is established that the issue of formation of a business association on the example of a syndicate aimed at minimizing the risk associated with the instability of demand for the public and private sectors of the coal industry is relevant.

Within public-private partnership in the field of mining industry and development of pits syndicate shall be an effective form of partnership between large vertically integrated companies which at the same time act as producers and consumers of coal products, and state coal-mining enterprises for the purpose of organization, control and regulation of joint sales. It doesn't contradict

current legislation of Ukraine where possibility of merging of the enterprises by the industry principle is pointed out.

Considering that state coal enterprises is under the management of the Ministry of Energy and Coal Mining of Ukraine, the relations between them shall be governed by the agreement on estate administration. It complies with the Regulations on the Ministry of Fuel and Energy of Ukraine, Art. 1029 of the Civil code of Ukraine, Art. 5 of the Law of Ukraine «On public-private partnership».

According to the Article 1029 of the Civil code of Ukraine under the agreement on estate administration one party (administrator – in this case the Ministry of Energy and Coal Mining of Ukraine) transfers to the other party (to the executive manager of created coal syndicate with the participation of DTEK) the management of estate of state enterprise for a definite period, and the second party shall provide management of this estate at a charge in its own name for the benefit of the trust or indicated person (beneficiary).

According to the Article 5 of the Law of Ukraine «On public-private partnership» income shall be distributed between the participants of the syndicate under the terms of joint venture agreement. In Article 1130 of chapter 77 of the Civil code of Ukraine it is agreed that that under the joint venture agreement the parties (participants) undertake to work jointly without creation of the legal entity in the furtherance of the goal. In this case (through the example of syndicate) without consolidation of deposits of participants for the purpose of the organization joint sales. Terms of joint venture agreement, including coordination of working partnership of the participants, coverings of expenses and loss thereof, contribution to the results of joint venture and so on are specified in the agreement between the parties.

So, mechanism of implementation of public-private partnership is improved during control over sales of coal mining enterprises of different forms of ownership based on syndicate as a form of business, what shall contribute to prompt response to changes in demand for coal, distribution of risks between coal enterprises of public and private sectors and their minimization, organization of continuous supply and secured channels of distribution of coal products for national coal-mining enterprises.

The methodical approach to the estimation of the economic effect from the implementation of measures to improve the marketing activities of coal mining enterprises is proposed, which is based on saving of sales expenses as a result of the increase of the level of coordination between the coal mining enterprise and the cargo handling department at the conclusion of agreements on the provision of transport services, the formation of optimal schedules the movement of wagons, the rational use of wagons by load capacity, reducing the

time for servicing consumers of ears efficient innovation infrastructure products.

**Conclusion.** The scientific novelty of the obtained results lies in the further development of theoretical aspects, scientific and methodological approaches and practical guidelines for the improvement of the marketing activity organization of coal-mining enterprises in the conditions of irregular demand.

The main provisions that contain scientific novelty include the following:

proposals on the application of a network approach to the organization of sales activities of coal mining enterprises on the basis of development of three possible models of sales networks;

improved client-oriented approach to customer service of coal products, which allows forming a system of contractual relations between a coal-mining enterprise and different groups of consumers;

the principles of the combination within the framework of the concept of marketing the relationship of system, process and functional approaches in order to improve the service of consumers of coal products;

an improved methodical approach to choosing the optimal channel of coal production, which allows using the hierarchy analysis method to determine the most important criteria and to calculate the volume of the supply of coal to large-scale consumers taking into account the set of factors;

mechanism of realization of public-private partnership in the management of sales activities of coal-mining enterprises on the basis of the legal form of the syndicate.

The practical implication of the research results is that the proposed recommendations for the improvement of the marketing activity organization can be used for coal-mining enterprises of Ukraine.

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### Залознова Ю. С., Трушкіна Н. В. Підвищення ефективності організації збутової діяльності вугільних підприємств

Досліджено особливості функціонування вугледобувних підприємств з точки зору організації збутової діяльності. Уточнено суть і зміст понять «збутова діяльність вугледобувного підприємства», «маркетинг взаємовідносин», «клієнтоорієнтованість», «обслуговування споживачів вугільної продукції», «збутова мережа». Доведено доцільність за-

стосування мережевого підходу до організації збутової діяльності вугледобувних підприємств.

У результаті аналізу обсягів і структури споживання вугілля в Україні виявлено закономірності нестабільності попиту на вугільну продукцію різних категорій споживачів. Запропоновано застосування клієнтоорієнтованого підходу до обслуговування споживачів вугільної продукції на основі їх диференціації, який, на відміну від існуючих, базується на врахуванні обсягів щорічного попиту різних груп споживачів та їх специфічних особливостей.

Встановлено, що для вдосконалення обслуговування споживачів вугільної продукції доцільним є поєднання системного, процесного і функціонального підходів. Досліджено та систематизовано чинники впливу на організацію збутової діяльності підприємств вугільної промисловості. Розроблено інерційний та оптимістичний сценарії розвитку збутової політики вугледобувних підприємств за допомогою різних методів прогнозування.

Удосконалено методичний підхід до вибору оптимального каналу збуту вугільної продукції з використанням методу аналізу ієрархій, експертного й аналітично-оціночного методів. Розроблено механізм реалізації державно-приватного партнерства при управлінні збутовою діяльністю вугледобувних підприємств різних форм власності у вигляді синдикату.

Сформовано систему контрактних взаємовідносин вугледобувного підприємства з різними категоріями споживачів вугільної продукції. Дістав подальшого розвитку методичний підхід до оцінки економічного ефекту від реалізації заходів щодо вдосконалення організації збутової діяльності вугледобувних підприємств, який апробовано на вітчизняних підприємствах вугільної промисловості.

*Ключові слова:* вугільне підприємство, збутова діяльність, організація, нестабільність попиту, теоретичні положення, науково-методичні засади, практичні рекомендації, клієнтоорієнтований підхід, канал збуту, синдикат.

### **Залознова Ю. С., Трушкіна Н. В. Повышение эффективности организации сбытовой деятельности угольных предприятий**

Исследованы особенности функционирования угледобывающих предприятий с точки зрения организации сбытовой деятельности. Уточнены сущность и содержание терминов «сбытовая деятельность угледобывающего предприятия», «маркетинг взаимоотношений», «клиентоориентированность», «обслуживание потребителей угольной продукции», «сбытовая сеть». Доказана целесообразность применения сетевого подхода к организации сбытовой деятельности угледобывающих предприятий.

В результате анализа объемов и структуры потребления угля в Украине выявлены закономерно-

сти нестабильности спроса на угольную продукцию различных категорий потребителей. Предложено применение клиентоориентированного подхода к обслуживанию потребителей угольной продукции на основе их дифференциации, который, в отличие от существующих, базируется на учете объемов ежегодного спроса различных групп потребителей и их специфических особенностей.

Установлено, что для совершенствования обслуживания потребителей угольной продукции целесообразно сочетание системного, процессного и функционального подходов. Исследованы и систематизированы факторы влияния на организацию сбытовой деятельности предприятий угольной промышленности. Разработаны инерционный и оптимистический сценарии развития сбытовой политики угледобывающих предприятий с помощью различных методов прогнозирования.

Усовершенствован методический подход к выбору оптимального канала сбыта угольной продукции с использованием метода анализа иерархий, экспертного и аналитико-оценочного методов. Разработан механизм реализации государственно-частного партнерства при управлении сбытовой деятельностью угледобывающих предприятий различных форм собственности на основе создания синдиката.

Сформирована система контрактных взаимоотношений угледобывающего предприятия с различными категориями потребителей угольной продукции. Получил дальнейшее развитие методический подход к оценке экономического эффекта от реализации мероприятий по совершенствованию организации сбытовой деятельности угледобывающих предприятий, который апробирован на отечественных предприятиях угольной промышленности.

*Ключевые слова:* угольное предприятие, сбытовая деятельность, организация, нестабильность спроса, теоретические положения, научно-методические основы, практические рекомендации, клиентоориентированный подход, канал сбыта, синдикат.

### **Zaloznova Yu., Trushkina N. Increasing the efficiency of the organization of marketing activity of coal enterprises**

Performance features of coal mining enterprises in terms of organization of the marketing activity were studied. The essence of the concept «marketing activity of coal-mining enterprise» is specified, taking into account the specifics of its performance and detected changes and development trends of the institutional environment. The author's interpretation of the terms «relation marketing», «customer orientation», «consumer service of the coal product», «sales network» are given. Network approach to organization of the marketing activity of coal mining enterprises is proposed, which

main point is the development of three models of sales networks.

Based on the analysis of scope and pattern of coal consumption in Ukraine, common factors of irregular demand for coal of different categories of consumers are determined. As per calculations of seasonal fluctuations index it is estimated that demand for coal of large-scale consumers is characterized by weak seasonal fluctuations and of middle-scale – by significant. It is offered a customer-oriented approach to servicing consumers of coal products based on differentiation thereof, which unlike the existing one, considers annual demand level of different groups of consumers and determine their peculiarities.

It is established that in order to improve the processes of servicing of coal consumers it is reasonable to use in a single package the system, process and functional approaches. This shall contribute to synergistic effect through the improvement of service quality, reducing handling time of coal, increasing sales, expanding markets as a result of new segments upraise. The factors influencing the organization of sales of coal mining enterprises are investigated and systematized. The inertial and optimistic scenarios for the development of sales policy of coal-mining enterprises through the use of various forecasting methods are developed.

Selection criteria for optimal channel of coal product sale are specified and systematized into four groups: economic, organizational, market and information. Using hierarchy analysis technique (Saaty's method), judgmental method based on point factor and analytical appraisal method the advantages of direct supply of coal to customers are proved, which amounts almost 90% of

sales of coal mining enterprises. When calculating the volume of the delivery of coal products to large-scale consumers it is proposed to take into account such factors as annual demand for coal; price of 1 t of marketable product; expenses for the organization of sales (expenses for consumer service and transportation of coal); inflation rate and risk factor.

Mechanism of implementation of public-private partnership is improved during control over sales of coal mining enterprises of different forms of ownership based on syndicate as a form of business, what shall contribute to prompt response to changes in demand for coal, distribution of risks between coal enterprises of public and private sectors and their minimization, organization of continuous supply and secured channels of distribution of coal products for national coal-mining enterprises.

The system of contractual relationships of coal producers with various categories of coal consumers is built, which is understood as a set of interrelated elements (objects, subjects, functions, methods, principles, tools) for continuous conclusion and fulfillment of the terms of contracts for the delivery of coal products. The methodical approach is being further developed to evaluation of economic potential from implementation of measures on improvement of sales of coal mining enterprises, which has been tested on a number of national coal mining enterprises.

*Keywords:* coal enterprise, marketing activity, organization, irregular demand, theoretical positions, scientific and methodical principles, practical recommendations, client-oriented approach, channel of distribution, syndicate.

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## CONTROLLING AS A COMPANY MANAGEMENT CONCEPT

### Introduction

In Europe, the system of control-related management of companies appeared in 1950s in American businesses. The system was implemented mainly in Germany and France. In Poland controlling was introduced late in 1980s, since the companies of that time, run under the planned economy system (the latter being a command and allocation economy in character), simply did not need the said tool. All that changed with the outset of the market economy. In order to stay afloat in the market and improve their competitive edge, the companies started to modify their management systems.

The challenge in question could have been met thanks to the establishing of a base of data and methods necessary to make proper strategic decisions [Jędralska 2003, p. 48].

Numerous decisions are made within the company; they may refer to such subjects as: marketing, sales, organisational resources, human resources, financial resources, production, information resources, material resources. Controlling may encompass the above-mentioned business activities, allowing the executives to make proper decisions of operational and strategic character.

Controlling is a management concept that reflects all management functions: planning, organising, motivating, and reviewing [Lew 2004, p. 15].

The idea of controlling is to establish a logical system which will help to make proper decisions. It is possible thanks to its well-structured links between particular elements of the companies, being involved in the economic activity expressed in financial, economic, organisational and technical contexts.

One can therefore assume that controlling is a line of thought and action, being reflected in the form of decision-making procedures carried out by particular executive units of the company [Marciniak 2004, p. 13; Miśkiewicz 2017, p. 28 et. seq.].

Controlling may involve various areas of business, helping the executives take proper decisions of operational and strategic character. It is a management concept that reflects all management functions: planning, organising, motivating, and reviewing. Being a system of co-ordinated management of a networked organisation, controlling provides for establishing and fulfilling

of common or individual aims of its participants. The system, being satisfactorily rational, reflects the added value over a long-term period.

Controlling uses certain procedures and data derived from the accounting system. As an information system operating in the company with regard to its planning and directing, controlling significantly resembles accounting, and the management accounting in particular. The controlling and accounting share the same theoretical background. They need to co-operate, since each of them has its own tasks to be performed in the company.

In the organisation- and management-related system of the company, which implements the controlling principles, the management functions must be properly integrated and co-ordinated; otherwise the system will not be able to properly operate and support the decision-making process, with a consideration given to signs coming from the inside of the company, as well as its surrounding environment.

The implementation of controlling into the company requires an adjustment of the company's organisational structure to its new tasks. One should not forget about a proper location of the Controlling Department or of a controller in the organisational structure. The higher the location in the organisational structure, the greater the effectiveness of controlling.

Information is a basic precondition for the design of controlling. It should be comprehensible, credible and accessible at due time. Basic indicators, focussed on results, should be currently calculated and analysed, in order to provide for an effective management of the company. Financial indicators should be supplemented with non-financial ones, so that one may achieve a comprehensive view on weaknesses and strengths of the company.

The purpose of the present article is to underline the importance of controlling, viewed as a concept of management in contemporary companies. The author has elaborated and implemented the controlling and budgeting systems in numerous companies and public financial entities. He held a post of a Vice-President in the Polish Society of Controlling. He has written several dozen papers on the subject, published in Poland and abroad.

## 1. Functions of controlling in the management process

The performance of tasks and accomplishment of anticipated objectives within the scope of controlling are to provide the companies with opportunities to survive and improve their competitive edge in the long-term perspective. The identification of controlling functions should be preceded by the determination of scopes and activities performed under **comprehensive** functions of management. Controlling being, as an information system, a tool for planning, organising and reviewing, should fulfil numerous functions; it integrates, among others, the following aspects: planning, organising, motivating, reviewing.

Controlling supports the decision-making process in the company through: activity planning, managing and reviewing of achieved results, informing, motivating.

In the organisation- and management-related system of the company, which implements the controlling principles, the management functions must be properly integrated and co-ordinated; otherwise the system will not be able to properly operate and support the decision-making process, with a consideration given to signs coming from the inside of the company, as well as its surrounding environment. A comprehensive use of controlling in the company reorganisation process should also take into account the "human capital" present in the company, who, as long as being active and well-informed, is able to ensure that all above-described functions of controlling may be fulfilled. Proper motivational system allows for the employees to remain involved in the performance of common goals. Thus, the staff participate in the determination and accomplishment of tasks of companies.

Controlling makes use of certain procedures and data from the accounting system. As an information system, operating in the company within the scope of planning and reviewing, controlling and accounting have numerous common points. Controlling employs the analysis of the most sensitive areas of the company [Marciniak 2004, p. 13]. However, controlling puts an emphasis on managing the company, which is explicitly non-existent in the management accounting. The systems of management accounting and controlling have a lot in common.

Theoretical backgrounds of these areas of science are the same. The areas need to co-operate with each other, as each of them has its own role to play.

## 2. Types of controlling

With regard to the timeline for setting targets and making decisions, one may distinguish strategic and operational controlling. The **strategic controlling** involves activities aimed at providing the company with a long-term operation, thanks to prior adjustment of the

company to requirements of the business environment. Decisions taken within the scope of strategic controlling result from general intentions and aims defined by the company's board of directors.

The following elements are the most frequently quoted tasks of strategic controlling, to be found in the source literature [Lichtarski 2005, ps.35-38]:

- reviewing and analysing information derived from internal and external environments,
- establishing aims and long-term tasks, carrying out a study of their feasibility,
- dividing long-term tasks into operational aims; checking their correctness,
- creating a system of information flow, supporting the decision-making process of the lower-level managers,
- monitoring and carrying out a prior assessment of strategic tasks, along with an analysis of potential opportunities and threats,
- identifying deviations,
- putting forward remedies and corrective actions.

Another, frequently cited division criterion is the **function-related** systematics of controlling, often referred to as **processual** controlling. The said controlling relies on various functions performed by particular cells in the company. [Jędralska 2003, p. 48] Such a division criterion is connected with the scope in which controlling is used in various areas of organisational structures. One can distinguish here: production controlling, logistics, marketing and sales controlling, HR controlling, financial and project-related controlling, R&D controlling.

## 3. Stages of controlling in the company

*S. Nowosielski* and *R. Marczak* [Nowosielski, Marczak 1996, p.109] claimed that controlling, viewed from the methodological point of view, should require to implement a series of analysis- and project-related works that may be defined, in details, in three stages:

### Stage I: preliminary findings related to:

- the acquisition of top executives' approval for the very basic idea of a new management system, which system significantly undermines deeply-rooted and proven methods of taking decisions,
- the determination of main targets set on controlling, which targets are to be fulfilled in economic centres,
- the creation of an implementation team,
- the preparation of the company's staff to face new organisational challenges, through a series of training courses aimed at informing the employees of the organisational matters, and the operation of controlling as a system based on a decentralised organisational structure of the company,

- the critical analysis of ongoing solutions, which analysis provides two types of information on the company: „hard area” (structures, methods, procedures, techniques) and „soft area” (attitudes of the executives and the employees, their systems of values, opinions of trade unions).

**Stage II: designing organisational changes related to:**

- the determination, in a detailed way, of aims, both strategic (elaboration and implementation of a system oriented towards decision-making processes) and operational ones (e.g. elaborating cost budgeting systems, activity monitoring, etc.),
- the general concept of the controlling system, in compliance with the following sequence:
  - aims => tasks => methods => procedures => instruments => documents,
  - a preliminary assessment and verification of solutions during a training session. The training session should involve unit managers and their deputies, playing active roles in the process of implementation and subsequent exploitation of a new system,
  - acceptance of the concept by the company’s board of directors,

**Stage III: implementation aimed at:**

- preparing for the implementation, that involves preparing detailed principles, documents on planning and settlement operations, and implementation schedules, based on priorly accepted and approved solutions,
- correcting solutions during the system operation, provided that at the first stage the operation of controlling has no payroll-related consequences to managers and employees. Combining assessment factors with the payroll system is performed in compliance with the old rules. That will certainly be changed in future, when new “game rules” are accepted.

The main purpose of the actions should involve the opportunity to make use of the company’s present information resources (located in the IT sources) for the sake of the employment of the controlling method. Equally important is to modify and extend the information resources so that one is able to gradually extend the application of controlling-related techniques and tools.

**4. Budgeting in the company**

It is becoming necessary to separate responsibility centres from the company, which centres feature defined competencies and tasks, while using budgeting mechanisms.

Maintaining a responsibility account results from the division of work as to managerial functions performed in the company. The implementation of responsibility centres allows to effectively use one’s economic, staff and organisational potential, which, in turn, contributes to a more effective operation of the company.

Budgeting makes use of a database acquired during the exploitation of the accounts of costs, particularly with regard to volumes and structures of costs in particular organisational units and of factors that influence their levels. This is a method of a current management of the company, determining the rules for planning and using of financial means in order to effectively perform production-related tasks.

The budget may be described as an action plan expressed in natural and value-related units, with a special emphasis on means for its performance and on a person responsible for its execution [Sierpińska, Niedbała, 2003, p.17].

Moreover, budgeting allows to delegate decision-related powers and responsibilities to the lower levels of the management. It also allows to maintain a common course of action for particular organisational cells.

An essential element of the budgeting process is the controlling of tasks being performed. Controlling in question is a process of constant review whether predictions turn out to be compliant with the economic reality, whether these two are coherent. Controlling allows to distinguish any deviations in the economic process and to remove them promptly.

**5. Implementation of controlling in the company**

In the company, of equal importance are managerial posts responsible for actions aimed at conquering new markets or actions covering the design of a new product or those that are involved in the performance of repeated functions.

Fundamental factors of basic budgeting are separated areas of the company, being known as responsibility centres (cost centres, profit centres). In modern companies, the responsibility centres should be managed by managers who have at their disposal a defined scope of power and responsibility. The key issue is to provide for an objective evaluation of the task performance.

The responsibility centre may be: a plant, department, division, unit, or a separated part of the company’s activity, provided that its manager was equipped with decision-related powers, necessary to perform tasks. The responsibility centre needs to have just one manager and one scope of tasks to be performed. Should the scopes be undefined and imprecise, and should they overlap the scopes of other responsibility centres, then there shall appear a dilution of responsibility, dualism in the decision-making process, and eventually particular areas of the company’s activity shall suffer.

The budgeting system in the company requires to identify responsibility centres as to: costs, revenues, profits and investments. The **cost centre** in the company is characterised by the following features:

- it is the lowest in the hierarchy,
- it manages the incurrence of costs,
- it has no direct influence on the sales volume,



- it may involve centres of administrative costs and other centres that are not directly connected with the operational activity.

The decision-making scope of managers in cost centres is limited to the powers to decide on production volumes, quality of products or services, and to manage, in a proper way, resources contained in the budget. The assessment criterion related to the tasks performance influences the costs incurred in the said centres, i.e. the ones that might be influenced by a manager of a given centre. The basic feature of the cost centre is the opportunity to plan and inspect costs upon the performance of tasks. Thus, our role cannot be limited to maintaining the cost records, without the possibility to achieve analytical information from particular responsibility centres.

The **profit centre** in the company may be characterised by the following features:

- it is located at the middle level of the budgeting system structure; it manages the occurrence of costs and earning of revenues,
- it does not affect the use of investment means,
- may encompass units responsible for sales and production.

The profit centre may consist of a few cost centres. The proper operation of the centre involves managing its revenues. The centre manager should be entitled to influence price policies, sales trends and volumes. The effectiveness of the centre should be measured by the difference between a value of net revenues and manufacturing costs of a product, service, i.e. operational profit or gross profit and a net profit.

## 6. Advantages related to the implementation of controlling

The advantages of the implementation of responsibility centres in companies consist of the following elements:

- introduction and development of a planning, controlling and managing system, dependent on results achieved by a given entity,
- creation of a better information system in the company,
- a stronger drive for employees and particular teams to achieve positive results,
- a managerial awareness evolving around activities which bring about positive results on the one hand, and which ensure cost-optimisation on the other hand,
- a better awareness as to cost-inducing reasons, their necessity, and also opportunities to carry out optimisation activities,
- a reliable calculation of costs and results,
- a faster reaction to diagnosed weaknesses of the company through the implementation of corrective actions or their elimination,

- a better motivation to achieve favourable results by joining the effects of the responsibility centre with, e.g. remuneration systems,

- a faster decision-making process, a better co-ordination of actions in the decision-making process,

- a shorter circulation of information, through the creation of a reporting system, adjusted to internal recipients of a given centre,

- a better innovativeness and responsibility of employees for the company's actions,

- a greater involvement of the executives in the direct decision-making process,

- a fast and effective provision of up-to-date information for the managers, and the acceleration of the decision-making process,

- a greater transparency of process creating values in particular responsibility centres, and bonds between them,

Organisational units as responsibility centres shall contribute to the shift of some competencies and entitlements onto line managers. Therefore, the management processes in the company are being decentralised. It is thus possible to react more swiftly to the changes in the company's environment. Furthermore, the company may be able to operate in a more flexible way, which adds to its competitive advantage in the market.

## Conclusion

The introduction of controlling into the companies is becoming a dire necessity. Managing the company in the conditions of a fierce competition is getting more and more difficult, as it requires the co-ordination and integration of particular economic links carrying out their processes and projects within the scope of their activities.

The implementation of controlling into the company brings about the decentralisation of decisions and responsibilities; it thus fuels a demand for defined information, the latter being a pillar of the proper management.

In the controlling-related management process it is extremely important to properly define the responsibility centre. Depending on the character of an activity, targets, tasks allocated to a given responsibility centre, one should define assessment factors that take into consideration various levels of decision-related independence and complexity of its management process.

Separating from the company's structure of centres of responsibility for action results is a complex process that requires a replacement of functional structures by matrix and divisionalized ones.

Budgeting forces the executives to present aims and enterprises in digits, e.g. revenues, costs, profits.

Information is a basic precondition for the design of controlling. It should be comprehensible, credible and accessible at due time.

Controlling is a tool that assists the management or reorganisation processes; however, one should mention here sources of uncertainties, such as: a proper selection of gauges, volumes of acceptable deviations, volumes of planning gauges.

The implementation of controlling into the company requires an adjustment of the company's organisational structure to its new tasks. One should not forget about a proper location of the Controlling Department or of a controller in the organisational structure. The higher the location in the organisational structure, the greater the effectiveness of controlling.

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### **Джвігол Х. Контролінг як концепція управління компанією**

Автор визначає сучасні концепції управління бізнесом. Управління розглянуто як система планування, контролю, збору і обробки інформації. Грунтуючись на власному досвіді в діловій практиці, а також на теоретичному досвіді в галузі управління наукою, автор пропонує впровадити сучасний управлінський процес з урахуванням принципів контролю. Представлено переваги реалізованого контролю (з методологічної точки зору) з урахуванням ряду аналітичних та проектних робіт, які були визначені в три етапи.

*Ключові слова:* контролінг, бюджетування в компанії, сучасні концепції управління, контроль процесу.

### **Джвигол Х. Контроллинг как концепция управления компанией**

Автор определяет современные концепции управления бизнесом. Управление рассмотрено как система планирования, контроля, сбора и обработки информации. Основываясь на собственном опыте в деловой практике, а также на теоретическом опыте в области управления наукой, автор предлагает внедрить современный управленческий процесс с учетом принципов контроля. Представлены преимущества реализованного контроля (с методологической точки зрения) с учетом ряда аналитических и проектных работ, которые были определены в три этапа.

*Ключевые слова:* контроллинг, бюджетирование в компании, современные концепции управления, контроль процесса.

### **Dźwigoł H. Controlling as a company management concept**

The author defines contemporary concepts of business management. It perceives it as a system for planning, controlling, collecting and processing information. Based on his own experience in business practice, and with the theoretical background in management science, he suggests the implementation of a modern management process taking into account the principles of control. The author presented advantages of the implemented controlling (viewed from the methodological point of view), with a consideration given to a series of analysis- and project-related works that were defined in three stages.

*Keywords:* controlling, budgeting in the company, modern management concepts, process control.

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## MERGERS AND ACQUISITIONS: SELECTED EPISTEMOLOGICAL ASPECTS

### Introduction

Selection of modern company development strategies by means of endogenous or exogenous growth, is highly individualised. It is believed, in economic practice, that mergers and acquisitions are a natural way of development for enterprises, which is in turn part of synergy effect. In economy – management theory to be precise – these processes are analysed closely and examined thoroughly. Management theory focuses on these processes and examines them in a broad perspective. Practice shows that concentrations exist, that can lead to industrial conglomerates or establishment of corporations encompassing businesses that are often unrelated. Companies with a holding structure can also be established. The goal of the article is to organise the terminology and definitions from the scope of mergers and acquisitions. Based on theoretical considerations and own business experience, the author defines the role and meaning of knowledge in modern economic processes.

### 1. Theoretical aspects of mergers and acquisitions

Mergers and acquisitions are an important fragment of the functioning of world economy. They can be defined as transactions which the companies make to achieve specific strategic – organisational and financial – goals. A company that is a part of global market economy, is affected by internal and external factors alike, which forces it to develop a specific strategy. However, the selection of a development strategy by means of endogenous or exogenous growth, is highly individualised. Nevertheless, the most important reason for mergers and acquisitions is the so called synergy effect. This means that the value of the whole is bigger than the sum of the two values of respective parts. This phenomenon is also called the 2+2=5 effect.

The issues of mergers and acquisitions are not explicitly defined in the economic literature. In the 70s of the last century, A. Etzionii lead deliberations on the subject. He stated that respective elements of the economy can be subjects to restructuring processes, including businesses, departments, the whole national economy. He suggested that the subject of reindustrialisation is narrower and limited only to one fragment of the national economy – industry. A. Karpiński continued in similar vein and argued that reindustrialisation means building and one industrial structure from scratch in order to adapt it to the requirements of the future – to the generations of technology and internal organisation which are yet to come. The essence of this new structure

will be replacing humans with machines in the production process which will be achieved by restructuring, meaning an innovative process of reconstruction of the structure [Etzionii 2006, p. 204 et al.; Karpiński 1992, p. 154 et al.; Lyashenko, Osadcha, Galyasovskaya, Knyshek 2017, pp. 20-25; Pająk, Kamińska, Kvilinskyi 2016, pp. 204-217]. On the other hand, H. Dźwigoł and H. Johnson believe that knowledge and competence of human resources will become even more important in modern organisations. In his analyses, H. Johnson believes that these processes force the following:

- globalisation, which, thanks to ‘reduction of work cost and the opening of the markets to a larger number of producers’, has a significant impact from the perspective of industry competitiveness,
- proceedings of financial markets which ‘have become more integrated, which in turn allows them to conduct company merger transactions more easily’,
- privatisation of the state-owned enterprises, which allows mergers of companies from different sectors, including some, which were unreachable for the private capital so far,
- danger of recession, which ‘makes competitiveness an even more important matter, which results in measures being taken to eliminate some of the expenses by the means of consolidation [Johnson 2000, p. 32 et al.]’.

In mergers and acquisitions, the ‘added value’ is a result of the synergy effect and can originate from various sources, both operational (organisational structure, management styles) and financial [Karpiński 1992, p. 154 et al.]. What’s interesting from a theoretical point of view is the specification of the reasons for mergers and acquisitions, proposed by A. Herdan. She refers to: limited possibilities of seldom development; threat of hostile acquisition; improvement of the competitiveness. In her understanding, the technical and organisational causes include: the increase of management effectiveness; acquisition of a more effective leadership; operational synergy: economy of scale, complementarity of resources and locus, reduction of transaction costs, benefits of technological integration [Herdan 2008, p. 15]. From the economic point of view, considering the market and marketing preconditions, it is worth noting that they correspond with the process related to the increase of the added value, leading to the elimination of the competition; complementarity of products and finally, risk diversification [Evans 2005, p. 22 et al.; Brzóska 2010, p. 63].

Financial preconditions for mergers and acquisitions can be noticed in the event of the lack of financial liquidity and problems in obtaining a loan experienced by the acquirer. This can be seen in: the use of surplus funds; increase of debt ability; reorganisation of the investment portfolio; cash acquisition; reduction of capital cost; tax benefits; underestimation of the acquired company; increase of the value of market shares on the capital market [Herdan 2008, p. 15 et. al.; Kuchlewska 2003, p. 46 et. al.].

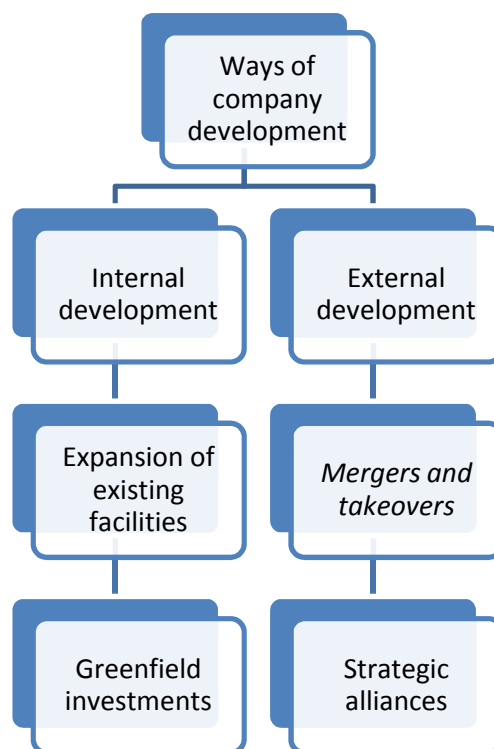
Hooke has a slightly different approach to the classification of the reasons for company mergers. He does not directly analyse the reasons for the process, but denotes the candidates for acquisition which will generate specific profits for the companies. Therefore, he proposes acquisition of companies along with their distribution channels which is the grounds for the belief that the acquirer seeks savings in costs. A pursuit for the increase of effectiveness of work, forces the company to search for candidates with more advanced production lines. On the other hand, the search for companies in liquidation, judicially attached or acquired by own management boards, suggests that 'looking for occasions' may also be the reason for mergers or acquisitions, which may be the evidence of surplus cash amounts of a company in mature stage [Hooke 1998, p. 8 et. al.]. P. J. Szczepanowski's suggestions are also worth considering. He denotes that the reasons for mergers and acquisitions can be: market related, profit and cost related or resources and energy as collateral related [Szczepanowski 2000, p. 53 et. al.].

Existing literature suggests that there are various reasons for mergers and acquisitions. Some authors of analyses and studies, stress the importance of preconditions related to internal situation and offensive strategy of the enterprises. However, in Polish mill industry, the dominating reasons are the internal goals to acquire new capital in order to achieve the synergy effect in the fields of production, technology, logistics and distribution, as well as financial liquidity. H. Dźwigoł and H. Mruk emphasise the fact that new technologies have lead to the development of the knowledge economy, in which the companies are more and more often taking measures to build an intelligent organisation [Dźwigoł 2015, p. 27; Mruk 2010, p. 70 et. al.].

The reasons for mergers and acquisitions outlined above are often objective which is caused by the situation of the merging companies. Figure 1 shows a generalised algorithm of this situation.

However, there are reasons for mergers and acquisitions that are subjective. These reasons are presented as proposals derived from the objective analysis of a business entity. But this does not mean that such reason isn't a consequence of company's needs. Yet it can be modified by the interest of actuaries, meaning groups with their own interest in the company (managers, shareholders, proxies, employees). M. Lewandowski

analyses these groups justly and denotes that they refer to: growth of leadership salaries; increase of prestige and power; reduction of management risk; increase of freedom of action [Lewandowski, Kulpa 1998, p. 23].



**Fig. 1. Ways of company development**

Source: Own work based on [Frąckowiak 2009].

This means that the managers have the final word in the process. They have good knowledge of the enterprise, therefore the shareholders represented by the Supervisory Board and the employees alike have to take their opinion into account. In Polish environment, the representatives of the employees also lean to the leadership's opinion, since the employees can benefit from a merger or acquisition heavily, if for example privatisation of a state-owned company is a direct consequence. In such case, employees receive 15% of shares of the company and numerous social and employment guarantees [Jaki 2000, p. 141 et. al.].

P. Sudarsanam had also analysed the reasons for mergers and acquisitions. He cites growth of the assets value as the main reason for the process, however he conditionally treats it as an indirect reason. In the further perspective, he argues that maximisation of the shareholders' wealth may be the base goal, however this goal may also be distorted by the managers taking actions to broaden their personal benefits. It is worth mentioning at this point that most of the mergers in mill industry are horizontal and the consolidation is grounded in objective reasons. The abovementioned deliberations about the types of mergers of enterprises and their relation with the reasons expressed by the decision-makers,

helped define the types of consolidations related to specific reasons, which are related to objective situations and decision-makers' interests alike. However, the literature does not provide broader research on the reasons of company mergers linked with the need to acquire new knowledge. Moreover, it is not always the main explicit reason for the company mergers [Mierzejewska 2007, p. 2; Drucker 1994, pp. 119-126; Roberts 2005, Vol. 19 No.3; Penc 2005, pp. 9-10].

Therefore the term *mergers and acquisitions* used in theory and in practice is a direct translation of English terms. The definition describes the forms of conducting these transactions on an active market with variable intensity, which has been present in these actions for years. Mergers and acquisitions as universally used terms, do not represent their legal form, nonetheless some authors wrongly try to use such interpretations. The theory of management, which heavily focuses on the issue, examines it from a broad perspective. It needs to be emphasised once again that the terms mergers and acquisitions do not define their legal form, regardless of the fact whether they are present in various legal sources and systems. According to this discipline, mergers are treated as actions leading to a connection of enterprise organisations in an equal situation where both parties express consensual initiative. Acquisition is an initiative of the acquirer towards the acquired.

The nature of these actions, especially acquisitions, is derivative and regardless of the fact if the acquisition is hostile or not, or what are the reasons for it. Taking the formal context of these transactions into account, the abovementioned explanation facilitates the differentiation of the nature of the transaction for the purposes of scientific deliberations within the theory of management, from its legal nature which is often dependent on different legal regimes, applicable to entities participating in such transactions [Cyfert, Krzakiewicz 2013, p. 30 et. al.; Szczepańska-Woszczyzna 2016, p. 204 et. al.].

## 2. Concentrations of entrepreneurs in modern market economy

Concentrations of entrepreneurs are a natural economic occurrence which does not – theoretically – interfere with competition on the market. As a result, entrepreneurs get the opportunity to strengthen their position by means of increasing their market share or expanding their offer with new fragments of the market. Consolidation of business activity may also have positive results for the functioning of the economy as a whole and consumers, thanks to the increase of availability, innovativeness and diversity of the products. An acquisition or a merger can also lead to restructuring of unprofitable entities or be an answer to competition from another large enterprise with great potential [Podczarski 2016, p. 63 et. al.].

Economic literature distinguishes two main groups of actions taken by enterprises that are aimed at concen-

tration. These are mergers (consolidations) of enterprises and acquisitions [Merges 2015, p. 4]. The goal of consolidations of enterprises is to make one out of two or more. Mergers and incorporations are examples of these process. Acquisitions on the other hand result in a transfer of control over a business entity to another enterprise. These transfer has two dimensions. Firstly it applies to the control of the company's activities, secondly the control of the company itself.

The requirement needed for a transaction to be qualified as concentration is the change of control of the entrepreneur or entrepreneurs, regardless of the fact whether it is a result of a merger or an acquisition. In this case the concentration forms include:

- merger (consolidation) – happens when two or more independent entrepreneurs merge into a new legal entity (as a result, they lose their former legal entity and formally cease to exist) or in the event of the capital of the company (acquired) is transferred to another company (acquiring) in exchange for shares, which the acquiring company issues to the shareholders of the acquired company (the acquired company ceases to exist),
- control takeover – the entrepreneur gains the ability to have decisive vote on the business activity conducted by another, previously independent entity. Usually happens when the majority stake is acquired,
- establishment of a joint venture – by two or more independent entrepreneurs who maintain their previous entities,
- acquisition of a part or of whole capital of an entrepreneur by another entrepreneur – if the turnover produced by this capital exceeded 10 million euro in any of the two years preceding the acquisition [Miśkiewicz 2017, pp. 13 -14].

From the point of view of the structure of the market the merging enterprises operate on and their product and services portfolio, the following types of concentration can be observed:

- horizontal – transaction between entrepreneurs who were previously operating in the same business (i.e. producers of cosmetics for women). It can result in creation of a new entity with large market power or in existence of few entities on the market, which cease to compete and are satisfied with a *status quo*,
- vertical – transaction between entrepreneurs who previously operated on different branches of a business focused on the same product (i.e. producer and distributor of paint). In this case, potential threat to competition may arise in the form of a limited access to products or services offered by the entrepreneur participating in the concentration, operating on lower or higher branch of the business,
- conglomerate – transaction between partners with no vertical or horizontal associations. Products offered by respective partners are often complementary and consumers buy them for similar reasons (i.e. laundry detergent and softening rinse). Possible conse-

quences of such concentration include so called tie-in transactions where purchase of one product is dependent on the purchase of another, or several products being sold at attractive prices [Miśkiewicz 2017, p. 14 et. al.; Borowiecki, Rojek 2006, p. 9 et. al.; Röder 2007, p. 38].

Considering the strategic goals of an enterprise, defensive and aggressive concentrations can be observed. In view of the reasons for taking actions – strategic and occasional concentrations, and from the territorial point of view – domestic and global (supranational). For the purposes of anti-trust analysis, the first division is the most important, since the assessment of a concentration for its effects on the market structure and consumers is different for distinct divisions [Kaleta 1998, p. 78 et. al.; Moszkowicz (et. al.) 2015, p. 19 et. al.].

In contrast to vertical and conglomerate concentrations, direct effects of horizontal concentrations – transactions made by competitors operating on the same market – include:

- reduction of the number of entities operating on the market after the concentration,
- Increase of the market share of the acquiring entrepreneurs in comparison with the situation before the transaction.

Additionally, the acquiring company reaches higher market power which allows it to propose higher prices (sometimes monopolist). Bigger market concentration creates the possibility to make open or alleged agreements which breach the competition. These are however, potential possibilities and the horizontal concentration does not always have to threaten competition, yet it definitely limits it. Unilateral and coordinated effects are the main concerns when it comes to threats to competition. The former relate directly to the position of the entrepreneur, being the result of the concentration. Thanks to this transaction, the entrepreneur reaches very high market power which can be used to limit the competition. This power grants him the ability to unilaterally raise the prices, limit production, reduce the quality or limit the availability of products and their innovativeness. Coordinated effects apply to the change in market structure. After the concentration, the number of competitors is reduced, which allows the remaining ones to coordinate their activities in order to achieve more profit [Miśkiewicz 2017, p. 15].

The competition mechanism is often replaced with the coordination process. Thanks to the abovementioned cooperation, the competitors together reach the market power that allows them to take actions which reduce the social welfare. Such collective coordination may be a result of a purposeful or a non-cooperative oligopoly.

Concentrations may lead to large industry conglomerates. These are large corporations which often group unrelated businesses, which in turn means that they are companies with a holding structure. The goal of establishing such entities is to benefit from the diversification and synergy effects. Hollmig, a Finnish con-

glomerate focused on harvesting renewable energy from waste, industrial services and sea transportation is a good example [Iwanicz-Drozdowska (eds.) 2007, p. 17 et. al.; Pająk (2013), p. 117 et. Al.].

From the political point of view, the power of such companies may be important and may in turn threaten the existence of civil society and contribute to barriers in the correct functioning of the democratic system. Existence of economic entities that powerful may have negative effect on operation possibilities of other entrepreneurs preventing them from exercising business freedom, they are granted. One of the rulings of American Supreme court is an example of such approach. The court ruled concentration of two enterprises illegal, because one of the goals of competition protection is to protect small, family businesses, even if its occupied by higher prices for consumers.

Another version of this approach states that the concentration of enterprises is in fact a mechanism of wealth concentration which in turn obstructs social balance.

Considering the abovementioned assumptions, the transfer of knowledge can apply to mergers and acquisitions alike. The latter, on condition that a true consolidation of enterprises takes place, since only in these conditions a transfer of knowledge can take place. Obviously, a transfer of knowledge can also take place in situation where there is no consolidation, however these are rare cases related to acquisitions of valuable inventions, patents etc. In such case, the acquisition of the abovementioned goods requires specific organisational actions. Therefore, on most occasions, when a transfer of knowledge is mentioned in the context of a merger or an acquisition, the process is usually followed by organisational actions which lead to a practical consolidation of the enterprises [Jachnis 2008, p. 83].

### 3. Horizontal and vertical types of mergers and acquisitions

Vast economic literature specifies various types and forms of merger processes. Analysis of the literature allows generalisation and a division of the process in the following base forms: concentration of activities, integration of actions and coordination. As a result of this classification several types of mergers were distinguished with its number varying depending on the author's views. The types of mergers are important for this article since that is where the problem of knowledge transfer can be observed. P.J. Szczepankowski distinguishes five types of mergers: horizontal, vertical, product, conglomerate and geographic [Szczepankowski 2000, p. 12]. H. Johnston on the other hand limits his division to four types: horizontal, vertical, concentric combination and conglomerate. [Johnson 2000] Finally M. Lewandowski et. al. Kulpa consider an even more limited division into vertical, horizontal and conglomerate integration [Lewandowski, Kulpa 1998, p. 56].

Knowledge transfer issues usually arise in two types of enterprises consolidations: horizontal and vertical. A horizontal merger is a consolidation of two or more companies operating on the same market (business), in order to increase overall market share or (and) create a more profitable enterprise, using combined know-how, patents and operational processes. The elements of knowledge enumerated in the definition, directly defines the role of knowledge transfer in the horizontal way of consolidation of organisations. Obviously, horizontal mergers can also take place in different sectors for diversification purposes, however from the knowledge transfer point of view, it is much less interesting.

Horizontal mergers, also known as circulation mergers, take place when merging enterprises use the same distribution channels. They have a specific meaning in the context of knowledge transfer, since knowledge may be used, not only in the production area, but also in marketing.

Based on the previous deliberations and analyses, it can be noted that horizontal mergers are the dominating type in steel and iron works [Frąckowiak 2009, p.64 et. al.]. Companies from the mill industry are often on different levels of technical and organisational knowledge and so the contemplated knowledge elements (know-how, patents) should definitely be transferred between the merging enterprises. This phenomenon is particularly evident in international mergers of large organisations such as Mittal which acquired and merged Polish mill enterprises often with more technically and technologically advanced foreign organisations.

In the consolidation process, synergy plays a particularly important role. It can take many forms: strengthen the market, operational (lower costs thanks to the economy of scale and combined range), financial and managerial power. According to Szczepankowski, the latter gives the company broad complementary benefits such as knowledge transfer in the area of new managerial techniques and methods on managerial positions in combined enterprises [Szczepankowski 2000, p. 34 et. al.]. Vertical type of merger is a situation where 'the transaction is made between entities being on subsequent links of the added value chain'. Therefore the benefits from synergy effect and the possibility to cover the whole technological process, from the acquisition of resources to the retail sales of the finished product, should be the main goal [Lewandowski, Kulpa, op. cit. p. 34]. The assumptions they propose in regard to mergers of related enterprises are complemented by P.K. Szczepankowski. It is worth noting that in such consolidations, knowledge transfer is naturally executed on a smaller scale than in horizontal mergers. This does not eliminate the possibility to create knowledge at the confluence of subsequent stages of the process of building the added value. This phase of knowledge creation is

called combination. It defines the creation of knowledge in organisations, through transformation of the conceptual knowledge into a system of knowledge by means of combination. Nonake and Takeuchi give an example where the concept of new product achieved on the combination stage, leads to the creation of a better prototype [Nonake, Takeuchi 1995, p. 42 et. al.]. This products is being further transformed to mass production by the means of stimulation and internalisation. Obviously, in vertical consolidation of organisations, knowledge combination, which is a part of its transfer, looks slightly different. It can be observed at the confluence of two phases of the process of creation of added value, i.e. between the supplier of mill resources and a processing enterprise (mill) or the recipients demanding specific mill product profiles. In this particular case of mill industry, we encounter a situation where for example, the knowledge externalised in the enterprise that supplies the mill industry will be used in combination with explicit knowledge, which the mill, that the supplier was merged with, already has. Knowledge transfer can also be observed in other types of enterprise consolidations and can be barely traceable. For example an enterprise acquired by a family business as part of its strategy, which assumes acquiring related businesses, which may lead to acquisition of patents. In practise, we see the connection between the reasons for enterprise consolidations and the selection of types of mergers and acquisitions appropriate in specific situations [Lewandowski 1998, p. 76].

After the analysis of the aspects of integration and the connections between the reasons for consolidation and executed consolidation form, A. Herdan has catalogued the reasons which can be observed in Table 1.

In practice, these actions must have caused changes in the organisational structure of integrating enterprises. The changes were taking place in the configuration of organisational units (groups) due to the assembly of human resources related with logistics and distribution, as well as management of integrating enterprises. On one hand the actions were aimed at broadening the range, but on the other at slimming the organisational structure, which on the second stage of integration (creation of Polskie Huty Stali holding) was extended by one managerial level. However, actions taken to optimise the decisive processes introduced centralising tendencies, which in turn resulted in some limitation of the autonomy on lower levels of managerial hierarchy.

Centralisation of some functions (logistics, distribution, R&D) definitely resulted in lowering of fixed costs and in consequence, in following the strategy of the merger. However, reinforcing the R&D resulted in creation of new knowledge i.e. by means of its transfer between the merged organisations. Vertical integration in mill industry also resulted with some other changes i.e. in the area of cash flow, however this matter did not affect the disturbances in the integration of organisational structures significantly.

**Connection between the reasons for consolidation and selected form of consolidation**

REASONS	CONSOLIDATION FORMS
Cost minimisation	Horizontal integration Global consolidations
Sales maximisation	Vertical integration Global consolidations
Risk reduction	Conglomerate Global consolidations
Realisation of adopted strategy	Horizontal integration Vertical integration Conglomerate Global consolidations
Control of cash flow	Horizontal integration Vertical integration Conglomerate Global consolidations

Source: [Herdan 2008, p. 23].

All the reasons for entering merger and acquisitions transactions contemplated in professional literature were objective and rooted in the situation of the enterprise and strategy derived from it.

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#### **Мишкевич Р. Злиття і поглинання: вибрані епістемологічні аспекти**

Вибір сучасних стратегій розвитку компанії за допомогою ендogenous або екзогенного зростання дуже індивідуалізований. В економічній практиці вважається, що злиття і поглинання є природним способом розвитку для підприємств, що, в свою чергу, є частиною синергетичного ефекту. В теорії управління економікою, якщо бути точним, ці процеси ретельно аналізуються і вивчаються. Теорія управління фокусується на цих процесах і розглядає їх в широкій перспективі. Практика показує, що існують концентрації, які можуть привести до промислових конгломератів або створення корпорацій, що охоплюють підприємства, які часто не пов'язані між собою. Також можуть бути створені компанії з холдингової структурою. Мета статті – сформулювати термінологію і визначення для сфери злиттів і поглинань. На основі теоретичних міркувань і власного ділового досвіду автор визначає роль і значення знань у сучасних економічних процесах.

*Ключові слова:* злиття, поглинання, процеси реструктуризації, управлінська компетентність, рента-

бельність інвестицій, стратегії компанії, інноваційність компанії.

#### **Мишкевич Р. Слияние и поглощение: выбранные эпистемологические аспекты**

Выбор современных стратегий развития компании посредством эндогенного или экзогенного роста очень индивидуализирован. В экономической практике считается, что слияния и поглощения являются естественным способом развития для предприятий, что, в свою очередь, является частью синергетического эффекта. В теории управления экономикой, если быть точным, эти процессы тщательно анализируются и изучаются. Теория управления фокусируется на этих процессах и рассматривает их в широкой перспективе. Практика показывает, что существуют концентрации, которые могут привести к промышленным конгломератам или созданию корпораций, охватывающих предприятия, которые часто не связаны между собой. Также могут быть созданы компании с холдинговой структурой. Цель статьи – сформулировать терминологию и определения для сферы слияний и поглощений. На основе теоретических соображений и собственного делового опыта автор определяет роль и значение знаний в современных экономических процессах.

*Ключевые слова:* слияния, поглощения, процессы реструктуризации, управленческая компетентность, рентабельность инвестиций, стратегии компании, инновационность компании.

#### **Miskiewicz R. Mergers and acquisitions: selected epistemological aspects**

Selection of modern company development strategies by means of endogenous or exogenous growth, is highly individualised. It is believed, in economic practice, that mergers and acquisitions are a natural way of development for enterprises, which is in turn part of synergy effect. In economy – management theory to be precise – these processes are analysed closely and examined thoroughly. Management theory focuses on these processes and examines them in a broad perspective. Practice shows that concentrations exist, that can lead to industrial conglomerates or establishment of corporations encompassing businesses that are often unrelated. Companies with a holding structure can also be established. The goal of the article is to organise the terminology and definitions from the scope of mergers and acquisitions. Based on theoretical considerations and own business experience, the author defines the role and meaning of knowledge in modern economic processes.

*Keywords:* mergers, acquisitions, restructuring processes, managerial competence, investment profitability, company strategies, company innovativeness, smooth operation practices.

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## ESTIMATION OF LEVEL OF SUSTAINABLE DEVELOPMENT OF INDUSTRIAL ENTERPRISES OF UKRAINE

**Statement of the problem.** In the period of globalization of economic processes into sustainable development of industrial enterprises one of the significant roles is played of their ecological component and the choice of strategic aims of management of sustainable development and coordination of a business – processes to envisage the processes of integration of the national economy into the united international economic system.

For the estimation of current level of providing of steady development of enterprises it is expedient to apply a mathematical design that assists the further decision of question of determination of existing to possibility of increase of constancy of enterprise.

**Analysis of the latest researches and publications.** The algorithm of management “space” modeling for enterprises to control of cost is shown in the works [2, 3] of Kalinina Ye.F. (Kalinina, 2007, p. 119-120) and Kuznetsova A.S. (Kuznetsova, 2007, p.131). The model of formation of competitive-price space for functioning of international business entity is presented in the works [4] of Ilyenko O.V. (Ilyenko, 2013, p. 140-145). However, the problem of sustainable development and of competitiveness control modeling for machine-building enterprises taking into account the ecological factor leaves much to be solved. The algorithm of economic systems modeling and problems of sustainable development has been researched by the following foreign and Ukrainian scientists [1-10]: Sovetov B.J. (Sovetov, 2001, p. 140-143), Yakovlev S.A., Rosen V.V. (Rosen, 2002, p. 196), Gracheva M.V. (Gracheva, 2005, p. 18-27), Minyk S.A. (Minyk, 2002, p. 5-13) and others.

**The purpose of the article** is modeling of parameters of sustainable development for directed influence of component on sustainable development of enterprises.

**Main results of the research.** The use of economic-mathematical instruments for profile presentation of the enterprise in three-dimensional space would be chosen as modeling of area of sustainable development for enterprise.

From mathematical point of view three-dimension space is presented in the form of pyramid (Sovetov, 2001; Rosen, 2002; Gracheva, 2005; Minyk, 2002; Itzkov, 2009; Pickover, 1999; Rucker, 1984), the algorithm of systems modeling “Three dimension space” [1-10] has been researched by the following foreign and Ukrainian scientists and on the basis of this mathematical approach it offered by us [11-14] to make the model of competitive environment (Fig. 1) for enterprise NKMZ (Novokramatorsky mashinostroitelny zavod /

Novokramatorsky mashine-building plant). NKMZ is an enterprise with a wealth of experience in participation in the large-scale national and international projects.

The parameters of “space of sustainable development” NKMZ (Fig.1) are defined:

$$\begin{aligned} S_{\min} \leq S \leq S_{\max}, E_{\min} \leq E \leq E_{\max}, \\ E_{C\min} \leq E_C \leq E_{C\max}. \end{aligned} \quad (1)$$

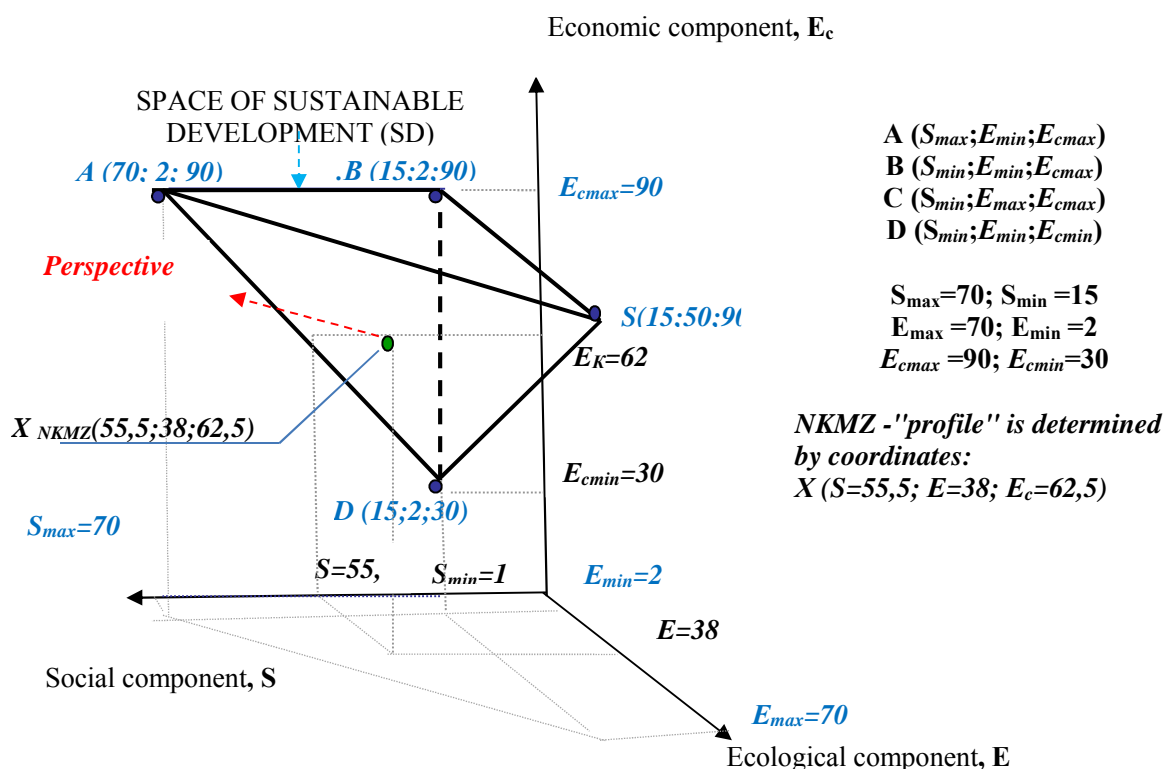
If this requirement is not fulfilled, the enterprise is outside the “space of sustainable development” (Fig. 1). So, it is necessary to carry out the analysis of external and internal environment, elicit “gaps” in the activity and define lines of further development. If the enterprise moves to the “perspective” area, space parameters move to optimal level of enterprise competitiveness and its innovation for all low scale of negative influence on the environment. The plant NKMZ is in the “space of sustainable development”. It is necessary to form development strategy of the enterprise (according to estimation results).

Maximum and minimum parameters for “space of sustainable development” were defined by the experts and equation for NKMZ passing through three points:

$$\begin{aligned} f(S, E, E_c) = (S - S_{\max}) * (E_{\max} - E_{\min}) * (E_{c\min} - E_{c\max}) - \\ - (E_c - E_{c\max}) * (E_{\max} - E_{\min}) * (S_{\max} - S_{\min}) - (E - E_{\min}) * \\ * (S_{\max} - S_{\min}) * (E_{c\min} - E_{c\max}). \end{aligned} \quad (2)$$

In the model (Fig.1) the maximal and minimum values of parameters of space were set on the basis of the got results of estimations of experts - specialists of aggregate of the rating estimations (on a 100 ball scale) got from the leading specialists of economic and ecological services of enterprises. “The best” index was set on soil of possible maximum that can be attained at the modern state of national economy, and “worst” on the basis of indexes of enterprises of industry. The value of social constituent of  $S_{\max}$  for industrial enterprises was certain 70 balls,  $S_{\min}$  is 15,  $E_{\max}$  equals 70,  $E_{\min}$  is 2 (on the framework of ecolaw),  $E_{C\max}$  is 90,  $E_{C\min}$  is 30 (on a 100 ball scale).

One of of the important stages of design electing of form of connection, that characterizes dependence of integral index (constituent of sustainable development) on factors that influence on her, became. Accessible of alternatives were additive and multiplicative models. The special literature of synonymous recommendations does not give through this question. In of our view, an empiric way of choice of connection is only possible. A select



**Fig. 1. Position of enterprise “Novokramatorsky mashinostroitelny zavod/ Novokramatorsky machine-building plant” (NKMZ) in “space of sustainable development”**  
 Source: authoring.

model must answer essence of the investigated processes (economic, ecological or social), to be will stand enough from the point of view of her mathematical treatment and economically interpreted. At of a choice the forms of connection were used such criteria: coefficient of of plural детермінації, Fisher – criterion, remaining dispersion, middle error of approximation. Electing of of additive form of model (3) became a result with the managed, not managed and weakly – adjusted factors:

$$I = a_0 + \sum_{j=1}^k a_j z_j + \sum_{i=k+1}^n a_i x_i + u, \quad (3)$$

$$f(E_c) = 22,899 + (uec) - 0,858Ec_1 + 0,568 Ec_2 - 0,285 Ec_3 + 0,309 Ec_4 - 0,628 Ec_5 - 0,724 Ec_6 - 0,742 Ec_7 + 0,182 Ec_8 - 2,665 Ec_9 + 6,345 Ec_{10} - 1,380 Ec_{11} - 1,771 Ec_{12} + 1,277 Ec_{13} + 0,441 Ec_{14} - 4,584 Ec_{15} + 1,531 Ec_{16}; \quad (4)$$

$$f(E) = -8,488 + (ue) - 0,158E_1 + 0,935E_2 + 0,211E_3 + 0,479E_4 + 0,052E_5 + 0,029E_6 + 0,229E_7 + 0,302E_8 + 2,029E_9 - 1,714E_{10} - 0,255E_{11} + 1,103E_{12} - 0,204E_{13} - 0,371E_{14} - 0,235E_{15} - 1,408E_{16}; \quad (5)$$

$$f(C) = 2,951 + (us) + 0,281S_1 - 0,041S_2 + 0,079S_3 - 0,927S_4 + 0,374S_5 - 1,796S_6 + 0,0002S_7 - 0,061S_8 + 0,235S_9 + 0,170S_{10} - 0,466S_{11} + 1,058S_{12}; \quad (6)$$

$f(E_c), f(E), f(S)$  – functions of rating estimation of components (constituents) of sustainable development (economic, ecological and social accordingly);  $E_{ci}, E_i, S_i$  – coefficients of regression after the corresponding functions of rating estimation,  $u_{ec}, u_e, u_c$  – factors are conditioned by branch (cluster) features and position of enterprise in a cluster.

The got indexes of regressive statistics testified functions to the high enough level of meaningfulness and reliability of got. The got functional dependences

$I$  – integral estimation of component of sustainable development of enterprise;  $z_j$  – weakly – adjusted factors;  $x_i$  – adjusted (managed) factors;  $u$  – factors, conditioned by branch features;  $a_0$  – a free member;  $a_j$  – coefficients of regression at weakly – managed factors;  $a_i$  – coefficients of regression at the managed (adjusted) factors

Processing of statistical data in relation to the rating estimation of constituents of sustainable development of the investigated selection of enterprises and forming of regressive models (4 - 6) allowed getting the aggregate of equalizations:

(formula 4 – formula 6) and corresponding rating estimations of constituents of sustainable development of enterprises create informative soil of positioning of en-

terprises in space of sustainable development. Possibility of being of function (formula 2) that characterizes the terms of providing of hit in the marked space and profile of industrial enterprise (his coordinates) in space appears farther.

$$f(E_c) = 22,899 + (-0,944) - 0,858*88 + 0,568*78 - 0,285*94 + 0,309*93 - \\ - 0,628*87 - 0,724*92 - 0,742*98 + 0,182*92 - 2,665*29 + \\ + 6,345*29 - 1,380*60 - 1,771*38 + 1,277*23 + 0,441*18 - \\ - 4,584*23 + 1,531*27 = 62,5;$$

$$f(E) = -8,488 + (1,045) - 0,158*5 + 0,935*30 + 0,211*17 + 0,479*32 + 0,052*100 + \\ + 0,029*26 + 0,229*96 + 0,302*44 + 2,029*16 - 1,714*2 - 0,255*47 + \\ + 1,103*38 - 0,204*45 - 0,371*45 - 0,235*86 - 1,408*39 = 38,0;$$

$$f(S) = 2,951 + (-4,489) + 0,281*90 - 0,041*96 + 0,079*78 - 0,927*20 + \\ + 0,374*78 - 1,796*10 + 0,0002*33 - 0,061*32 + 0,235*47 + 0,170*85 - \\ - 0,466*58 + 1,058*38 = 55,5.$$

Thus, optimal function defines "space of sustainable development" of NKMZ:

$$f(S; E; E_c) = (f(S) - S_{max}) * (E_{max} - E_{min}) * (E_{Cmin} - E_{Cmax}) - (f(E_c) - E_{Cmax}) * \\ * (E_{max} - E_{min}) * (S_{max} - S_{min}) - (f(E) - E_{min}) * (S_{max} - S_{min}) * (E_{Cmin} - E_{Cmax}) = \\ = (55,5 - 70) * (70 - 2) * (30 - 90) - (62 - 90) * (70 - 2) * (70 - 15) - \\ - (38 - 2) * (70 - 15) * (30 - 90) = f(55,5; 38; 62,5) \geq 0 \\ f(0; 0; 0) \geq 0.$$

The NKMZ is in "space of sustainable development" (Fig. 1), because the following conditions are complied:  $S$  - parameters:  $15 < 55,5 < 70$ ;  $E$  - parameters:  $2 < 38 < 70$ ;  $E_c$  - parameters:  $30 < 62,5 < 90$ . Component optimization for sustainable development of NKMZ – "ecological factor" was conducted due to the implementation of the program of ecologically oriented control and measures for lowering of the harmful environmental effects.

**Conclusions.** This model "space of sustainable development" helps to defines directions of strategic (sustainable) development of enterprises. For authentication of influence of ecological constituent on sustainable development of industrial enterprises the design of three-dimensional space of constancy of development is offered. The economic component of sustainable (steady) development ( $E_c$ ) is suggested to determine the level of economic position of industrial enterprise. A social component ( $S$ ) is characterized by the level of accordance of enterprise to the modern requirements of corporate social responsibility. An ecological component ( $E$ ) is determined by the degree of accordance of economic activity to the ecological norms, to the standards of safety and by the level of introduction and efficiency of the ecological programs and ecological projects. After implementation of additional measures for environmental safety for sustainable development, vector motion to the perspective of competitiveness rise of the NKMZ became the result of technique approbation. Advantage of the model is in its versatility and flexibility. It enables to use it for enterprises under any conditions of their development and state of environment. Perspectives for further research are in the preparation of optimal strategy model for sustainable development of the enterprise.

Thus, for NKMZ will get aggregate of indexes of optimal function defines "space of sustainable development":

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#### **Латишева О. В. Оцінка рівня сталого розвитку промислових підприємств України**

У статті досліджено процес еколого-економічного управління "простором сталого розвитку" підприємств, визначено параметри, управління якими дозволяє підвищити загальну сталість підприємств. У представленій моделі були вибрані параметри оцінки, які дозволяють усебічно оцінити ефективність функціонування підприємств в конкурентному середовищі і визначити напрями сталого розвитку підприємств. Для ідентифікації впливу екологічної складової на сталий розвиток промислових підприємств пропонується моделювання тривимірного простору сталості розвитку. Запропоновано економічну складову сталого розвитку підприємства визначати рівнем економічного стану промислового підприємства. Соціальна складова сталого розвитку підприємств характеризується рівнем відповідності підприємства сучасним вимогам корпоративної соціальної відповідальності. Екологічна складова сталого розвитку підприємств визначається ступенем відповідності господарської діяльності екологічним нормам, стандартам безпеки і рівнем впровадження та ефективності екологічних програм і екологічних проектів.

*Ключові слова:* сталий розвиток, еколого-економічне управління, підприємства, конкурентне середовище, модель "простору сталого розвитку", економічні параметри, соціальні чинники, екологічний компонент сталого розвитку.

#### **Латышева Е. В. Оцінка рівня сталого розвитку промислових підприємств України**

В статье исследован процесс еколого-экономического управления "пространством устойчивого развития" предприятий, определены параметры, управление которыми позволяет повысить общую устойчивость предприятий. В представленной модели были выбраны параметры оценки, которые

позволяют всесторонне оценить эффективность функционирования предприятий в конкурентной среде и определить направления устойчивого развития предприятий. Для идентификации влияния экологической составляющей на устойчивое развитие промышленных предприятий предлагается моделирование трехмерного пространства устойчивости развития. Предложено экономическую составляющую устойчивого развития предприятий определять уровнем экономического состояния промышленного предприятия. Социальная составляющая устойчивого развития предприятий характеризуется уровнем соответствия предприятия современным требованиям корпоративной социальной ответственности. Экологическая составляющая устойчивого развития предприятий определяется степенью соответствия хозяйственной деятельности экологическим нормам, стандартам безопасности и уровнем внедрения и эффективности экологических программ и экологических проектов.

*Ключевые слова:* устойчивое развитие, эколого-экономическое управление, предприятия, конкурентная среда, модель "пространство устойчивого развития", экономические параметры, социальные факторы, экологический компонент устойчивого развития.

#### **Latysheva O. Estimation of level of sustainable development of industrial enterprises of Ukraine**

The process of ecologically – economic management of "space of sustainable development" of enterprises are investigated in the article. Ecological of activity, economical component and social factors are accepted in models for the increase of total sustainability of enterprise. Control their factors makes it possible to increase the sustainability of enterprises. The parameters of estimation of sustainable development of enterprises were chosen in the presented model. This model "space of sustainable development" helps to defines directions of strategic development of enterprises. For authentication of influence of ecological constituent on sustainable development of industrial enterprises the design of three-dimensional space of constancy of development is offered. The economic component of sustainable development is suggested to determine the level of economic position of industrial enterprise. A social component of sustainable development is characterized by the level of accordance of enterprise to the modern requirements of corporate social responsibility. An ecological component of sustainable development is determined by the degree of accordance of economic activity to the ecological norms, to the standards of safety and by the level of introduction and efficiency of the ecological programs and ecological projects.

*Keywords:* sustainable development, ecologically – economic management, enterprises, model of of "space of sustainable development", economic parameters, social factors, ecological component of sustainable development.

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## MANAGEMENT OF THE COUNTERPARTY RISK OF AN INDUSTRIAL ENTERPRISE

**Problem Statement.** The normal functioning and future development of an industrial enterprise is largely predetermined by the actions and reactions of its counterparties. They are an important premise and have a vital role in its timely implementation and successful realization of both its production and sales activity. Any violation of the contract terms by the counterparties and negative change in their behaviour may lead to risk situations or circumstances, some of which to one degree or another have a strong influence on market positions, company reputation and public image, competitiveness of product portfolio and the enterprise as a whole, its money flows and financial results.

This inevitably necessitates placing an emphasis on creating and maintaining a clear idea regarding counterparty risk management, which will enable the enterprise to precisely reveal the reasons that have led to its appearance and to correctly define the risk profile of the company's counterparties, conduct a scientifically grounded analysis and draw a real and objective evaluation, on the basis of which the enterprise has to develop and apply specific mechanisms for prevention and efficient counteraction.

**Analysis of Researches and Publications.** The specific aspects of the counterparty risk and its effective management are a scientific field, which is increasingly attracting the interest of scientists and researchers, as well as specialists from the practice. This problem is an object of attention and is covered in the scientific works of a number of authors, like: G. Bustad, E. Bayer, J. Fraser, B. Simkins, N. Beier, H. Harreis, T. Poppensieker, D. Sojka, M. Thaten, H. Stein, A. Shapkin, V. Shapkin, D. Shelagin, D. Sokolov, A. Barchukov, V. Granaturov, R. Gabrovski, T. Nenov, P. Pavlov, S. Tonev, etc.

**The purpose** of this article is to highlight the specific peculiarities of the counterparty risk and to justify the possibility of its management, thus limiting and reducing the unfavourable consequences and risk exposure of the industrial enterprise.

**Presentation of the Main Material.** The modern industrial enterprise in the process of organisation and implementation of its economic activity creates direct and indirect relationships with certain counterparties (clients, suppliers, consigners, distributors (wholesalers and retailers, functional intermediaries) and other individual and/or legal entities) and on this basis enters into contractual relations. The establishment and maintenance of complicated relationships and the strong de-

pendency of the performance and efficiency of business processes in the enterprise on their actions create many prerequisites and conditions for the occurrence of the *counterparty risk*. Actually this is a *specific risk for the industrial enterprise that results from the non-performance of the contractual obligations by the counterparties, thus raising the degree of its risk exposure*. It characterises the probability of not realising the planned goals and priorities of the enterprise as a result of the non-compliance of the contract terms by the disloyal company counterparties.

Counterparty risk, as an element of the aggregate (overall) risk of the enterprise, possesses a number of *peculiarities*, the most important of which are [4, p. 54; 6, p. 103; 7, p. 9]:

- *economic nature* – counterparty risk is a complicated economic category, directly connected to the realization (implementation) of certain activities, functions and processes that influence the normal functioning and future development of the industrial enterprise;

- *objective phenomenon* – it can occur independently of the purposeful actions of the enterprise, due to a change in the counterparty's behaviour according to the contract;

- *probable (stochastic) phenomenon* – it is the result of the interaction and relationship of different counterparties, because of which the predictions and identification of the regularity of occurrence is impossible;

- *complicated phenomenon* – that is a risk with a different frequency of manifestation and size of the consequences, which practically makes it difficult to predetermine the damage (losses) or the income (profit);

- *variable phenomenon* – the counterparty risk changes with time (according to the continuation of the contract) as well as under the influence of a number of objective and subjective factors that are in constant dynamics;

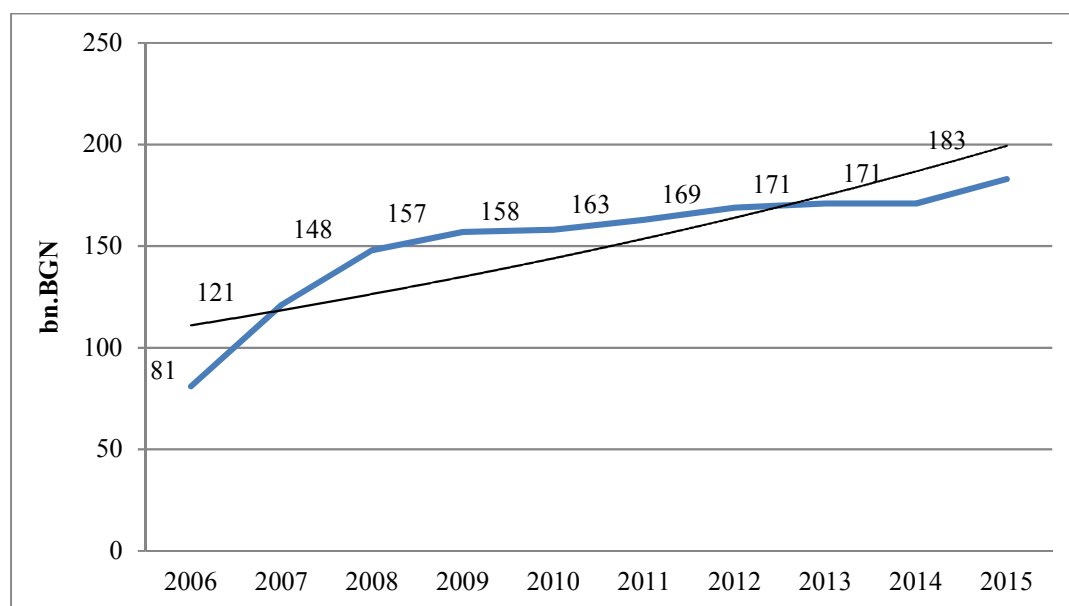
- *subjective nature* – it is a result of human actions and largely depends on the knowledge, skills, competences of the parties to the contract.

Counterparty risk as a distinct type of risk generates a number of difficulties, some of which to one degree or another strongly influence the functioning, development, survival of the industrial unit. It creates a chain reaction that inevitably leads to lack of working capital for sustaining the current production activity and the timely coverage of costs related to production and its

realisation. To a great extent all this reflects on the production activity of the enterprise and on the impossibility to provide enough funds to pay its obligations.

For example over the period 2006 – 2015 the enterprises' obligations from the non-financial sector in

Bulgaria, due to incorrect actions and bad practices on the company's counterparties' side are threateningly rising (see Fig. 1). Especially significant is the increase in 2007 by 49.4% and in 2008 by 22.3% compared to the previous year.



**Fig. 1. Obligations of the enterprises from the non-financial sector of economy in Bulgaria over the period 2006 - 2015<sup>1</sup> [5, p. 6]**

<sup>1</sup> Information for 2015 is preliminary and unofficial.

Although during the next seven years there is a positive trend of decreasing the rate at which the indebtedness changes, its level is constantly increasing and it is expected that this trend will continue in the future. In 2015 corporate indebtedness more than doubled compared to 2006. For the analysed period the absolute average annual growth of the common indebtedness of the enterprises from the non-financial sector is positive (11.33 billion BGN), the average annual rate of the

growth (medium geometric) is 9.48% and the average annual rate of the growth (medium-exponential) – 6.80% (see Table 1). All this shows an exceptionally high level of deficiency of financial assets and at the same time a low level of liquidity and solvency, which can furthermore lead to worsening of the whole image of the economic unit in the view of their loyal or future counterparties.

*Table 1*

**Obligations of the enterprises from the non-financial sector of the economy of Bulgaria for the period 2006 - 2015**

Year	Absolute values (bn. BGN)	Absolute increase (bn. BGN)	Rate of growth (%)	Rate of increase (%)	Log	t	t <sup>2</sup>	
2006	81	-	-	-	4.394449	1	1	4.394449
2007	121	40	149.4	49.4	4.795791	2	4	9.591581
2008	148	27	122.3	22.3	4.997212	3	9	14.991637
2009	157	9	106.1	6.1	5.056246	4	16	20.224983
2010	158	1	100.6	0.6	5.062595	5	25	25.312975
2011	163	5	103.2	3.2	5.093750	6	36	30.562501
2012	169	6	103.7	3.7	5.129899	7	49	35.909291
2013	171	2	101.2	1.2	5.141664	8	64	41.133308
2014	174	3	101.8	1.8	5.159055	9	81	46.431498
2015	183	9	105.2	5.2	5.209486	10	100	52.094862
					50.040147	55	385	280.647085

\* The information is calculated at chain basis.

The consequences for the industrial enterprise from the counterparty risk can be direct as well as indirect, which indicates exceptional importance of the constant search for opportunities and methods for its management which includes purposeful activities for identification, analysis, estimation, restriction, monitoring and controlling the risk. At the same time, this is a risk that has a bidirectional impact on the interests of both the enterprise and its counterparties, which practically requires the development and application of a thorough, specific and adequate program for counterparty risk management that determines the approach, elements of the management and the resources that have to be provided by the economic unit.

Business practice has proved that better knowledge on the specific peculiarities and economic consequences from the counterparty risk helps the *development and application of a more adequate and grounded management method* that will ensure the ability of the enterprise to timely react in case of unfavourable, risk situations occurring and to use adequate tools for counteraction against them.

It has to be taken into consideration that counterparty risk management is a complicated and multifunctional process that includes the implementation of certain purposeful actions and functions (see Fig. 2) that guarantee its complete, exact and fast prognosis, analysis, evaluation, control and restriction [8, p. 40].

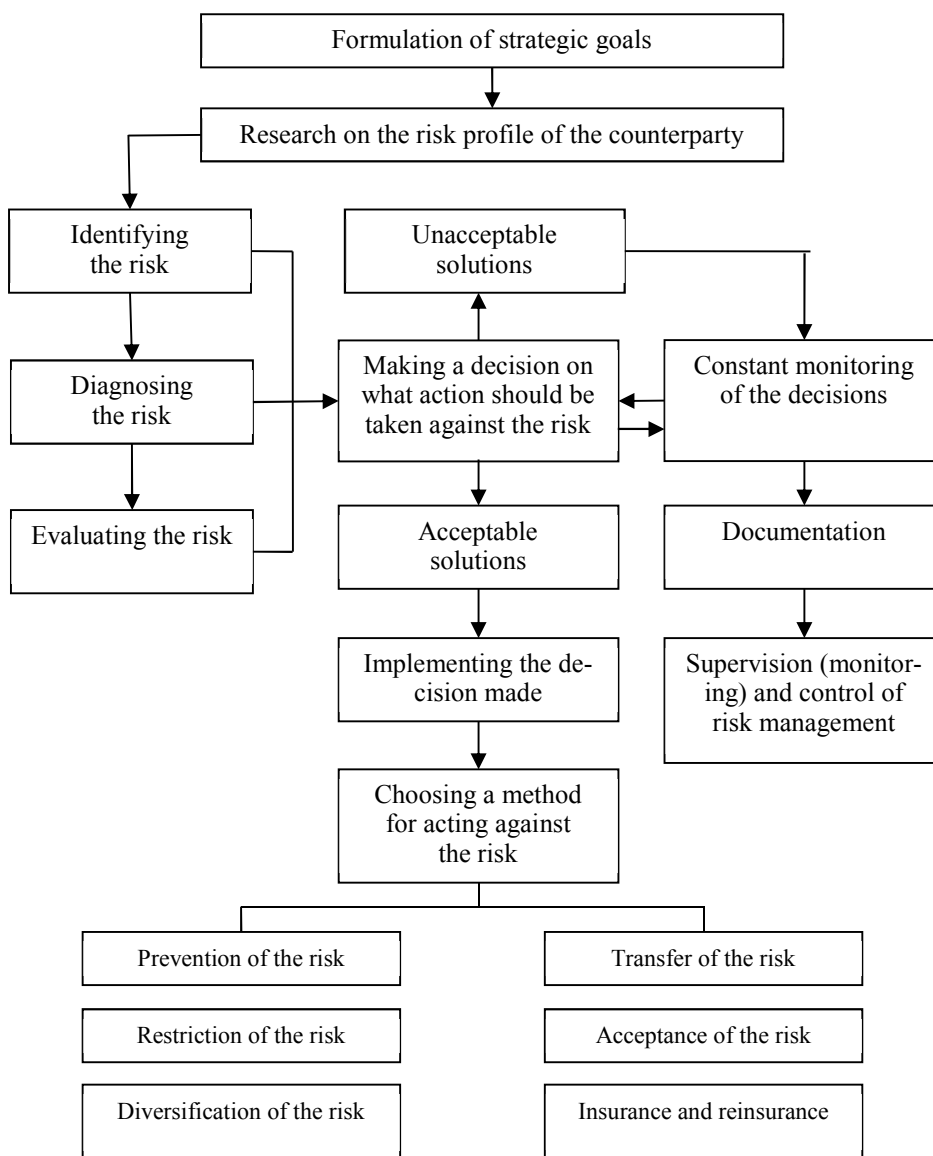


Fig. 2. The process of counterparty risk management [1, p. 18; 2, p. 24]

Precisely via it, it is intended to simultaneously discover the circumstances and reasons for the emergence of the risk and the correct determination of the com-

pany's counterparties' risk profile, conducting thorough and multilateral analyses and preparation of a real and objective evaluation. On the basis of all these actions



one can develop and implement specific mechanisms for the prevention and effective counteraction and restriction of the negative consequences (losses) and to maintain them in a relatively low degree of threat.

Actually despite the established counterparty risk management models (classic, integral, holistic, total), every industrial enterprise has to apply the individual approach principle taking into account its potential abilities and available resources (material, labour, financial, informative) as well as the specific peculiarities and parameters of the counterparty risk.

The proper and rational management of the counterparty risk is a key factor for the industrial enterprise because it strongly influences the increase in the level of manageability of the negative conditions and the improvement of quality of the managerial decisions made. At the same time creating a clear idea for management enables the early establishment of the potential reasons for non-performance of the contractual obligations of the company's counterparties, an accurate identification of their risk profile, a fast realisation of successful preventive actions and insurance of maximum security of the enterprise.

The modern industrial enterprise very carefully formulates the *strategic goals* related to counterparty risk management. It mainly gravitates towards timely discovering the weaknesses of the company's counterparties and the correct determination of their risk profile, as well as towards precise performing of scientifically grounded analyses and preparing an objective and real evaluation on the basis of which specific mechanisms are developed for prevention and effective counteraction to the risk circumstances and their consequences. This way the economic unit outlines the guidelines more clearly, focuses its efforts and determines the priorities and vision on reduction, restriction and removal (elimination) of the counterparty risk.

It should be taken into consideration that the establishment of the *counterparties' risk profile* is a difficult and prolonged process. Precisely via it the separate individuals and/or organisations that are directly or indirectly in certain relationships with the industrial enterprise are identified, diagnosed and evaluated.

On the basis of *identification* the possible sources of the counterparty risk and its varied influence on the enterprise's activity are determined. This is a process by which the existing or potential risk situations linked with the company's counterparties are discovered and described. The modern industrial enterprise uses separately or in combination different traditional and specific techniques and methods which increase the possibility of performing an accurate and objective identification of the risk counterparties (see Table 2). Mainly with the help of this method the enterprise collects, processes, systematises, analyses and evaluates information

about the risk, resulting from the actions and behaviour of the company's counterparties which the enterprise works and has certain relationships with. In particular the factors that form the risk situation, its scope, the rate of amendment, specific sources and dangers, the reasons for their emergence and the possible consequences are tracked.

The degree of identification of the risk counterparties is fundamental for the correct and precise *diagnosis* that is linked with logical consistent procedures and actions for studying and analysing the risk circumstances. Normally it aims to analyse the company's counterparties' behaviour and then to establish the "narrow places" that lead to the increase of risk situations.

One of the frequently used methods for diagnosis of the company's counterparties in the industrial enterprise's practice is the *method for analysing the sensitivity* (see Fig. 3)<sup>1</sup>. It helps the research of the risk profile of a specific counterparty, as it thoroughly analyses the key risks from its activity or inactivity and based on this the corresponding mitigation measures are indicated while being documented and coordinated with the main interested parties in the enterprise.

At the same time this method allows for a hierarchical structure to be created, in which the company's counterparties can be conditionally separated into:

- *First level counterparties* – these are low risk counterparties, whose behaviour and actions are fairly predictable on the basis of thorough and exact analysis and evaluations or previous experience; they can lead to damage and losses which need reasonably moderate prevention measures or are minimal for the enterprise;

- *Second level counterparties* – they are characterised by risk behaviour and actions, the results of which are unacceptable or unexpected for the enterprise and which can directly or indirectly lead to bigger financial losses or large expenses in order to overcome them;

- *Third level counterparties* – they are high risk counterparties; their behaviour and activity can hardly be predicted and can lead to fatal consequences for the enterprise or inflict serious financial losses.

This way the enterprise can determine the company's counterparties of a higher risk class and implement pre-emptive measures and restrictions that lead to the removal or reduction of their negative influence.

After accurately identifying the company's counterparties' risk profile, the enterprise should develop a *security strategy (program)* via which the enterprise will ensure its maximum protection. Timely making and realizing specific decisions linked to the performing of immediate actions for restriction of the unfavourable consequences from the occurrence of the counterparty risk is also necessary. When making a decision for impacting on the counterparty risk the following *alternative options* are possible:

<sup>1</sup> A risk that is connected to the providers of the enterprise is shown in this example.

Techniques and methods for identifying the counterparty risk of the industrial enterprise

Techniques	Key characteristics	Traditional methods	Key characteristics	Specific methods	Key characteristics
Brainstorming	This is a group technique for determination of the specific problems as well as acquaintance with and description of the counterparty risk	Method of analogy	On the basis of this method the causal links for the emergence of two similar (identical) counterparty risks but in different time periods are sought	"Check-list" method	This is a list in which the more essential and typical risk situations in the counterparty's behaviour are registered and mistakes made in previous periods are considered and judged
Questionnaires	Questionnaires are one of the most common tools for collecting primary information on the counterparty risk. They are a flexible tool that allows some of the cardinal dangers and problems as well as the reasons for their emergence to be pinpointed	Comparison method	This method allows for the changes in the parameters of the counterparty risk to be evaluated and for the trend and perspective for its development to be outlined. It also allows a certain risk situation to be compared with a similar one	"What if...?" method	With this method the specification of the dangers is more detailed and the nature and the level of damage are stated
Case Studies	With the help of different business analyses the influence of different factors that cause the counterparty risk is identified	"Delphi" method	This method is based on the choice of a certain circle of specialists that have to express their opinion independently and to make a prognosis for the counterparty risk	"FTA – Fault Tree Analysis" method	With this method the causal links between accidental events with different frequency and different stages are estimated. These links help identify the counterparty risk
Benchmarking	This is a process that identifies the problem areas through comparing with the leading enterprises in the specific sector	Scenario method	This is a method for identifying the counterparty risk by creating and using different scenarios for the future. Different scenarios which pinpoint the possibilities for change in the counterparty's behaviour under the influence of different (external and internal) factors are developed	"ETA – Event Tree Analysis" method	It contributes to the making of a hierarchical structure of different levels of danger in the company's counterparty's behaviour which are systemised and registered in a way that allows their easy identification, qualitative characterisation and correct estimation
Seminars (trainings)	Through the organization of and participation in discussions, practical trainings and seminars new possibilities for identifying the counterparty risk are disclosed				

- using funds for counteraction against the risk in conditions of uncertainty but in a known risk situation;
- using funds for an unknown risk situation but in the presence of sufficient information for an accurate evaluation of its consequences;
- taking measures in an unknown risk situation but with the possibility of evaluating the results from the possible countermeasures that were used;
- taking measures whose value does not allow the enterprise to risk their own capital;
- spending funds when there is a possibility for receiving positive results.

Despite the different alternatives, the enterprise's choice should mostly be based on the possibilities provided for predicting the threats and reduction (restriction) of the company's losses (damage). In particular the modern industrial enterprise strives to apply a certain system of specific mechanisms for prevention and effective counteraction against the counterparty risk, namely:

- consulting specific experts and specialists (i.e. lawyers) – the involvement of experts and specialists that will provide all the possible preventative measures for avoidance of the emergence of the counterparty risk

is mandatory. They will be able to ensure maximum protection of the enterprise, clear communication and policy in negotiations for the conclusion of new transactions and preparation of reliable contracts, containing specific terms, steps and actions;

– *developing and concluding secure and quality contracts* – mainly they have to be consistent with the

respective counterparty's status and prepared by means of appropriate impact tools according to its capabilities, containing clauses which ensure maximum protection, and using every opportunity given by the Bulgarian legislation to protect the enterprise from future complications;

Risk description	Probability score	Impact description	Impact score	Risk rating	Mitigating action(s)	Action owner(s)	Target completion date
Capacity issues due to fewer suppliers	2	Failure to supply if capacity estimates are inaccurate	4	8	<ul style="list-style-type: none"> <li>▪ Supplier audits in advance of switching suppliers</li> <li>▪ Improved forecast accuracy</li> </ul>		
Term			Description				
Risk description			Details the nature of the risk and why it might occur				
Probability score			1-2 (Green), 3 (Amber), 4-5 (Red)				
Impact description			Details the nature of the impact, if the risk occurs (e.g. Failure to supply product)				
Impact score			1-2 (Green), 3 (Amber), 4-5 (Red)				
Risk score			Probability score x Impact score				
Mitigating action(s)			List of actions to help mitigate the risk, either through				
Action owner(s)			Who is responsible to complete the mitigating actions				
Target completion date			When the mitigation action(s) will be completed by				

**Fig. 3. Model of the method for sensitivity analysis [3]**

– *conducting research on the potential counterparties in advance* – the implementation of detailed research on the potential counterparties' activity, financial position, image and reputation, the gathering of complete and accurate information about persons connected to the specific counterparty and to its possibility for future collateral in certain risk circumstances is mandatory;

– *development and enforcement of collateral in case of violation of the contractual relations* – in modern conditions the provision of collateral for defined amounts/goods is more than mandatory, as well as the prediction of certain terms for its timely redemption;

– *creation of a workgroup for effective management of the counterparty risk* – the creation of a workgroup of professionals which will observe the company's counterparties' condition and the probability of obtaining the respective receivables from them is necessary. They must carry out checks on the overall financial position of the respective counterparty, prepare an ana-

lysis on its indebtedness, presence of overdue receivables and conclude on the degree of risk of making a specific deal with it;

– *termination of the contracts with high risk counterparties* – this is an extreme measure but it is mandatory in the presence of counterparties' actions, which lead to negative and unsolvable risks or to avoid ones for which it is known in advance that cause risks of an unacceptable level or are not a subject of treatment.

**Conclusion.** The implementation of adequate and effective counterparty risk management gives the industrial enterprise the chance to cope with the great number of challenges and dangers related to non-performance of the contractual obligations by its counterparty. Actually, the enterprise will be able to limit the difficulties more accurately and swiftly, eliminate the weaknesses in its activities and implement policies ensuring that the company will achieve better results and demonstrate a more flexible and competitive business behavioural model.

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#### **Иванова З. С. Управління ризиком контрагента промислового підприємства**

Сучасне промислове підприємство має надзвичайно складні економічні відносини зі своїми контрагентами. З іншого боку, невизначені і динамічні відносини і взаємозв'язки, а також багатогранна місія і цілі компанії, безсумнівно, породжують прояв ризику контрагента. Це ризик, який може суттєво вплинути на стан і продуктивність його промислової структури, її конкурентоспроможність і ефективність на ринку. Здатність підприємства розробляти і застосовувати адекватний і надійний метод управління ризиками контрагента стає життєво важливим фактором його нормального функціонування і майбутнього розвитку. Мета цієї статті – виявити деякі специфічні особливості ризику контрагента та обґрунтувати можливості його управління, що може призвести до обмеження та зменшення несприятливих наслідків і схильності до ризику промислового підприємства.

*Ключові слова:* ризик контрагента, промислове підприємство, управління ризиками контрагента, контрагент ризику, ситуація з ризиком, схильність до ризику.

#### **Иванова З. С. Управление риском контрагента промышленного предприятия**

Современное промышленное предприятие имеет чрезвычайно сложные экономические отношения со своими контрагентами. С другой стороны, неопределенные и динамичные отношения и взаимосвязи, с одной стороны, и многогранная миссия и цели компании, несомненно, порождают проявление риска контрагента. Это риск, который может существенно повлиять на состояние и производительность его промышленной структуры, ее конкурентоспособность и эффективность на рынке. Способность предприятия разрабатывать и применять адекватный и надежный метод управления рисками контрагента становится жизненно важным фактором его нормального функционирования и будущего развития. Цель этой статьи – выявить некоторые специфические особенности риска контрагента и обосновать возможности его управления, что может привести к ограничению и уменьшению неблагоприятных последствий и подверженности риску промышленного предприятия.

*Ключевые слова:* риск контрагента, промышленное предприятие, управление рисками контрагента, контрагент риска, ситуация с риском, подверженность риску.

#### **Ivanova Z. Management of the counterparty risk of an industrial enterprise**

The modern industrial enterprise has extremely complicated economic relationships with its counterparties. The insecure and dynamic relationships and interrelations, on the one hand, and the multifaceted company mission and goals, on the other hand, undoubtedly generate the manifestation of the counterparty risk. This is a risk that can significantly influence the state and performance of an industrial structure, its competitiveness and market efficiency. The ability of the enterprise to develop and apply an adequate and reliable method of counterparty risk management becomes a vital factor for its normal functioning and future development. The purpose of this article is to pinpoint some of the specific peculiarities of the counterparty risk and to justify the opportunities of its management, which can then lead to limiting and reducing the unfavourable consequences and risk exposure of the industrial enterprise.

*Keywords:* counterparty risk, industrial enterprise, counterparty risk management, risk counterparties, risk circumstances, risk exposure.

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## DEVELOPMENT OF INNOVATIVE ENTREPRENEURSHIP IN UKRAINE

In countries with a market economy, the sector of small and medium-sized businesses is paying a lot of attention – governments, with the help of various measures of direct and indirect support, promote the development of small and medium-sized enterprises (SMEs) and, if possible, compensate for its inherent disadvantages. SMEs are the focal point of a market economy, and, focusing on the needs of the market, develops precisely in those areas where demand arises, and comes from those areas that cease to meet market demands. Thus, optimum economic proportions in the structure of the market are formed and maintained.

The ability to quickly perceive and disseminate technical innovations and the development of innovation makes this sector a full participant in the innovation process. By providing the bulk of jobs and paying a large portion of taxes, the SME serves as the mainstay of the socio-economic policy of the state. In the periods

of economic crises, it is the SMB that affects production, absorbing rising unemployment and ensuring the productivity of individual activities, its presence on the market contributes to lowering prices, supports structural flexibility of the economy and constant attention of producers to consumer demand and product quality.

However, in Ukraine, the study of the structure of the entrepreneurial sector (ES) showed that the share of small enterprises is about 95% throughout the period of development of entrepreneurship in Ukraine, and the share of the volume of sales of their products in total does not exceed 19% (Tables 1, 2) [1].

This suggests that small business structures that turn into medium and large economies in developed economies in Ukraine, either remain small, or cease activities in general, that is, they have no expanded reproduction. That is, there is a structural asymmetry of the entrepreneurial sector.

Table 1

The structure of the Ukrainian entrepreneurial sector in 2016

Activities	Total, units / % to the total	Large enterprises		Medium enterprises		Small businesses	
		units	in% to the total number of enterprises of the corresponding type of activity	units	in% to the total number of enterprises of the corresponding type of activity	units	in% to the total number of enterprises of the corresponding type of activity
1	2	3	4	5	6	7	8
<b>Total</b>	<b>306369 / 100</b>	<b>383</b>	<b>0,1</b>	<b>14832</b>	<b>4,9</b>	<b>291154</b>	<b>95,0</b>
including:							
agriculture, forestry and fisheries	44998 / 14,68	20	0,0	2501	5,6	42477	94,4
industry	38555 / 12,58	208	0,5	4652	12,1	33695	87,4
construction	24333 / 7,94	2	0,0	766	3,2	23565	96,8
wholesale and retail trade; repair of motor vehicles and motorcycles	82192 / 26,83	116	0,1	2644	3,2	79432	96,7
transport, warehousing, postal and courier activities	13716 / 4,48	21	0,2	1101	8,0	12594	91,8
temporary placement and organization of food	6544 / 2,14	1	0,0	243	3,7	6300	96,3
information and telecommunications	11932/3,89	6	0,0	331	2,8	11595	97,2

Ending of Table 1

1	2	3	4	5	6	7	8
financial and insurance activities	3786/1,24	1	0,0	255	6,7	3530	93,3
real estate transactions	30913 / 10,09	2	0,0	425	1,4	30486	98,6
professional, scientific and technical activities	24853 / 8,11	2	0,0	547	2,2	24304	97,8
administrative and auxiliary services activities	13801/4,5	2	0,0	873	6,3	12926	93,7
education	1855/0,61	–	–	52	2,8	1803	97,2
health care and social assistance	3936/1,28	–	–	284	7,2	3652	92,8
art, sports, entertainment and recreation	1705/0,56	2	0,1	112	6,6	1591	93,3
provision of other types of services	3250/1,06	–	–	46	1,4	3204	98,6

<sup>1</sup> Data are given without considering the results of activity of banks, budgetary institutions, temporarily occupied territories of the Autonomous Republic of Crimea, Sevastopol and parts of the zone of anti-terrorist operation.

Table 2

## Volume of sold products (goods, services) of enterprises by types of economic activity in 2016

Activities	Total, UAH million	Large enterprises		Medium enterprises		Small businesses	
		UAH million	in% to the total number of enterprises of the corresponding type of activity	UAH million	in% to the total number of enterprises of the corresponding type of activity	UAH million	in% to the total number of enterprises of the corresponding type of activity
1	2	3	4	5	6	7	8
<b>Total</b>	<b>6237535,2</b>	<b>2391454,3</b>	<b>38,3</b>	<b>2668695,7</b>	<b>42,8</b>	<b>1177385,2</b>	<b>18,9</b>
including:							
agriculture, forestry and fisheries	403645,8	53033,7	13,1	206593,8	51,2	144018,3	35,7
industry	2305695,9	1232221,0	53,4	921066,3	40,0	152408,6	6,6
construction	169705,3	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	82759,2	48,8
wholesale and retail trade; repair of motor vehicles and motorcycles	2385691,5	689681,7	28,9	1123927,8	47,1	572082,0	24,0
transport, warehousing, postal and courier activities	365332,7	188888,3	51,7	127402,5	34,9	49041,9	13,4
temporary placement and organization of food	23083,8	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	7272,0	31,5
information and telecommunications	117407,2	39808,6	33,9	44258,3	37,7	33340,3	28,4

Ending of Table 2

1	2	3	4	5	6	7	8
financial and insurance activities	61162,3	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	15916,1	26,0
real estate transactions	85497,3	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	47794,7	55,9
professional, scientific and technical activities	241869,5	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	39923,6	16,5
administrative and auxiliary services activities	53787,0	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	23446,7	43,6
education	2253,0	–	–	898,9	39,9	1354,1	60,1
health care and social assistance	13805,0	–	–	9936,6	72,0	3868,4	28,0
art, sports, entertainment and recreation	4921,4	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	... <sup>2</sup>	1906,2	38,7
provision of other types of services	3677,5	–	–	1424,4	38,7	2253,1	61,3

<sup>1</sup> Data are given without considering the results of activity of banks, budgetary institutions, temporarily occupied territories of the Autonomous Republic of Crimea, Sevastopol and parts of the zone of anti-terrorist operation.

<sup>2</sup> The data are not disclosed to ensure compliance with the requirements of the Law of Ukraine "On State Statistics" regarding the confidentiality of statistical information.

The research of the sectoral structure of the substitution shows that the share of entrepreneurial structures of productive types of economic activity (industry and construction) is about 20% of their total, and the share of trade and financial intermediary – more than 40%; the share of entrepreneurial structures engaged in professional, scientific and technical activities is only about 8% (see Table 1). In other words, in previous years hypertrophied development was speculative (financial and intermediary) sector of the economy, which provides a

level of income incommensurate with real production and practically does not create added value.

After all, financial and intermediary activities bring relatively high profitability (trade: 15.8%), while relatively low risk, and the activity of the real sector of the economy – the productive – has an inverse relationship, that is, it is relatively low income, with a profitability not exceeding 5% (for example, in industry: 4.2%, construction: -0.4%), but relatively risky (Table 3).

Table 3

**Cost-effectiveness of operating activities of enterprises by types of economic activity in 2016, UAH million<sup>1</sup>**

	The result of operating activities	Operating expenses	Profitability level (loss-making), %
Total	315184,7	4258442,3	7,4
agriculture, forestry and fisheries	109638,7	338045,6	32,4
industry	96856,9	2331111,2	4,2
construction	-714,9	181765,2	-0,4
wholesale and retail trade; repair of motor vehicles and motorcycles	59328,0	376671,0	15,8
transport, warehousing, postal and courier activities	18864,4	370177,1	5,1
temporary placement and organization of food	-219,4	26903,4	-0,8
information and telecommunications	10047,9	118558,9	8,5
financial and insurance activities	-3765,1	78583,8	-4,8
real estate transactions	-9824,4	120935,8	-8,1
professional, scientific and technical activities	38489,0	218523,1	17,6
administrative and auxiliary services activities	-2516,0	65033,1	-3,9
education	134,9	2428,2	5,6
health care and social assistance	621,5	13885,5	4,5
art, sports, entertainment and recreation	-1958,6	11856,8	-16,5
provision of other types of services	201,8	3963,6	5,1

<sup>1</sup> Data are given without considering the results of activity of banks, budgetary institutions, temporarily occupied territories of the Autonomous Republic of Crimea, Sevastopol and parts of the zone of anti-terrorist operation.

In addition, the low level of innovative activity of business structures remains. Thus, according to the survey conducted by the State Statistics Service [1], in 2014-2016, the share of enterprises engaged in innova-

tion activity amounted to 18.4%, including technological innovations - 11.8% (5.7% - food and 10.3% - process), non-technological - 13.4% (8.7% - organizational and 10.2% - marketing) (Table 4).

Table 4

**Innovative activity of enterprises in 2014-2016 by types of economic activity,  
% to the total number of surveyed enterprises**

	Innovative enterprises	Including introduced		
		technological innovations	technological and non-technological ones innovations	non-technological ones innovations
<b>Total</b>	<b>18,4</b>	<b>5,0</b>	<b>6,8</b>	<b>6,6</b>
Mining and quarrying	14,2	5,1	3,8	5,3
Manufacturing industry	22,0	6,6	9,0	6,4
Supply of electricity, gas, steam and air conditioning	15,4	8,7	3,9	2,8
Water supply; sewage, waste management	9,8	5,3	2,5	2,0
Wholesale trade, except trade in motor vehicles and motorcycles	17,3	3,2	5,7	8,4
Transport, warehousing, postal and courier activities	9,7	2,7	3,3	3,7
Information and telecommunications	22,1	4,8	8,3	9,0
Financial and insurance activities	21,7	3,7	8,6	9,4
Activity in the spheres of architecture and engineering; technical testing and research, research and development, advertising activities and market research	20,1	5,7	7,5	6,9

Moreover, a critically high degree of disproportionality exists regarding the unevenness and imbalance in the structure of sources of funding for innovative activities of industrial enterprises (Table 5).

Data table 5 indicate an increase in the share of own funds of enterprises for the financing of innovation activities and a significant drop in the share of foreign investors' funds (from almost 30% in 2010 to 0.1% in 2016), indicating a crisis situation and a high degree of risk and instability the country's economy as a whole and innovation business activity, in particular.

In our opinion, to overcome the technological backwardness as a result of the imbalances in innovation entrepreneurship, we need to build a system of technological entrepreneurship (STE) in Ukraine, under which we mean a single integrated social institution "Education, Science, Technology and Innovation" [2]. At the same time, we define technology entrepreneurship as an entrepreneurial activity in transforming scientific knowledge into innovative ideas for the creation of new products and technologies adapted to modern value added chains.

For the construction of STE, as proved by the research, it is advisable to apply an iterative approach.

*Step 1.* Determination of the priorities of technological development of the country for the long-term period.

*Step 2.* Development of the concept of state policy for the development of markets for innovative goods based on the use of technological entrepreneurship potential.

*Step 3.* Creating an effective communication system for organizations that carry out research and development, among themselves and with other socio-social, entrepreneurial and state institutions, a link between society, the state, science, education and entrepreneurship.

*Step 4.* Development of the system of cooperation of science and entrepreneurship. A promising form of cooperation is design research and technology consortia – forms of implementation of joint technological projects on a temporary contractual basis, the scale and complexity of which exceeds the resource and technological capabilities of each of the participants in the project.



Table 5

## Sources of financing of innovation activity of enterprises

Years	Total cost, mln. UAH	Including at the expense of funds			
		their own	the state budget	foreign investors	other sources
	%				
2000	1757,1	79,65	4,42	17,58	12,35
2001	1971,4	83,90	2,83	2,97	10,3
2002	3013,8	71,07	45,5	1,51	18,66
2003	3059,8	70,21	3,04	4,25	22,5
2004	4534,6	77,22	1,40	2,48	18,91
2005	5751,6	87,72	0,49	2,75	9,04
2006	6160,0	84,60	1,89	2,86	10,68
2007	10821,0	73,65	1,34	2,97	22,04
2008	11994,2	60,56	2,81	0,96	35,67
2009	7949,9	65,03	1,60	19,02	14,35
2010	8045,5	59,35	1,08	29,97	9,59
2011	14333,9	52,92	1,04	0,40	45,64
2012	11480,6	63,90	1,95	8,67	25,48
2013	9562,6	72,92	0,26	13,11	13,71
2014 <sup>1</sup>	7695,9	84,98	4,47	1,8	8,74
2015 <sup>1</sup>	13813,7	97,20	0,40	0,42	1,98
2016 <sup>1,2</sup>	23229,5	94,86	0,77	0,10	4,27

<sup>1</sup> Data are given without considering the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and parts of the zone of the anti-terrorist operation.

<sup>2</sup> Data are calculated based on the results of the state statistical observation in the form of the number of INN "Survey of innovation activity of enterprises for the period 2014-2016" (according to the international methodology) [1].

*Step 5.* Creation of technological platforms as an effective mechanism combining the efforts of representatives of technological entrepreneurship, science and the state interested in conducting long-term research and development works and organizing joint activities for the development of strategic plans for research and development, as well as for their implementation [3, 4].

*Step 6.* Implementation of the concept of network interaction, which is an important mechanism for implementing the state policy of developing innovative goods markets based on the use of technological entrepreneurial potential.

*Step 7.* Improvement of development institutes as one of the most important tools of state policy that stimulate innovation processes and infrastructure development using public-private partnership mechanisms.

*Step 8.* Selection of priority markets for innovative products for the construction of an effective system of technological entrepreneurship. For this purpose, we formulate hypotheses for choosing new markets for innovative products:

– the priority for development are markets that will meet the needs of the population (i.e., the priority is to stimulate demand for innovative products);

– new markets should be based on a network-based approach.

*Step 9.* The linking of STE elements (educational-scientific and technological business structures and sci-

entific and technical infrastructure), as well as the institutional basis with priority markets for innovative products.

Thus, the formation of a technology entrepreneurship system based on the proposed approaches can ensure the development of innovative entrepreneurship and the internal market of goods with high added value.

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#### Бондаренко О. В. Розвиток інноваційного підприємництва в Україні

У статті розглянуто питання розвитку інноваційного підприємництва в Україні. Проаналізовано сучасні тенденції розвитку, як підприємницького сектора в цілому, так і його інноваційно активної частини.

Виявлено, що за попередні роки гіпертрофований розвиток отримав спекулятивний (фінансово-

посередницький) сектор економіки, що забезпечує непорівнянний з реальним виробництвом рівень доходів та практично не створює доданої вартості. Адже фінансово-посередницькі види діяльності приносять відносно високу прибутковість (торгівля: 15,8%), при цьому відносно низько ризиковані, а діяльність реального сектору економіки – виробничого – має зворотне співвідношення, тобто вона відносно низькодоходна, з рентабельністю не вище 5%, але відносно ризикована. Зберігається низький рівень інноваційності діяльності підприємницьких структур. Зберігається критично високий ступінь диспропорційності щодо нерівномірності та дисбалансу структури джерел фінансування інноваційної діяльності промислових підприємств: зростає частка власних коштів підприємств для фінансування інноваційної діяльності та значно впала частка коштів іноземних інвесторів, що свідчить про кризовий стан і високий ступінь ризику та нестабільності економіки країни в цілому та інноваційної підприємницької діяльності зокрема.

Для того, щоб здолати технологічну відсталість внаслідок диспропорцій, що склалися в інноваційному підприємництві, необхідно побудувати систему технологічного підприємництва. Її доцільно будувати, використовуючи ітераційний підхід. Запропоновано 9 кроків, які включають: визначення пріоритетів технологічного розвитку країни на довгостроковий період; розробку концепції державної політики розвитку ринків інноваційних товарів на базі використання потенціалу технологічного підприємництва; створення ефективної системи комунікації організацій, що здійснюють дослідження і розробки, між собою і з іншими суспільно-соціальними, підприємницькими та державними інститутами, сполучною ланкою між суспільством, державою, наукою, освітою і підприємництвом; розвиток системи кооперації науки і підприємництва; створення технологічних платформ; впровадження концепції мережевої взаємодії, яка є важливим механізмом реалізації державної політики розвитку ринків інноваційних товарів на базі використання потенціалу технологічного підприємництва; вдосконалення інститутів розвитку як одного з найважливіших інструментів державної політики, що стимулюють інноваційні процеси та розвиток інфраструктури з використанням механізмів державно-приватного партнерства; вибір пріоритетних ринків інноваційної продукції для побудови ефективної системи технологічного підприємництва; ув'язка елементів СТП, а також інституційного базису з пріоритетними ринками інноваційної продукції.

*Ключові слова:* інноваційне підприємництво, система технологічного підприємництва, ітераційний підхід.

### **Бондаренко А. В. Развитие инновационного предпринимательства в Украине**

В статье рассмотрена проблема развития инновационного предпринимательства в Украине. Проанализированы современные тенденции развития, как предпринимательского сектора в целом, так и его инновационно активной части. Выявлено, что за предыдущие годы гипертрофированное развитие получил финансово-посреднический сектор экономики, который обеспечивает несравнимый с реальным производством уровень доходов и практически не создает добавленной стоимости. Ведь финансово-посреднические виды деятельности приносят относительно высокую доходность, при этом они относительно низко рискованные, а деятельность реального сектора экономики – производственного – имеет обратное соотношение, то есть она относительно низкодоходна, с рентабельностью не выше 5%, но относительно рискованная. Сохраняется критически высокая степень диспропорций по неравномерности и дисбалансу структуры источников финансирования инновационной деятельности промышленных предприятий: растет доля собственных средств предприятий для финансирования инновационной деятельности и значительно упала доля средств иностранных инвесторов, что свидетельствует о кризисном состоянии и высокой степени риска и нестабильности экономики страны в целом и инновационной предпринимательской деятельности в частности. Для того, чтобы преодолеть технологическую отсталость вследствие диспропорций, сложившихся в инновационном предпринимательстве, необходимо построить систему технологического предпринимательства. Ее целесообразно строить, используя итерационный подход. Предложено 9 шагов, которые включают: определение приоритетов технологического развития страны на долгосрочный период; разработку концепции государственной политики развития рынков инновационных товаров на базе использования потенциала технологического предпринимательства; создание эффективной системы коммуникации организаций, осуществляющих исследования и разработки, между собой и с другими общественно-социальными, предпринимательскими и государственными институтами, связующим звеном между обществом, государством, наукой, образованием и предпринимательством; развитие системы кооперации науки и предпринимательства; создание технологических платформ; внедрение концепции сетевого взаимодействия, которая является важным механизмом реализации государственной политики развития рынков инновационных товаров на базе использования потенциала технологического предпринимательства; совершенствование институтов развития как одного из важнейших инструментов государственной политики, стимулирующих инновационные

процессы и развитие инфраструктуры с использованием механизмов государственно-частного партнерства; выбор приоритетных рынков инновационной продукции для построения эффективной системы технологического предпринимательства; увязка элементов СТП, а также институционального базиса с приоритетными рынками инновационной продукции.

*Ключевые слова:* инновационное предпринимательство, система технологического предпринимательства, итерационный подход.

### **Bondarenko O. Development of innovative entrepreneurship in Ukraine**

The article considers the problem of development of innovative entrepreneurship in Ukraine. The modern tendencies of development, both business sector, and its innovatively active part have been analyzed. It was revealed that for the previous years the financial and intermediary sector of the economy, which provides an incomparable level of income incomparable with real production, has received hypertrophied development and practically does not create added value. After all, financial intermediary activities bring relatively high returns, while they are relatively low risk, and the activity of the real sector of the economy - the production sector - has the opposite ratio, that is, it is relatively low-yielding, with a profitability of no more than 5%, but relatively risky. Critically high degree of imbalance in unevenness and imbalance in the structure of sources of financing innovative activities of industrial enterprises is maintained: the share of enterprises' own funds for financing innovative activities is growing and the share of foreign investors' funds has dropped significantly, which indi-

cates a crisis and high degree of risk and instability of the country's economy and innovative business activities. To overcome technological backwardness due to the disproportions that have developed in innovative entrepreneurship, it is necessary to build a system of technological entrepreneurship. It is expedient to build it using an iterative approach. Proposed 9 steps, which include: determining the priorities for technological development of the country for a long-term period; development of the concept of state policy for the development of innovative goods markets based on the use of the potential of technological entrepreneurship; creation of an effective system of communication between organizations engaged in research and development, among themselves and with other socio-social, entrepreneurial and state institutions, the link between society, the state, science, education and entrepreneurship; the development of a system of cooperation between science and entrepreneurship; creation of technological platforms; introduction of the concept of network interaction, which is an important mechanism for implementing the state policy for the development of innovative goods markets based on the use of the potential of technological entrepreneurship; improvement of development institutions as one of the most important instruments of state policy, stimulating innovation processes and infrastructure development using public-private partnership mechanisms; selection of priority markets for innovative products for building an effective system of technological entrepreneurship; linking STP elements, as well as an institutional basis with priority markets for innovative products.

*Keywords:* innovative entrepreneurship, system of technological entrepreneurship, iterative approach.

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## ENHANCEMENT OF EMOTIONAL INTELLIGENCE-RELATED COMPETENCIES OF SUCCESSORS IN FAMILY BUSINESSES

### Introduction

The concept of management in family businesses requires a different approach to functions executed by contemporary managers and their successors. Moreover, it requires to elaborate new models of education, “tailored” to the needs of family businesses, which, in the larger extent, will take into consideration the following aspects: development of leadership skills, development and improvement of employees’ competencies, practical motivation skills. In the family businesses, one can combine business and their family by shaping entrepreneurial values during the upbringing of the generation of successors, the latter regarded as future managers [Więcek – Janka 2014 ps. 139-155].

Owners of family businesses require from their successors to have numerous multi-discipline skills, the acquisition of which is a highly time- and work-consuming process. The acquisition and use of the skills are to ensure that the family-run enterprise will continue to develop in compliance with a determined strategy.

Competencies of successors are subject to studies by numerous members of the scientific community. Elaborating a set of competencies for successors, necessary to run a family business, is a complex and ambiguous process. Family enterprises which, under the long-term strategy, anticipate succession processes, should take into account the successors’ competence profiles. The studies on the specific character of diagnoses and assessments of the use of successors’ competencies confirm that the competencies related to emotional intelligence are essential for succession processes.

The following study particularly focusses on emotional intelligence that constitutes a great part of the successor’s competencies. It is difficult to find, among various papers, the ones which involve studies on emotional intelligence competencies of successors. The owners of family businesses more and more frequently seek help from psychologists or employment counselors on “how to raise a successor”. Certainly, there is no ready-to-use recipe on how to mould a potential successor for him/her to take over the family business in the future. However, taking into consideration the significance of emotional intelligence in the professional life, looking for methods of shaping and developing the competencies in question seems to be rightly justified.

### 1. The importance of successors’ competencies related to emotional intelligence

There is not even a single area in life in which emotional intelligence would not play an important role. The emotional intelligence acts as a drive for people to develop their own potential, it allows them to take hold of bad habits, helps to set interpersonal borders and facilitates the development of satisfactory relationships, in both private and professional life.

Emotional intelligence is people’s personal competencies, understood as their ability to recognize their own and other people’s emotional states, as well as the ability to make use of their own emotions and tackle other people’s emotional states. [Mikołajewska 2013, p. 3; Miśkiewicz 2017, p. 74] It involves one’s ability to control and regulate one’s mood, which, in turn, is helpful in coping with various situations. The ability to understand emotions and make right use of them plays a key role in the human life.

The studies on emotional intelligence were initiated by H. Gardner. He distinguished [Gardner, 1989]:

- Intrapersonal intelligence involving the capacities of understanding and controlling of one’s own emotions (relationship with the self),
- Interpersonal intelligence involving the capacities of understanding and coping with interpersonal relations (relations with the others).

Interpersonal intelligence, also known as social intelligence, means one’s capacity to get on well with people and be willing to co-operate with them. It also means the empathy, the capacity to enter into deep relationship with the others, understand their needs, and promote desired attitudes and reactions. Moreover, the social intelligence consists on empathising with other people’s emotions and building of trust.

The importance of social intelligence in family enterprises has been confirmed by the findings of the report entitled „Competencies of the future in the family businesses 2017” [Report 2017, p. 15]. The analysis of responses by all companies proves that social intelligence is the most desired competence of the future. Over  $\frac{3}{4}$  of surveyed businesspeople declare both the willingness and need to develop the said competence.

A list of successors' competencies, needed in the succession process, elaborated on the grounds of a study carried out by E. Więcek-Janka i A. Hadryś-Nowak [Więcek-Janka, Hadryś-Nowak, Łódź – Warszawa 2016, ps. 61 - 72] in 2014, enumerates 20 competencies, out of which eleven refer to emotional intelligence. One can find here: diligence, communication skills, organisational skills, accuracy, resourcefulness, commitment, resistance to stress, firmness, ambition, motivation, courage. It was emphasised that the most frequently chosen competencies are, among others, diligence and commitment, whereas the competence of diligence was granted the highest average mark. Furthermore, Polish successors of family businesses stated that the abilities to introduce changes and adapt to the closest and more remote environment of the enterprise are the most useful skills in the succession process. Adaptive skills, i.e. the ability to change and the ability to act and make decisions are also regarded as competencies related to emotional intelligence.

The classification of successor competencies used in the succession process implies their various origins. Providing the family enterprise with multi-generation resources and development, and ensuring that the enterprise is highly efficient are, to a large extent, dependent on relevant competence potential of successors. Those family enterprises that anticipate succession process should focus on competence profiles of their successors, while taking into consideration the role played by the competencies related to emotional intelligence.

The significance of competencies in the area of emotional intelligence was also underlined by L. Weroniczak, who defined the following qualities, i.e. [Weroniczak, 2012, p. 81] :

- communication skills,
- empathic perception,
- ability to solve conflicts through co-operation,
- understanding of change processes,
- seeing diversity as a resource,
- regarding the company and the family as intertwined systems,
- as psychological and social skills, necessary to create space that promotes intergenerational dialogue, existing in the succession process.

The managing of the family enterprise is undoubtedly a test of successors' competencies. It is of great importance for managers to have competencies related to emotional intelligence as the managers shape the culture of the entire organisations, set development trends and motivate the staff to work more effectively. Creating the empathy-based atmosphere being, more often than not, a factor that builds team stability, is one of the key competencies of contemporary businesspeople. Those managers who can act wisely and keep their teams together are able to carry on and expand their family businesses.

## 2. Emotional education of successors

The source literature explicitly defines emotional education as a process of developing essential, emotional and social competencies of children [CASEL 2002; Denham, Weissberg, 2003].

The most effective acquisition of emotional and social competencies takes place in supportive, meaningful and challenging person-person relationships (e.g. a mother – a child, a teacher – a student) or person-group relationships (e.g. a tutor – a class team) [Brzezińska, 2000, ps. 224—257; Shapiro 1999].

The development of emotional intelligence should focus on its personal and social aspects. One should bear in mind that emotional intelligence is shaped already in the childhood, for example by observing parents or other people playing important roles in one's life. That is how people learn to manage their emotions and relationships. Notwithstanding any experiences taken from the childhood, the improvement of emotional management skills may be effected by other methods of emotional intelligence development.

W. Machalica – a psychologist and expert for Instytut Biznesu Rodzinnego, has created a series of programmes and training sessions, including workshops on emotional intelligence as a connector among generations. To that end, she has advocated to use numerous tools [Machalica 2017]:

- relationship-building tools,
- tools to tackle difficult situations in family-related and work-related groups,
- communication without violence tools,
- tools to tackle one's own and other peoples' emotions,
- constructive criticism and appraisal tools, tools to deal with criticism,
- tools to support employees' development,
- tools to chair meetings effectively,
- motivational tools and tools to delegate tasks in a motivating way,
- tools to set aims and plans,
- tools to access one's own resources.

The author believes that the enhancement of competencies related to emotional intelligence, with the application of the above-mentioned methods, allows to achieve the following benefits. [Machalica 2017]

- elaboration of an effective system to manage emotions – one's own emotions and other people's emotions – in such a way as to turn them into one's advantages,
- development of one's own initiative and self-driven personality,
- effective building-up and controlling of relationships, to win over and inspire other people,
- professional and effective team management and co-operation,
- benefits derived from the skills of coping with a difficult situation and stress in an effective way,

– elaboration of one’s own strategies on how to tackle stress; deliberate use of one’s own resources in the stress management process; enhancement of skills of how to react in a planned and effective way,

– significant influence on one’s own emotional states, in order to reduce stress and strengthen motivations,

– gathering adequate opinions on oneself and on the others in order to generate a strong internal motivation and motivate other people in a proper way.

It is worth using specialised “survival schools for young, future managers”. In Poland, there is still a lack of such institution, which may bring about the situation that Polish family firms would be in worse situations than their counterparts in the countries where succession processes and succession-related social awareness are considerably more developed. There is also a necessity to establish new scientific organisations such as the Young President Organisation, tailored to educate leaders and future presidents of the boards. Put into practice, a child or a teenager may be provided with competition workshops, exercises involving riddles, team-building tasks like Outward Bound, divided into segments and designed to teach and enforce such values as: sociability, analytical skills, foresight, dexterity, astuteness, as well as courage and distance to a given task [Sułkowski, Mariański, 2009, p. 40].

W. Machalica [Machalica 2012, p. 110] put a special emphasis on the role of self-development, i.e. a systematic work on developing one’s personal competencies, which is an indelible element of strategies to support family businesses, since it ensures a qualitative

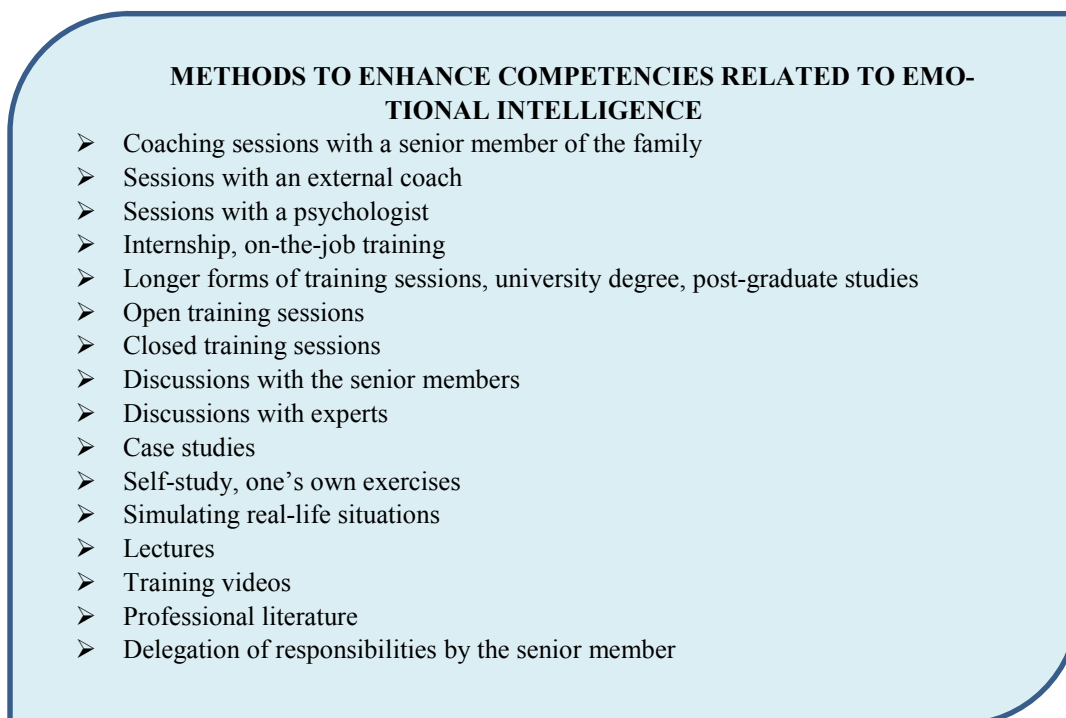
change as to attitudes. The author underlined the fact that the deliberate self-development is a constant work at all three levels of existence of an individual, i.e.:

– self-awareness level – the development of the self, which entails the necessity to recognize one’s own advantages, motivations, needs, and also limitations;

– interpersonal level – psychological and social level, which entails the necessity to work on relationships between an individual and the external world, people who surround the individual, and interactions between the individual and other people at different stages of the former’s life (for owners and managers of family businesses the enhancement of interpersonal competencies, which affects the establishment of satisfactory relationships, is an indelible element of their self-development);

– the level of knowledge and competencies related to the enhancement of abilities and acquisition of knowledge on management, strategic planning, marketing and other areas strictly connected with successful running of a family firm (within the said area, it is extremely important to deliberately implement the acquired knowledge and competencies in the everyday life and conditions under which the family business operates).

Upon the analysis of source literature and the author’s own research, the Figure 1 was created to show various methods on how to enhance competencies related to emotional intelligence, which competencies are to be implemented as methods to reduce emotional competence gaps of successors.



**Fig. 1. Methods to enhance competencies related to emotional intelligence**

Source: Own work.

The survey carried out by the author showed that the discussions with experts and self-study were used as a way to compensate all gaps related to emotional intelligence, discovered during the study. Thus, a statement can be drawn that these methods may be regarded as optimal methods to enhance competencies related to emotional intelligence.

As far as self-study/own work is concerned, numerous researchers confirmed the application of the method, advocating the necessity to self-develop by means of self-awareness and self-knowledge enhancement programmes [Stone, Dillehunt, 1978; Miśkiewicz 2017, p. 95]. It is worth becoming familiar with various situations and outcomes of suggested solutions, accompanied by an analysis of one's own emotions and way to control them.

The development of the knowledge of one's own emotions is certainly of great importance; however, it is still slightly defective as there is no such element as an expert willing to correct mistakes in expressing, using or understanding given competencies related to emotional intelligence. Thus, it is justified that the method of competencies enhancement – discussions with experts, was regarded by the experts as effective as the self-study.

It should be underlined that the effectiveness of the education depends on a many-year, integrated effort to develop children's emotional and social competencies. It is important for the educational offer to be adjusted to the individual's development stage. Moreover, due to its specific character, the educational offer should focus on skill development in order to become a long-term action

with a gradual acquisition of skills. Thus, the development of the emotional aspects should begin already in the very early years of the childhood and be continued until an individual enters a higher education school [Jasielska, 2009, p. 73].

### 3. Roles of senior members of family businesses in the development of successors' competencies related to emotional intelligence

In the studies by E. Więcek–Janka and A. Hadryś–Nowak [Więcek–Janka, Hadryś–Nowak, 2016, ps. 68 - 69] on successors' competencies, the authors named two problems faced by the successors who were asked to perform self-assessments as to their self-development in the context of succession process. The surveyed assessed the following two aspects on the dichotomous scale:

- 1) the necessity to develop successors competencies in the form of individual coaching sessions;
- 2) the consideration granted by the senior members to their children's ideas.

Up to 58% of the surveyed claimed that their solutions had not gained acceptance of the senior members of the family company (Figure 2). The lack of the opportunity to put their competencies into practice resulted in the lowered self-esteem and ensuing necessity to rectify the said situation by means of coaching sessions. As many as 93% of the successors made such a declaration. The development of the successors' competencies related to adaptive skills is strictly connected with the awareness of usefulness of propositions put forward by successors.

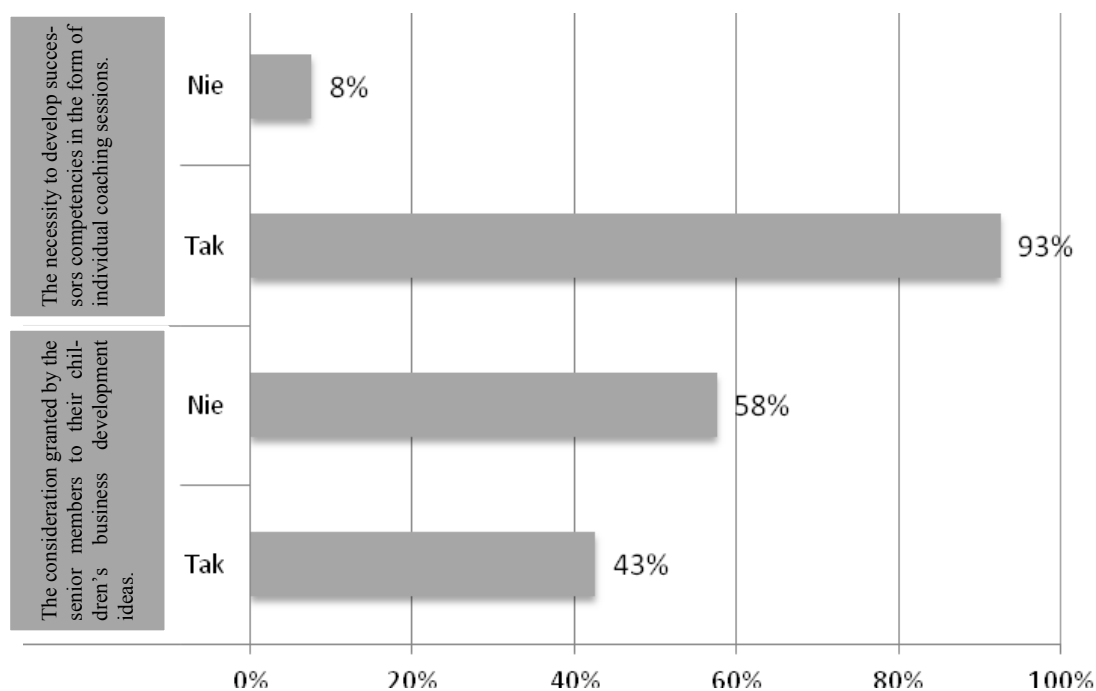


Fig. 2. Results related to selected competencies and features

Source: [Więcek–Janka, Hadryś–Nowak, 2016, p. 69].

The lesser the trust of senior members and families, the greater emphasis is placed on adaptive competencies, and the more frequent is the felt necessity to develop by means of coaching.

An important role in the enhancement of predisposal of younger generation to take over their families' businesses is the involvement of a child in the company matters from the child's earliest years, by developing their interest in the family business and fuelling the willingness to manage it in the future.

Within the upbringing process, the senior members of the families can share with the children their knowledge of business activities, tricks of trade or management gimmicks. A family firm may also be an educative environment. A successor candidate employed in the company, starting from the simplest tasks and going further as to taking managerial positions, may learn, from co-workers and senior members of the family company, practical skills, including co-operation skills and managerial practices remaining in compliance with values of the family who established the company. By means of a partner-to-partner dialogue, a senior member and a successor can jointly create new development trends, reconciling experience and knowledge of company founders with innovativeness and energy of successors [Bocheński, 2016, p. 14].

Handing over the direct control over the family firm to the successors is, more often than not, a difficult move for the firm owners. Thus, the parents fail to provide their children with relevant knowledge and rights to take decisions. Consequently, the successors are not properly prepared to run the family business, and thus the bleak scenario of the company's collapse, triggered by the intergenerational change at the helm of the company, becomes highly probable.

Competencies provide a sound basis for people's activities in the professional area. They are acquired and shaped not only at the very early stage of human development, but also during the job seeking process and while carrying out job-related tasks [Więcek–Janka, Hadryś–Nowak, 2016, p. 62].

With reference to the foregoing, the parents who wish their family companies to be taken over by their children need to take care of their proper education, combined with the development, from the early age, of pro-business attitudes, encouragement to take actions and carry out activities, face challenges and gain experiences.

### Conclusion

Family firms have been the oldest way of running the business and one of pillars of the world-wide economy. Their creation, operation and collapse highly influence the development of both national and global economies. A long-term perspective of companies run by future generations, along with the combination of family-related and managerial functions, provide such

identities with distinct characteristics [Sulkowski, Marjański, 2009, p. 9].

Effective addressing of challenges of contemporary companies requires significantly more than just proficient management of tasks. It requires greater interpersonal skills, committed people and a transparent system of values. In such conditions, one may experience a growing need to find more appropriate predictors of professional successes and life achievements than mere traditional skills.

More and more family businesses have been facing a decision to launch a succession process, which is mainly connected with the acceptance of responsibility and management. And to this end the future managers of the said companies are required to possess determined competencies. One should bear in mind that the specific character of the family business management entails a necessity to take into consideration not only economic aspects, but also interpersonal relations in their broad sense.

Thus, the process of preparing successors requires an intergenerational co-operation, with a special emphasis on the role of family seniors in the upbringing of children from their early childhood, through gradual introduction of successors into the family businesses, combined with sharing of knowledge, good practice, behavioural patterns, applying of competence enhancement methods and encouraging to take actions. The parents who want their businesses to be taken over by next generations should consistently implement the educational project (including emotional intelligence) for their successors.

Nonetheless, one should bear in mind that the successors in family firms are not inborn managers, they may become them through comprehensive upbringing by senior family members [Gutkova 2014, ps. 4-5]. Talent and aptitudes recognition and their subsequent channelling into skill development are the key role for parents.

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#### **Джвігол-Барош М. Підвищення компетенцій, пов'язаних з емоційним інтелектом спадкоємців сімейного бізнесу**

У даній статті представлено питання, пов'язані з посиленням емоційних розумових здібностей сімейних бізнес-наступників. Особливий акцент був зроблений на емоційному інтелекті, який являє собою істотний елемент компетенції наступників. Автор статті навів приклади дій та методів для підвищення компетентності, пов'язаної з емоційним інтелектом, на основі аналізу попередніх досліджень, а також її власних досліджень. Увагу в статті було звернуто на вплив батьків (старших членів сім'ї) на дії і підвищення емоційної компетентності наступників.

*Ключові слова:* компетенції, емоційний інтелект, наступник, сімейний бізнес.

#### **Джвігол-Барош М. Повышение компетенций, связанных с эмоционального интеллектом приемников семейного бизнеса**

В данной статье представлены вопросы, связанные с усилением эмоциональных умственных способностей семейных бизнес-преемников. Особый акцент был сделан на эмоциональном интеллекте, который представляет собой существенный элемент компетенции преемников. Автор статьи привел примеры действий и методов для повышения компетентности, связанной с эмоциональным интеллектом, на основе анализа предыдущих исследований, а также ее собственных исследований. Внимание в статье было обращено на влияние родителей (старших членов семьи) на действия и повышение эмоциональной компетентности преемников.

*Ключевые слова:* компетенции, эмоциональный интеллект, преемник, семейный бизнес.

#### **Dźwigoł – Barosz M. Enhancement of emotional intelligence-related competencies of successors in family businesses**

The following article presents issues related to the enhancement of emotional intelligence-related competencies of family business successors. A particular emphasis was put on emotional intelligence which constitutes an essential element of the successors' competencies. The author of the article provided examples of actions and methods to enhance the emotional intelligence-related competencies, on the grounds of studies by other researches as well as her own research. Readers' attention was drawn to the impact of parents (senior members of the family) on actions and enhancement of emotional competencies of successors.

*Keywords:* competencies, emotional intelligence, successor, family businesses.

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## ESTIMATION OF A LIVING STANDARDS OF ELDERLY POPULATION IN THE CONDITIONS OF TRANSITION TO THE SUSTAINABLE DEVELOPMENT IN AZERBAIJAN REPUBLIC

**Introduction.** Our country as the all world community has passed to new type of the development, allowing to satisfy requirements of present generation without a damage of interests of the future generation. The term “*sustainable development*” connects problems of the environment protection, stabilization of economy and improvement of quality of a life of all social classes, particularly older persons.

How the process of ageing of the population influence on sustainable development? The analysis of these problems is considered in this paper. Here emerge the question: How this growth is influenced the living standard of a society, and especially the most unprotected part of community – older persons? On the other hand, we observe a process of ageing of the population in our country as well as all over the world. Will the process of ageing of the population slow down economic growth? The analysis of these problems is considered in this paper.

**Methods and data.** For researching on the basic demographic tendencies, indicators of ageing, quality of the life elderly we use the methods of the descriptive statistics, econometrics and program Eviews. Material: Data set of monitoring the households is spending annually by the World Bank and the State Statistical Committee of Azerbaijan Republic.

Demographic ageing of the population – increasing a share of elderly and old people in population structure – twenty years ago considered as the phenomenon observing only in the developed countries, today is observed all over the world. This process has various aspects, which are necessary for considering by working out of social programs. Population ageing already today are shown in all areas of community life. Experts predict, that this process will influence on the economic growth, savings, investments and consumption, labor markets, pensions, the taxation etc.

So, in the near future population ageing can lead to annual falling of rates of economic growth, deficiency of a labour, and payment of pensions becomes serious loading for the government.

In Azerbaijan acceleration of demographic ageing of the population has coincided by time with the period of the economic reforms. In this situation elderly have appeared among those categories of citizens which have suffered in the social plan most of all. It was most difficult to older persons to adapt to changing social-economic conditions. World financial crisis more has worsened this process. Though Azerbaijan is weakly integrated into world economic, especially in sphere of finance, but our country develops the economy in the conditions of globalization and fluctuation of currencies. The budget of the country which is filled up in basic by oil incomes, also has suffered from changing oil prices. First of all government programs have suffered in social sphere. Some problems connected with employment have emergences, especially among older persons. The world economic crisis has led to the further differentiation of a society, including among older persons. In this connection there is a question: How to estimate quality of a life of the elderly population in our Republic during ageing of the population which are taking place all over the world.

The analysis of dynamics of the basic demographic indicators in our country shows that with increasing of life expectancy growth of a share of the elderly population. By the opinion of the most demographers if the number of the elderly population makes more than 7% from the total number it is shows the population So, if in 1990 year the share of persons aged 60 and over emerged 8.%, in 2000 – 8.5% and in 2015- 8.8% in total number of the population (women – 9.9%, men – 7.7%).

Characteristic of the of ageing in Azerbaijan consists from two factor : decrease in birth rate and life expectancy growth. Decrease in level of birth rate has led to reduction of relative density of children in a population and therefore growth of relative density of the elderly population. At the same time structural changes in the given group of the population are observed. In 1989 year among population of working age the number of people in group age 15-29 year was 47,6%, in group age 30-49 year was 32,8% and in older group 50-64 year – 19,6%. But in 2015 these indicators are 1.6%, 42.4%,

16.0%. It is necessary to notice also, that the growth of elderly population in urban places higher than the growth of rural population. Especially fast growth is observed in age group from 70 and is more senior, and also dominance of number of women over number of men. According to forecasts, by 2050 year share of population elder 50 will increase up to 20%. The coefficient of demographic support elderly (by United Nations technique – ratio of the number of persons at the age of 15-65 years to one elderly), characterising load elderly on the population of working age during last years was on low level: did not exceed 6 and tended to decrease up to 1998. The coefficient of demographic load is calculated as the ratio of the general number of dependants (the person at age more youngly 15 and persons at age 65 and over ) to the population at able-bodied age (15-64 years). Demographic load can have various value: positive – when loading children exceeds loading elderly and negative – in case of prevalence of elderly load.

At the beginning of 2015 year the indicator of the demographic load was equal 470 on 1000 persons at working age, including 332 for children , 137 for elderly persons. It means that two working contain one non-working pensioner.

Such relation between the population of working and elderly age has adverse consequences for pension system. Now the most of state pension systems existing in the world are in inconvenient position. This position forces the governments of many countries to increase the pension age. But if not to increase a pensionable age the further process of ageing of the population will lead to growth of demographic load and decrease of economic growth.

Since 1991 in Azerbaijan as well as in many post-soviet republics the new pension age has been established: 57 years for women and 62 years for men. According the new law about labor pensions in 2017 pension age is increased for men and women – till 65 years.

For the research of the structure of the population by age often is used the index of ageing – the relation of number or a share of older persons to number or shares of children. In 2015 ageing index of ageing was equal 33, that twice larger than in the middle of the last century. It is necessary to notice, that the index of ageing for urban population which equal 33, that is exceed index for the rural population equal 28.

Recent statistic of the State Fund of Social Protection indicate that the number of pensioners in Azerbaijan accounts about 1,3 mln. persons, of them 536 659 are men and other are women. 64% of pensioners receive the old-age pension, 25% receive disability pension, 11% – in connection with loss of the head of the family. In 1999 year the proportion of pensioners in the overall population was 14.8%, in 2006 their part has reached 16.5%, and in 2009 has again decreased to 14%.

The exit on pension for those who has high labor potential and could continue productive professional work, is the powerful stress factor. Because majority of firms employ employees, is not older 40 years, access to

the employment for older persons is limited. Difficulties at labor market are especially sharp for elderly women who have in comparison with men the worst financial position. The elderly persons are less competitive at labor market, because of lack of health and loss of their professional skills , low adaptability to current situation and e. t. c. Elderly persons are needed only at not prestigious workplaces - with low salary or bad working conditions. As a result is reduction of the employment among the elderly population during the last 30 years.

The analysis of structure of employment among elderly persons shows, that employment of people is older 60 years sharply decreases, more, than on 20%. If among age group of 60-64 men almost half is employed, among men is older 65 years only 25% have job. Analyzing employment in different economic sectors, the greatest percent of employment of the elderly is observed in sphere of trade and in agriculture. Among 60-64 years women age group 43% are employed and is older this age group only 29.7%. women had a job.

It is necessary to note that mainly high employment level is kept by pensioners with higher education and with low qualification. The marital status of older persons and educational level also influence quality of their life. Elderly with high education have higher level of a financial position. In accordance with our mentality, the most of older persons live together with the working relatives, that considerably facilitates their life. Placing of older persons in geriatric home also is alien to our mentality, that explains existence only one in all over the country similar house for elderly.

Though health services for pensioners is free, but quality of such service is very low. Single elderly with low incomes cannot get the qualified medical aid and buy expensive medicines. Research of statistical data shows, that health of older persons with low incomes is worse, than pensioners with high incomes. And accordingly among them above a death rate.

Investigation about expenses of the elderly shows, that in process of ageing the consumption structure varies. Expenses at a food, the goods of hygienic and medical appointment, payment of certain types of service especially medical is increased, but expenses at tobacco products, alcoholic drinks, transport are considerably cut down.

The most of older persons in Azerbaijan consider, that the level of their life in 90th years has considerably decreased, they estimate their financial position as unsatisfactory, unstable and unreliable. The standard of living of the elderly is defined by their possibility to satisfy the necessities of life at the expense of goods and services purchase.

In the conditions of the market the purchase of goods and services depends on an economic position of the older person which is defined by level of his income and the prices.

The main parameter of the standard of living of the older persons is the size of pension correlated with a prices of consumer goods and services.

For the estimation of a standard of living of older persons and comparison with other groups of population it is possible to use the indicator which characterizes purchasing capacity of incomes and shows the quantity of sets of a living wage (lw) that the person could buy by the income per capita.

This indicator reflects changes of incomes of the population along with change of the prices for the basic goods and services, is the characteristic of a standard of living. As the this indicator we offer to take the rate (RLW) of the monthly average salary (AW – average

wage) to the living wage (LW – living wage), which is denoted by RLW:

$$RLW = AW / LW.$$

Below in table 1 results of calculations of this indicator are presented.

Table 1 shows, that the indicator of a standard of living of older persons twice less than his average value in the country and only, since 2008 exceeds unit. It means, that incomes of older persons still were below a living wage.

Table 1

Year	Average wage, man.	Average pension, man.	Average living wage, man.	Living wage for older person, man.	Standart of living	Standart of living for elderly
2005	123.6	24.0	55	42	2.25	0.57
2006	141.3	28.0	58	45	2.44	0.62
2007	214.0	41.1	64	50	3.77	0.82
2008	274.4	62.9	70	57	3.92	1.1
2009	298	95.82	84	65	3.55	1.47
2010	331.5	100.4	87	68	3.8	1.48
2011	364.2	112.9	95	72	3.81	1.57
2012	398.4	145.1	108	84	3.69	1.73
2013	425.1	152	116	95	3.66	1.6
2014	444.5	170.5	125	103	3.57	1.66
2015	466.9	173.4	131	108	3.56	1.61

Using calculated values RLW and statistical data of economic growth for the period of 2005-2015, the econometric model characterising dependence between the indicator of a standard of living of older persons and

economic growth in the country is constructed. Data about economic growth are described below in the table 2.

Table 2

#### The rate of economic growth in Azerbaijan

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Economic growth, %	26,4	34,5	25	10,8	9,4	4,9	0,1	2,2	5,8	2,8	1,1

The economic growth (GGDP) is calculated as ratio of gross domestic product (GDP) of current period and last period. From the table 2 it is shown, that since 2007, sharp decrease in rates of economic growth is observed. It is explained both the world economic crisis, and reduction of prices on oil. Decrease in rates of economic growth should affect a population standard of

living including older persons. For estimating of this influence the regression function is constructed:

$$RLW = f(GGDP),$$

where  $RLW$  – standard of living,

$GGDP$  – level of economic growth.

By using Eviews program, we received the following result represented by table 3.

Table 3

Dependent Variable: RLW  
Method: Least Squares  
Date: 09/08/17 Time: 00:12  
Sample: 2005 2015  
Included observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GGDP	0.035070	0.003566	9.834749	0.0000
C	1.685778	0.056778	29.69091	0.0000
R-squared	0.914871	Mean dependent var		1.293636
Adjusted R-squared	0.905413	S.D. dependent var		0.435896
S.E. of regression	0.134060	Akaike info criterion		-1.018090
Sum squared resid	0.161749	Schwarz criterion		-0.945746
Log likelihood	7.599497	F-statistic		96.72229
Durbin-Watson stat	2.327541	Prob(F-statistic)		0.000004

$$RLW = 0.03506961954 * GGDP + 1.685778473.$$

Statistical characteristics of the econometric model show, that the model is quite adequate and can be used for the forecast of growth of a standard of living of older part of the population of the country.

And only thanks to reforms in pension system of the Azerbaijan Republic the situation has changed for the better. And still despite all these measures, the average size of pension hardly exceeds living level and is less than 50% from the average salary, that considerably lags behind world indicators. It means that retirement is dangerously for older persons because their incomes are considerably reduced. All of it demands great attention from the government to interests of the elderly and the further perfection of pension system.

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**Аббасова Ш. А., Оруджева М. Ш., Оруджева Т. В., Оцінка рівня життя літніх людей в умовах переходу до сталого розвитку в Азербайджанській Республіці**

У статті проводиться аналіз рівня життя літніх людей в період переходу до сталого розвитку в Азербайджані. Для оцінки рівня життя літніх і порівняння його з іншими верствами населення використовується показник, що характеризує купівельну спроможність доходів. Використовуючи значення цього показника і дані щодо економічного зростання, побудована економетрична модель. Отримані статистичні характеристики показують, що модель адекватна і може бути використана для прогнозу зростання рівня життя літніх під впливом стійкого економічного зростання.

*Ключові слова:* літнє населення, сталий розвиток, економічне зростання, економетрична модель.

**Аббасова Ш. А., Оруджева М. Ш., Оруджева Т. В. Оценка уровня жизни пожилых в условиях**

**перехода к устойчивому развитию в Азербайджанской Республике**

В данной статье проводится анализ уровня жизни пожилых людей в период перехода к устойчивому развитию в Азербайджане. Для оценки уровня жизни пожилых и сравнения его с другими слоями населения используется показатель, характеризующий покупательную способность доходов. Используя значения этого показателя и данные по экономическому росту, построена эконометрическая модель. Полученные статистические характеристики показывают, что модель адекватна и может быть использована для прогноза роста уровня жизни пожилых под влиянием устойчивого экономического роста.

*Ключевые слова:* пожилое население, устойчивое развитие, экономический рост, эконометрическая модель.

**Abbasova Sh., Orujova M., Orujova T. Estimation of a living standards of elderly population in the conditions of transition to the sustainable development in Azerbaijan Republic**

The estimation of standard of living of elderly population and transition to sustainable development in Azerbaijan Republic is considered in this paper. For the estimation of a standard of living of older persons and comparison with other groups of population it is possible to use the indicator which characterizes purchasing capacity of incomes and shows the quantity of sets of a living wage that the person could buy by the income per capita. Using calculated values of this indicators and statistical data of economic growth, the econometric model characterising dependence between the indicator of a standard of living of older persons and economic growth in the country is constructed. Statistical characteristics of the econometric model show, that the model is quite adequate and can be used for the forecast of growth of a standard of living of older part of the population of the country.

*Keywords:* elderly population, sustainable development, economic growth, econometric model.

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## VOCATIONAL EDUCATION PROBLEMS IN TOURISM SPHERE OF AZERBAIJAN

**Introduction.** In modern age competitive production in the world market and sustainable economic growth is mainly driven by human capital. As a result of World Bank surveys in 192 countries, it was found out that 16% of our economic growth happened because of physical capital, 20% natural resources, 64% human capital. Moreover, according to western research the rate of return on investment in human capital in developed countries at least twice as much as the profit from the shares. In this regard, human capital development has become one of the major tasks of each state, as the main productive force of society. Among the factors that contribute to the development of human capital, one of the key areas is the effectiveness of investments directed to people's education, particularly vocational training. In general, the experience of developed countries shows that vocational education has an indispensable role in ensuring sustainable economic development and high living standards.

### Vocational tourism education

The main focus of the tourism education in the world is on vocational education. In general, vocational education is defined as "the process by which individuals in a society are able to be professional and develop the skills of the individual in terms of physical, intellectual, emotional, social and economic aspects, giving them the knowledge, skills and practical application skills required by the profession" [2]. Tourism education should not be perceived as different from general education and needs to be done in general education. The aim of the training is to increase the knowledge and skills of the people and to make them a good citizen. In parallel, tourism education and training includes the process of raising productivity in the labor-driven tourism sector, providing direct services to tourists, and attaining behavior standards to balance the competencies, abilities and responsibilities of staff. The nature of the tourism sector as a social phenomenon and its relevance to all segments of the society at a certain level includes not only the focus of professional formation but also the social aims of this sector.

It is difficult to put a determinate date on the start of tourism education but seems it was during the 1960s that a number of key changes had been in tourism, in education and in society more generally, led to the emergence of tourism "both as a clear area of study in its own right and as a subject for study to diploma and degree level and for research. During that decade many of the early tourism programs began. The tourism programs of the 1960s and 1970s were highly vocational in aim and content, highly restricted in the knowledge base on

which they could draw, and highly based on economics and business studies [3].

As noted earlier by the author (Airey, 1995, p.4), the growth of tourism as an activity, the expansion of further and higher education, as well as an increased recognition and respectability of vocational education provided a fairly potent set of influences that encouraged what would now be called "educational entrepreneurs" to launch the first tourism programmes. Tourism education began as a development of technical/vocational schools in Europe. These schools highlighted training in foundation abilities such as hospitality, hotel management and related business skills. Need and call from the public and private sectors influenced prompt growth of tourism studies and the development, and establishment, of departments of tourism at institutions of higher education in addition to technical schools (Butler 1999, p.7-25).

### Tourism education in Azerbaijan

Azerbaijan has the potential to attract a large number of international tourists. Tourism is increasingly becoming an important part of Azerbaijan's economy. In Azerbaijan, 2011 has been declared the "Year of Tourism." Today works are carried out to draw tourists from foreign countries. The successful oil strategy shows itself on non-oil sector in fast-growing Azerbaijan Republic. Tourism industry is one of the important fields of non-oil sector. Due to the potential of increasing incomes to the state budget, Azerbaijan Government targeted to develop tourism industry and make it the most sustainable and competitive part of the economy. According to experts, the demand to tourism personnel will be more than 75000, until 2023. But now, professional cadre shortage on tourism is one of the main problems, preventing the development of perspective tourism industry of our country.

Tourism personnel are trained on

- Primary vocational special education – in vocational schools and vocational high schools from 3 to 6 months;
- Vocational secondary education – in colleges for 2-3 years.
- Bachelor education – at universities up to 4-5 years.
- Master education - at universities up to 2-3 years.
- Doctorate education – up to 3-5 years [7].

Organization and development of vocational education of Tourism industry is one of the main tasks of our government recent years. So, below indicated articles of State Program on development of tourism, » approved by the President's decree dated on April 6, 2010

were purely related with the education of tourism in Azerbaijan.

- Approval of special tariff handbook of Tourism personnel.
- Establishment of national tourism training center under the Azerbaijan Institute of Tourism.
- Improvement of relevant study program at universities, high schools and vocational schools preparing tourism professionals.
- Realization of Special events, courses and trainings for the personnel working in the tourism industry.
- Implementation of sanitary and hygiene study programs in tourism enterprises.
- Preparation of proposals about the implementation of international practices and new education opportunities of tourism.

#### **Vocational tourism schools in Azerbaijan**

Vocational schools and high schools are the initial phase of the training of personnel in tourism educational institutions. Currently, the following educational institutions are available in the level of primary vocational schools:

- Baku Tourism Vocational School,
- Vocational Training Centre of Tourism and Hotel Business in Gabala
- Vocational Training Center in Ismayilli.

Due to the high demand of vocational education of tourism, Ministry of Culture and Tourism of Azerbaijan Republic signed a decree of establishment of vocational training schools in the regions of Azerbaijan [7].

These are relevant tourism specializations due to the decree of the Cabinet of Ministers of Azerbaijan Republic about the approval of the classification of the professions of primary vocational education.

#### **Classification of the professions of primary vocational education**

Name of specialty group	Specialty name
Commercial	Tourism agent
Catering services	Waiter
	bartender
	waiter, bartender, barman
	Confectioner
	Cook
	The barman-waiter
	Hotel receptions
	Employee of sanitary department
Ski Tourism	Ski tourism guides
Travel guide	Ecotourism guides
	The national park guides
	Local guides

Source Azerbaijan Ministry of Tourism Report, 2011.

The first trade cantor apprenticeship school was founded in Azerbaijan in the basis of 3 year education, due to the decree of Cooperatives Union for the South Caucasus in 1927-1928 academic years in order to pro-

vide trade and service enterprises of Baku and Azerbaijan with the professional employees.

The name changed several times and called Baku vocational School in this educational institution was realized already the preparation of waiters, cook-confectioners and travel guides. It was considered to establish Baku Tourism Vocational School under the Azerbaijan Institute of Tourism due to the clause 19 of the action plan related with "Tourism Year" declaration of current year approved with Azerbaijan President's order, dated July 20, 2011 and implemented with the decree of the Cabinet of Ministers of Azerbaijan Republic dated December 6, 2011.

The following vocational classes are taught to the pupils studying barman, bartender and waiter: Customer service management, the culinary characteristics of lunches, Bar and buffet equipment, Food physiology, Beverage making technology

**Conclusion.** Tourism is one of the most important sectors today due to its important place in the gross national product of the countries. Therefore, tourism needs to be important. Even if qualified infrastructure can be built, it will reduce the importance of tourism in the long term when it cannot be filled with qualified personnel. The way of providing qualified staff also lies through education. Tourism education in Azerbaijan is given as vocational and higher education. According to the results of research we can list the aims of vocational tourism education as follow:

- Establish the relationship between theoretical and practical education;
- Contribute to the development of the sector;
- Creating a positive tourism awareness over the citizen;
- To reveal the interest of people in the tourism;
- To increase the knowledge and skills of the employees in the sector;
- The following suggestions regarding vocational education can be made;
  - The establishment of a committee to supervise the adequacy of the courses given in the higher education institutions and should be provided with workers from the sector;
  - Curriculums should be organized to meet the needs of the regions;
  - The pyramid of International Labor Organization should be taken into account while calculating the quotas for higher education;
  - Whether alumnus from vocational tourism schools or higher tourism educational institutions one-year vocational qualification internship should be done. In addition, a proficiency examination should be given by teachers and vocational teachers in tourism in every 5 years;
  - The amount of funds allocated from the state budget for the vocational education in the country should be increased several times;
  - Within the framework of state investments, new high school lyceums should be built in the capital and

all regions, existing ones should be reconstructed accordance with modern requirements;

▪ Low level of teacher's salary at vocational schools does not allow to involve employees in this field. From this point of view, salaries of employees here should be increased.

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### Алієва І. Проблеми професійної освіти Азербайджану в сфері туризму

З огляду на той факт, що туризм є важливим сектором у 33 галузях, не можна заперечувати його впливу на економіку. Туризм, як найважливіша альтернатива, розглядається як рушійна сила в економічному розвитку країн, що розвиваються. У зв'язку з цим багато країн почали збільшувати число туристичних підприємств різними ініціативами, щоб отримати більшу частку доходів в туризмі. Спеціалізовані кадрові ресурси відіграють ключову роль у туризмі, з огляду на той факт, що туризм є людським сектором. Важливе значення має отримання практичних знань на всіх етапах туристичної освіти. Наявність кваліфікованого персоналу є одним з основних кроків для продовження зростаючої конкуренції. Це можна зробити тільки ефективно і професійно за допомогою освіти в галузі туризму та працевлаштування випускників професійно-технічних училищ в цьому секторі. Тому в цьому дослідженні підкреслюється важливість професійного навчання для задоволення потреб кваліфікованих кадрів в туризмі.

*Ключові слова:* професійна освіта, освіта в сфері туризму, робоча сила туризму.

### Алиева И. Проблемы профессионального образования Азербайджана в сфере туризма

Учитывая тот факт, что туризм является важным сектором в 33 отраслях, нельзя отрицать его влияния на экономику. Туризм, как самая важная альтернатива, рассматривается как движущая сила в экономическом развитии развивающихся стран. В этой связи многие страны начали увеличивать число туристических предприятий различными инициативами, чтобы получить большую долю доходов в туризме. Специализированные кадровые ресурсы играют ключевую роль в туризме, учитывая тот факт, что туризм является человеческим сектором. Важное значение имеет получение практических знаний на всех этапах туристического образования. Наличие квалифицированного персонала является одним из основных шагов для продолжения растущей конкуренции. Это можно сделать только эффективно и профессионально с помощью образования в сфере туризма и трудоустройства выпускников профессионально-технических училищ в этом секторе. Поэтому в этом исследовании подчеркивается важность профессионального обучения для удовлетворения потребностей квалифицированных кадров в туризме.

*Ключевые слова:* профессиональное образование, образование в сфере туризма, рабочая сила туризма.

### Aliyeva I. Vocational education problems in tourism sphere of Azerbaijan

It is not hard to perceive the dimensions of the effects on the economy of countries as the tourism sector is a challenging area for 33 different sectors. Tourism is seen as the most important alternative to the industry, and the driving forces of economic development in developing countries. In this sense, in order to get more share from the tourism movements, many countries have started to rapidly increase the number of tourism businesses and their capacities with various incentive measures. Due to the labor-intensive nature of the tourism sector, the importance of trained skilled labor force in the tourism sector arises [6]. Individuals shall be taught practical knowledge and skill in every stage of the tourism education. In order to be able to survive in increasing competition environment qualified workforce is one of the basic steps. And this can only be actualized by efficient and qualified tourism education and employing the vocational school of tourism graduates in the sector. Therefore, the research conducted to emphasize the importance of vocational training for fulfilling the need of qualified personals in tourism.

*Keywords:* vocational education, tourism education, tourism workforce.

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## RESEARCH OF FACTORS IMPEDING PROFESSIONAL DEVELOPMENT OF THE PERSONNEL OF DOMESTIC ENTERPRISES

**Formulation of the problem.** The acceleration of scientific and technological progress, increased competition in the market environment led to increased requirements of modern production to the quality of the workforce. Currently, the process of solving most problems facing the enterprise requires from its employees a continuous updating of knowledge, ability to gain knowledge and to use them in practice.

The necessity of updating theoretical knowledge and practical skills of employees is due, in the first place, their rapid «aging»: annually depreciated 20-30% knowledge. The rate of obsolescence of professions in industrialized countries is about 8 years, and in some countries - 5 years (including in metallurgy – 3,9 years, mechanical engineering – 5,2 years, chemical industry – 4,8 years) [1].

It is believed that each qualified employee for the entire period of his employment (40-45 years) on average 4-5 times needs to update their knowledge (to pass retraining, to improve their skills). In industry, especially in engineering, upgrade qualification for development of new technology now accounts for an average of 6-8 times, changing 3-4 times specialization [2].

Thus, the increasing role of knowledge, skills and abilities of employees, the need for their constant renewal determine the priority and relevance professional staff development of the enterprises in modern conditions of managing.

**Analysis of recent publications.** Many scientists are conducting research to problems of professional development of staff. Among them are: V. Savchenko [3], F. Khmil [4], N. Samolyuk [5], V. Radkevich [6], S. Timchenko [7], A. Tkachenko [8].

Despite numerous studies, most of the problems of professional development of the personnel of domestic enterprises remain unsolved.

According to the latest research of the State statistics service [9], the average for Ukraine professional training covered only 11,2% of full-time employees.

The total number of workers professional training and retraining receive about 1.8% of full-time employees. In most cases, it is the workers of industrial enterprises (68.1% of all the trained for new jobs) and transport, warehousing, postal and courier activities. The main form of training of workers was their professional retraining directly at the «on the job».

Improved skills on different forms of training (on the production-technical courses, courses with the pur-

pose, through probation, specialization, long-term and short-term training) of approximately 9,4% of full-time employees.

In health care and social assistance, education, public administration and defence, compulsory social insurance the staff development occurs primarily in educational institutions of various types.

Often «on the job» increase the skills of workers employed in enterprises of industry, in the field of scientific research and development, financial and insurance activities, information and telecommunications.

The periodicity of improved skills in Ukraine is 8 to 10 years, whereas in most industries it is recommended to improve the skills at least once in five years. For comparison, the periodicity of improved skills in economically developed countries is a once in 3-5 years (in Japan, of 1-1,5 years). In the US learn (in nonworking time) from 26 to 43% of employees according to qualification level, in the European Union – not less than 20 % of employees, and in Japan – 80% [2].

Thus, currently, the level of performance professional development the majority of employees of the enterprises of Ukraine does not meet the requirements of modern production and significantly behind the performance of enterprises in developed countries.

**The purpose of the article.** Research of factors impeding professional development of the personnel of domestic enterprises.

**Statement of the base material.** The results of the sample studies allowed to identify the main factors hindering professional development of staff in most enterprises of Ukraine [3]:

1. The lack of sufficient funds for the organization and implementation of professional training of the staff directly «on the job» or «off the job» (38,8% of all respondents indicated this as a reason).

2. The economic benefits of hiring highly skilled workers from the outside, not directing their own investment in training (for this essential reason stated 38,8% of respondents).

3. The risk of losing money to the professional training of the personnel, due to the «fluidity» of frames or the enticement of skilled workers by competitors (this opinion was expressed by 32,6% of the respondents).

4. Lack of employee interest in professional development (think so 20,2% of respondents).

5. There is no possibility to achieve the expected productivity from trained workers (think of 13,3% of the respondents).

Indeed, the crisis in the economy and, as consequence, reduction of production volumes limited financial resources of domestic enterprises for vocational training and personnel development. Most businesses nowadays can't even provide decent wages to their employees. In this situation, investment in training and staff development is seen as a costs and is carried out by a residual principle. This approach is limited and is associated with the lack of understanding of the importance and role of professionalism in promoting economic growth and development of the enterprise. Current research in the field of professional staff development based on human capital theory and the financing of vocational training and advanced training of employees is considered as investment in human capital:

- according to prof. F. Khmil [4] investing in human capital involves the so-called effect of resources is to increase in the performance measure «production/costs». The resulting productivity growth has longer competitive nature than that which is achieved by the actions aimed, for example, to reduce the number of employees;

- according to the american scientist E. Denison [10], investment in human capital provide a profit in 5-6 times more than investment in production;

- according to analysts USA [10], the growth of investment in training by 10% increases productivity by 8%, while increasing investment in manufacturing by 10% increases productivity by 4% (that is, the efficiency is two times lower).

In recent years, the majority of domestic enterprises observed negative trend in the financing of vocational training and development of employees – the share of expenditures on tuition, which was extremely low (approximately 1% of payroll), continuing to decrease [5, 6]. For comparison, the costs of professional development staff development of leading global companies ranges from 2 to 10 % of wage fund [2]: the costs of "IBM" on the professional development of staff constitutes more than 5% of wage fund; the costs of "Siemens" on the training of employees account for over 3% of wage fund; annual costs of Japanese companies on training amount to 10-12% of wage fund.

In conditions of limited financial resources, reduces the amount of training and advanced training of employees «off the job» (in educational institutions).

In tabl. 1 shows dynamics of the number of employees of enterprises that received professional training and improved skills in vocational-technical educational institutions of Ukraine [11].

The data in tabl. 1 show that from 2011 to 2016, there is a steady decrease in the number of workers, who were trained in vocational and technical educational institutions of Ukraine:

- the number of employees that have advanced training, decreased by 16,2%;

- number of employees trained has decreased by 38%.

Table 1

**The number of trained skilled workers  
(enterprises personnel), person**

Direction of training	Period					
	2011	2012	2013	2014	2015	2016
Vocational training	32052	31239	29408	23382	21838	19878
Advanced training	4130	4353	4203	3070	3440	3463

Most Ukrainian companies prefer the training, re-training and advanced training of employees «on the job». This approach to professional development of staff has a number of advantages:

- the training is meaningful and fully adapted to the characteristics of the production and labour processes of the enterprise, aimed at performing specific tasks. Many employers say that the professional knowledge and skills after completion of any educational institution is insufficient to complete the practical work. Qualification requirements for the personnel of most enterprises often differ from the requirements of educational institutions to the graduates;

- does not require significant financial costs (e.g., mentoring);

- accelerates the period of professional adaptation of new employees and young professionals.

Training «on the job» is effective for the formation of knowledge, skills and abilities needed to perform current production tasks when the contents of training adapted to the needs of the specific company. However, it should be noted that the training «on the job» in many cases, ineffective for obtaining fundamentally new knowledge as it does not allow the worker to disengage from the current situation in the workplace, to identify and to realize fully its potential. Thus, the predominance of professional training «on the job» is a constraint to professional development as individuals and collective as a whole.

In the absence of the necessary funds to provide professional development of staff («off the job» and «on the job») companies use external recruitment of skilled workers. However, it should be noted that in recent years, the labour market is unable to meet the growing needs of employers.

Dynamics of free working places (vacancies) by type of economic activity and occupational groups from 2011 to 2016 are presented in tabl. 2, 3 [12].

Tabl. 2 show a drop in the demand for labor from 2011 to 2015. During this period the need of employers for workers has decreased by 56.3%. In 2016 there is a significant increase in the deficit of labour force:

Table 2

**The need of employers in workers for substitution of free work places (vacancies) by type of economic activity, thousand person**

Types of economic activity	Period					
	2011	2012	2013	2014	2015	2016
Total	59,3	48,6	42,5	35,3	25,9	36
Industry	16,6	13,8	10,8	9,0	6,5	10
including processing industry	13,0	10,6	8,6	7,2	5,1	7,8

the number of available jobs (vacancies) reported by employers, at the end of 2016 amounted to 36,0 thousand people, which is 39.0% more than at the end of 2015. The greatest shortage of personnel is observed in industrial enterprises: from the total number of available jobs every tenth was in industry, and every seventh – in the processing industry.

In 2016, increased demand for workers of all occupational groups. The biggest remains the demand of employers for «Skilled Workers With Tools» and «Working in The Maintenance, Operation and Monitoring of Technological Equipment, and Assemblers Equipment and Machines» (tabl. 3).

Table 3

**The need of employers in workers for substitution of free work places (vacancies) by occupational groups, thousand person**

Professional group	Period					
	2011	2012	2013	2014	2015	2016
Total	59,3	48,6	42,5	35,3	25,9	36
Managers	5,3	4,3	3,8	2,7	1,9	2,7
Professionals	9,1	9,8	7,2	5,2	3,8	4,7
Technicians and Associate Professionals	7,0	5,9	4,8	4,0	2,8	3,9
Clerical Support Workers	1,7	1,3	1,3	1,4	1,2	1,6
Services and Sales Workers	6,2	5,1	5,4	5,0	4,2	4,8
Skilled Agricultural, Forestry and Fisheries Workers	0,6	0,6	0,4	0,4	0,3	0,4
Skilled Workers With Tools	13,0	9,7	8,3	6,4	5,2	7,9
Working in The Maintenance, Operation and Monitoring of Technological Equipment, and Assemblers Equipment and Machines	7,9	6,7	5,5	5,2	3,8	5,8
Elementary Occupations	8,5	6,8	5,8	5,0	2,7	4,2

Thus, the worsening situation of labor shortage limits the capacity of enterprises to meet their needs for skilled workers by hiring from the outside.

Another factor that hinders the professional development of staff is a risk to lose the funds spent by the enterprise to vocational training, as a result of staff turnover. Its origin is perhaps in the situation of lack of contract on training and of contract on «working off» between management and employees. Drafting of the contract on «working off» is not the responsibility of the employer, but the fact his conclusion directly affect the taxation of the cost of education. Its presence reduces the risk of loss of funds, which the company aims at vocational training, in the event of termination of the employment relationship by the employee. In contract on «working off» must include the following information: the period «working off» (the exact dates of its beginning and end); the actions of the parties in the case of dismissal of an employee before the expiry of the period of «working off»; the actions of the parties if the worker is prematurely expelled from educational institution. According to the law of Ukraine «On employment of population» [13] the duration of «working off» is determined by agreement of the parties and may not be more than 3 years. If the employee is dismissed before the end

of the period of «working off», the employer has the right to recover from him the full cost of training or part of it depending on time worked.

Impediments such as lack of employee interest in professional development and the inability to achieve the expected productivity from trained workers need to be considered simultaneously. They arise when the goals of the enterprise management and individual employees regarding professional development are not the same. Managers interested in improving quantitative and qualitative indicators of labour activity of employees trained. In turn, workers are committed to enhancing financial reward and career growth. Currently, the Ukrainian enterprises, in most cases, vocational training is not associated with any material incentives or professional status. For example, workers can change the skills from the second or third skill category up to the fourth or sixth skill category, that is, increase your status by about 3 category. The average tenure of a worker in the qualifying category of 2-2,5 years. The higher the skill category, so this is longer (for the second and third category – less than two years, for the fourth and fifth – 3 to 4 years). At this rate, in 10 years the worker reaches the peak of his professional career. The qualification «ceiling» is reached at the age of 30-

40 years, when the worker more sensitive to the prospects of further promotion. When using the existing ratios between the qualification level, wage increases by about 1.5 times over the entire period of employment of the employee [14]. This is clearly not enough to motivate the professional development and effective employment of personnel. Thus, to ensure professional staff development is necessary not only to take measures to organize continuous professional education, including professional training, advanced training and retraining, but also the development of a motivation system aimed at increasing the level of professional development of employees.

**Conclusions.** Problems of professional development of staff due primarily to the undervaluation of the importance of staff and level of professionalism in sustainable and economic development of domestic enterprises. The goals and results of the process of professional training, in most cases, are not consistent with the goals and objectives of the management of enterprise development. As a result, professional development has a low efficiency, which reduces its priority in the eyes of management. Ignoring the problem of professional development of staff in terms of the increasing shortage of skilled labor in the labor market will have the following consequences: will increase the probability of reducing the quality of performance of employees, their ability to professionally perform production tasks, which, of course, affect the economic performance and competitiveness.

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### Гітис Т., Клименко С. Дослідження факторів, що стримують професійний розвиток персоналу вітчизняних підприємств

Обґрунтовано актуальність проблеми професійного розвитку персоналу підприємств. Наведено статистичні дані, що дозволяють оцінити рівень професійного розвитку персоналу в Україні та економічно розвинутих країнах. Досліджено основні тенденції та проблеми професійного розвитку працівників вітчизняних підприємств: відсутність необхідних коштів на організацію професійного навчання персоналу; економічні переваги прийняття на роботу висококваліфікованих працівників зі сторони; ризик втратити кошти, що спрямовані на професійне навчання персоналу в результаті плинності кадрів; недостатня зацікавленість працівників у професійному розвитку; неможливість досягти очікуваної ефективності праці від навчених працівників. Проблеми професійного розвитку персоналу обумовлені, в першу чергу, зниженням значущості персоналу та рівня його професіоналізму у забезпеченні сталого господарського та економічного розвитку вітчизняних підприємств.

**Ключові слова:** персонал, професійний розвиток, підвищення кваліфікації, професійна перепідготовка, навчання «без відриву від виробництва», договір про відпрацювання, мотивація.

**Гитис Т., Клименко С. Исследование факторов, препятствующих профессиональному развитию персонала отечественных предприятий**

Обоснована актуальность проблемы профессионального развития персонала предприятий. Приведены статистические данные, позволяющие оценить уровень профессионального развития персонала в Украине и экономически развитых странах. Исследованы основные тенденции и проблемы профессионального развития работников отечественных предприятий: отсутствие необходимых средств на организацию профессионального обучения персонала; экономические преимущества принятия на работу высококвалифицированных работников со стороны; риск потерять средства, направленные на профессиональное обучение персонала в результате текучести кадров; недостаточная заинтересованность работников в профессиональном развитии; невозможность добиться ожидаемой эффективности труда от обученных работников. Проблемы профессионального развития персонала обусловлены, в первую очередь, снижением значимости персонала и уровня его профессионализма в обеспечении устойчивого хозяйственного и экономического развития отечественных предприятий.

*Ключевые слова:* персонал, профессиональное развитие, повышение квалификации, профессиона-

льная переподготовка, обучение «без отрыва от производства», договор об отработке, мотивация.

**Gitis T., Klimenko S. Research of factors impeding professional development of the personnel of domestic enterprises**

Justified the urgency of the problems of professional development of personnel of enterprises. Presented the statistical data that enable to evaluate the level of professional development staff in Ukraine and in developed countries. Investigated the basic tendencies and problems of professional development of employees of domestic enterprises: the lack of sufficient funds for the organization and implementation of professional training of the staff; the economic benefits of hiring highly skilled workers from the outside; the risk of losing money to the professional training of the personnel, due to the «fluidity» of frames; lack of employee interest in professional development; there is no possibility to achieve the expected productivity from trained workers. Problems of professional development of staff due primarily to the undervaluation of the importance of staff and level of professionalism in sustainable and economic development of domestic enterprises.

*Keywords:* personnel, professional development, advanced training, professional retraining, training «on the job», contract on «working off», motivation.

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## THE ROLE OF SUPPLY CHAIN SUSTAINABILITY IN A CORPORATE SOCIAL RESPONSIBILITY STRATEGY

Supply chain sustainability is increasingly recognized as a key component of corporate sustainability. In addition to being the right thing to do, managing the social, environmental and economic impacts of supply chains and combating corruption makes good business sense. However, supply chains consist of continuously evolving markets and relationships. To navigate this complex terrain, it is needed to offer a few baseline definitions and to identify practical steps that companies can take toward progress, using the United Nations Global Compact principles as the basis to work toward supply chain sustainability.

Supply chain sustainability is the management of environmental, social and economic impacts and the encouragement of good governance practices, throughout the lifecycles of goods and services. The objective of supply chain sustainability is to create, protect and grow long-term environmental, social and economic value for all stakeholders involved in bringing products and services to market. For many Ukrainian enterprises, the problem of ensuring the sustainability of supply chains is quite acute in connection with the upcoming tightening of environmental and social requirements for business, arising from the association agreement with the EU, and with the need to reorient its business activity to European markets.

**The aim of the paper** to trace the link between supply chain sustainability and corporate social responsibility and to ways for incorporate several measures of supply chain sustainability into a CSR strategy.

As environmental, social, and governance issues have become ever more important influencers of customer and employee expectations, organizations have tightened their embrace of the sustainability programs that address those issues. According to the latest McKinsey Global Survey on the topic [1] companies are increasingly formalizing the way they govern sustainability programs, as well as elevating the importance of diversity and inclusion [2]. And a larger share of corporations CEOs than ever before is reflecting the top reason for implementing a sustainability agenda is better alignment between an organization's practices and its goals, missions, or values [3, p. 29].

By integrating the UN Global Compact Ten Principles into supply chain relationships, companies can advance corporate sustainability and promote broader sustainable development objectives [4]. Evidence that the supply chain pressures towards corporate social responsibility (CSR) are becoming the reality is increasing. The European Commission note that CSR-related

threats and opportunities are now extending beyond larger players to entire firm networks and supply chains [5].

Sustainability of the supply chains is important because they are the engines for today's global economy, serving to deliver goods and services around the world, connecting businesses and the individuals who work for them across geographic, industry, cultural and regulatory boundaries [6, p. 23]. Supply chain sustainability provides that companies will continue to meet their needs in the future, in economic, social, ethical and environmental terms and are requiring such behaviour from its suppliers [7]. It ensures compliance with laws and regulations as well as adherence to and support of international principles for sustainable business conduct. In addition, companies are increasingly taking actions that result in better social, economic and environmental impacts because society expects this and because there are business benefits in doing so.

Supply chains management as a corporate governance function is fulfilled usually under uncertainty. Essentially, in a supply chain context, if there are some sources of uncertainty such as demand uncertainty and supply uncertainty, the performance of the supply chain will also be affected and become uncertain. As a result, risk emerges and supply chain agents need to make decisions under risk [8, p. 490; 9, p. 2]. In the operational research literature, the classical approach for exploring supply chain risk is to employ an expected measure approach [10; 11, p. 655].

By managing and seeking to improve environmental, social and economic performance and good governance throughout supply chains, companies act in their own interest, the interests of their stakeholders and the interests of society at large. By implementing supply chain sustainability programmes, companies engage with both direct and sub-tier suppliers, mainstreaming values and actions down to raw material producers and maximizing the overall social, environmental and ethical impact [12].

The implementation of CSR practices has long been considered the realm of large companies and globally operating multinational corporations (MNCs), which responded to a "pull effect", i.e. pressures by governments and consumers to address pollution and environmental degradation, inadequate working conditions in production, sourcing and delivery processes, or human rights abuses. Nevertheless, there is a growing interest and need to look at the entire value chain from primary production to consumption and disposal and

specifically to those small and medium-sized enterprises (SMEs) which are supplying raw materials, semi-processed or consumer goods and services to many large enterprises and MNCs.

As a result of the exponential increase of energy and materials consumption rates of energy and materials globally, sustainable development arise as an urgent issue and new approach to supply chain management is required to incorporate environmental and economic concerns in the design of supply chains. This approach is called green supply chain, which has been proposed to deal with the trade-offs between environmental and financial issues in order to reduce negative impacts on the environment caused by the increasing levels of industrialization (see: [13 – 17]).

Ukrainian companies, especially large ones, should encourage their suppliers to elaborate their own sustainability strategy. One way is to encourage them to join and participate actively in the Global Compact and Local Networks around the world. Joining the Global Compact is a sign that the supplier is taking sustainability issues seriously and trying to become a competitive player on global markets.

Over the past decade, the Metinvest Group has made sustained investments in meeting the highest standards in health, safety and environment (HSE) worldwide and the results have been significant. HSE is part of Metinvest's philosophy. The Group believes that its goal of becoming a leading European steelmaker requires it to meet the highest international standards in this area. To that end, Metinvest has invested substantially in new technology for its mines and mills that is cleaner and safer. Metinvest has also instituted a robust HSE system designed to improve oversight and drive results. In total, over the last 10 years, Metinvest spent around US\$4.2 billion on HSE, including US\$3.3 bil-

lion on environment protection and US\$0.9 billion on health and safety [18].

As part of its commitment to reinforcing a safety-first culture at facilities, the Group has introduced standards to cover every type of activity. Most operating facilities have been certified as complying with the OHSAS 18001 international occupational health and safety standard, among other similar ones. Metinvest has implemented 15 corporate health and safety standards. There is a Group-wide training system, which has helped to further the knowledge of over 96,000 people. The company has also set up a risk assessment system covering all business aspects. Each year, the company conduct over 130,000 safety audits at facilities to identify areas bearing the greatest risk to our people.

Metinvest has prioritized safety issues since day one, seeking to implement standards based on global best practices throughout. This approach has delivered commendable results. From 2012 to 2016 alone, the lost-time injury frequency rate decreased from 1.164 to 0.829, while the fatality frequency rate fell from 0.097 to 0.054. One of the Group's most successful occupational health programs has focused on cardiac health, which is among the greatest risks facing many employees in terms of both safety and personal health.

New technology has also been crucial in reducing pollution and associated risks, as have targeted environmental investments. By replacing outdated technologies, decommissioning obsolete equipment and upgrading production machinery and processes, Metinvest has slashed emissions. The company is committed to meeting international environmental standards and working with its local communities to create a better quality of life. Table 1 presents the activities of the Metinvest Group aimed at reducing pollution in the environment.

Table 1

**Work group Metinvest, aimed at reducing the emission of harmful substances into the environment [18]**

Period	Activities
2011-2014 Closure of open hearths at Mariupol steelmakers	Open-hearth furnaces are less efficient and dirtier than newer crude steel production methods, such as converter technology. As part of a long-term modernization strategy, Metinvest decommissioned its last open-hearth furnaces at Azovstal in 2011 and Ilyich Steel in 2014. This has significantly reduced gross emissions and improved steel production efficiency
2012 Closure of Azovstal's sinter plant	In response to the environmental situation in Mariupol, the Group took the step of closing a sinter plant and three obsolete coke batteries at Azovstal in 2012. These costly measures helped to reduce pollution in surrounding communities substantially. Sinter production was transferred to Ilyich Steel.
From 2012 Reconstruction of Ilyich Steel's sinter plant	Metinvest is reconstructing the sinter plant at Ilyich Steel, due for completion around 2020, in one of the largest environmental projects in the history of independent Ukraine. When complete, the plant will achieve international standards in terms of dust and sulphur oxide discharges.
2014-2016 Worker safety and communities in Ukraine	In 2014, Metinvest adopted a five-year HSE plan for its plants and communities. The conflict in Eastern Ukraine has required prompt action to safeguard employees and their families, and we have responded accordingly. The group has worked with its largest shareholder to help those affected, providing humanitarian aid and other support.

Developing its logistics system, the company must be guided by three key principles – clear management, transparency of operations and long-term support.

Cooperating with suppliers, the company encourages them to implement their own standards of responsible activities and simultaneously adhere to the requirements of the company itself. By developing a responsible supply chain management system (SCMS), logisticians and purchasers should evaluate not only the short-term financial benefits that they themselves can obtain, but also build such relationships with suppliers that will help create long-term value for the entire chain. And this requires integrating the principles of sustainable development into procurement practices.

By creating a supply chain management system, each company must make a lot of effort to structure its

work and get the result that will bring it the most benefit. The general plan for implementing the program consists of several stages. Each of them must be adapted to the specifics of the work of the company itself and its suppliers.

Stages of the development and implementation of the program of QMSS:

I. To support the decision to implement the program;

II. Carry out an analysis of the supply chain of the company and determine a plan for the implementation of the SCMS program;

III. Implement the program of the SCMS;

IV. Evaluate the progress of suppliers;

V. Report on the results of the implementation of the program of SCMS (Table 2).

Table 2

Stages of the development and implementation of the program of SCMS

Stages of the development	Implementation of the program of SCMS
1. Supporting	- to make a decision on conducting socially responsible work with suppliers; - to define business goals, expectations and benefits from the introduction of a CRMS
2. Analyze	Analyze: - assess the risks of the supply chain; - analyze the necessary efforts to improve the activities of the logistics chain or prevent the occurrence of risks; Identify: - determine the degree of implementation of the responsible supply chain management program; - to approve an action plan to introduce
3. Implantation	- Ensure coordination of efforts between company departments; - clearly implement the programs according to the plan in close cooperation with suppliers - ensure data transmission and information on the need for correction in the middle
4. Estimation	Track the progress of implementation of responsible principles of activity on the part of suppliers
5. Report	Implement external reporting

The stage of support for the implementation of the program. This stage includes:

- decision-making on conducting socially responsible work with suppliers;
- Definition of the business purpose and advantages from the introduction of the CRM.

To successfully carry out socially responsible work with suppliers, such a decision should be initiated and supported by the top management and owners of the company, and the SCMS and senior managers of all units that directly work with supply chains should be able to express their views, suggestions and recommendations.

For the development of the program CRMS company:

1. Analyzes the approaches of competitors and approaches in developed markets.
2. Defines business goals, expectations and benefits from the implementation of the program.
3. Forms the vision of the program of the SCMS.
4. Associates with the company's strategy.

5. Defines the business model of working with suppliers.

In order to clearly develop its own SCMS system, company managers should analyze how such a program is implemented by its competitors, namely:

- business model of sustainable development of supply chains;
- Understanding of risks related to human rights, labor, environment and cooperation with authorities,
- internal structure of supply chain management;
- codes of ethics and issues that are addressed in these codes;
- the processes of introducing codes of ethics into the real activity of a competing company;
- approaches and programs of cooperation with suppliers;
- indicators for assessing the success of the program;
- reporting practices.

Determination of business goals, expectations and benefits from the implementation of the program.



A clear vision and goals of the company's sustainable development program will help the company determine its strategy and obligations to its suppliers.

Since the new criteria of work concern both parties – the company and its suppliers, respectively, each of them sets its expectations and its goals of work. Having a vision of sustainable development of the company's supply chains, wording of the business impact objectives should not be difficult. These goals can include meeting the expectations of customers and other groups of influence, reducing costs and entering new markets. It is important to establish social and environmental goals, to which the program of sustainable development of supply chains directs efforts.

Some of the company's influence groups tend to understand the processes by which the company fulfills its obligations to implement the responsible supply chain program, while others are more concerned about the benefits, in particular suppliers are trying to understand the benefits that they can get for their business as a result of customer requirements.

In some cases, companies can expect the supplier to introduce their own sustainable development management system, determine the impact on the environment (greenhouse gas emissions, use of agricultural land, etc.), workers (work-related injuries, wages, working conditions, training); society (contribution to the development of infrastructure, the number of jobs created).

In order for the set goals to be realistic, and therefore, perceived in the company, their wording should occur with the participation of all units of the company, especially the purchasing department. Thus, the objec-

tives of the activities of suppliers should take into account the expectations of the company and include such specific areas as human rights, labor, environment, ethics, the development of supplier management systems.

The goals that the company sets itself can differ significantly and be:

- strategic – support of the company's long-term value;
- operational – reducing total costs due to reduced energy and material costs;
- reputational – the desire to change the opinion of interested parties about the company;
- The objectives related to the regulatory field – ensuring compliance and the company's activities with all laws and regulations;
- Preventive – the desire to avoid undesirable scenarios of events unfavorable for the company.

Expectations from groups of influence, and therefore, the criteria for selecting suppliers, the standards of their work, the quality of their work, the conditions for carrying out activities, the effectiveness, effectiveness and benefits that such cooperation will bring for the buyer company, on the one hand, and the obligations and principles of the company- the buyer, on the other hand, must be formalized by the company and available to potential and existing suppliers.

The minimum expectations that suppliers must comply with are compliance with national legislation and the implementation of all possible measures to prevent environmental and social harm. Table 3 below lists the expectations of the two sides of the supply chain: the supplier and the customer.

Table 3

**List of expectations of the two sides of the supply chain: supplier and customer**

Expectations of the supplier from the implementation of the responsible principles of the customer	Expectations of the company-customer from the establishment of requirements for the responsible activities of suppliers
Continuation of contracts with the client company	Suppliers conduct their business in a way that does not inflict a negative impact on the reputation of the company-customer
Obtaining assistance from the customer company when developing and implementing principles of responsible activity and non-interference in the part of the company that does not belong to the sphere of influence of the customer	Development of open relations with the supplier
Getting commercial benefits	Getting commercial benefits in the form of reducing the cost of raw materials and materials, etc.
Decrease in staff turnover, training for employees, and, consequently, increasing the ability to retain skilled workers	Timeliness and quality of supplies
Establishing common requirements and rules for the market	The functioning of the supply chain management system in accordance with recognized international standards
Conclusion of a partnership that will help all those involved in conducting responsible activities	Getting a quick and competent response to supplier requests

After determining the reasons for implementing the program, the company must evaluate its logistics chain "from the outside" – how suppliers cooperate with its competitors, expectations of influence groups to competitors and the possibility for suppliers to create partnerships with other organizations.

The process of the formation of CRMS includes the answers to the following questions:

- What does the company expect to achieve with the help of the supply chain management program?
- How to integrate a new supply chain management program into the company's business strategy?

What motivates the company to invest in appropriate supply chain management:

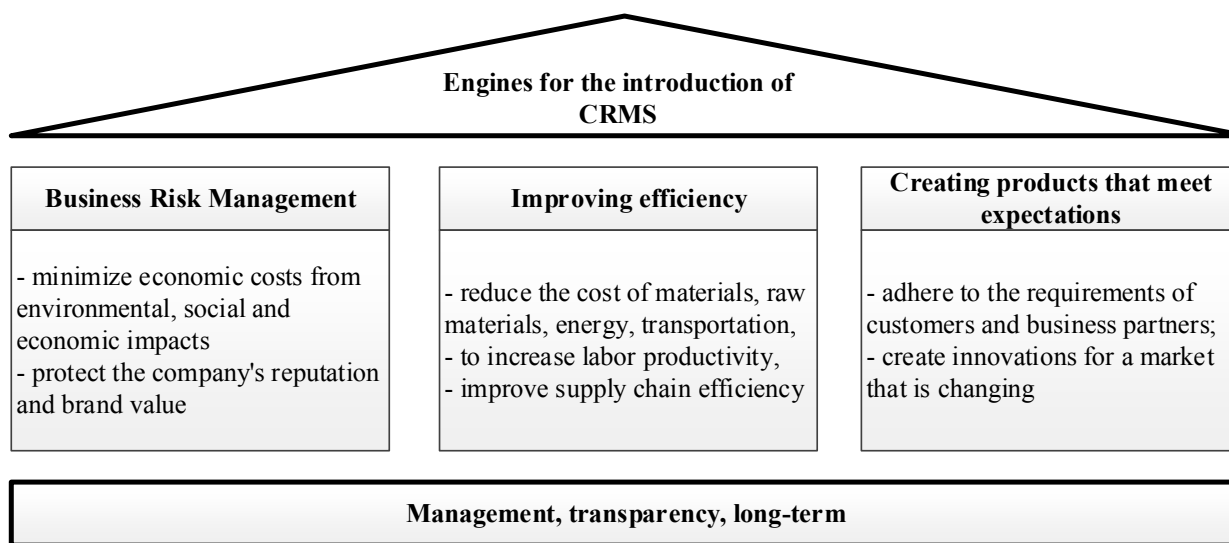
- requirements and requests of customers?
- requests of public organizations and activists on the practice of the supply chain, which affect the brand and reputation of the company?
- the desire of investors to understand how the company manages the risks of supply chains?
- discrepancy to regulatory standards and standards that prevent the company from operating?
- the growth of the company's costs as a result of increased demand and a decrease in the supply of natural resources?

Pressure from competing companies that also define programs for responsible management of influence groups?

- business interest in researching macro issues in the environment and society to ensure long-term sustainable performance?

Understanding the long-term perspective, the company describes the expectations of the supply chain, which will help it achieve its strategic goal.

To determine the business model of working with suppliers, the company is guided by the following main engines for the implementation of the CRMS (Fig. 1).



**Fig. 1. The main engines for the introduction of CRMS**

It is the business model that determines how the company cooperates with customers, suppliers and other groups of influence that creates value for them and who are ready to invest in improving their work to satisfy the client. Having formed a business model of an IMS, the company will be able to increase the efficiency of the use of resources and materials, and also produce products that meet the requirements of customers. Also, one of the main advantages of developing a business model for the company will be the opportunity:

- Implement responsible practices of labor protection and safety, which, in turn, affect the cost-effectiveness and productivity of work;
- Get a clear understanding of the basic processes of supply chains, incl. management of natural resources, logistics and production, which allows the company to better manage resources;
- Effectively organize processes and systems, which will reduce the need for resources and, accordingly, reduce the company's expenses.

The business model of each individual company depends on a number of factors: from the industry, the expectations of influence groups, the company's business strategy and its organizational culture.

Consider the second stage of the development and implementation of the program of CRMS – to analyze and determine.

This stage includes:

- risk assessment of the supply chain;
- analysis of the necessary efforts to improve the operation of the logistics chain or to prevent the occurrence of risks;
- determination of the degree of implementation of the responsible supply chain management program;
- approval of the action plan.

The next step after determining the objectives of the CRMS is the step of analyzing the vendor base. This task is connected with two difficulties: a possible large number of suppliers and various factors of the social responsibility of business, which need to be analyzed. Therefore, at the beginning of their work, many companies decide to focus on the largest or most critical of the impact groups, and these are usually those from which the company directly receives resources, or which accounts for the majority of its expenditure, or whose output is critical for production. Also, in the supply chain, so-called "hot spots" may occur, requiring immediate attention due to a high level of risk (as a result of scandals

or information about significant problems in the supply chain).

To understand the scale of managing sustainable supply chain development, a company must first understand well what the chain is for it. The main activity of

organizations and people involved at all stages of the production of goods - from raw materials to delivery to the market will help the supply chain map, the general scheme of which is depicted in Fig. 2.



**Fig. 2. Supply Chain Map**

Logical circuit card:

- Definition of the main categories of goods and services that the company receives or provides;
- outline for each category of product or service flow of materials and information;
- collection of all possible information at every stage of the supply chain about observance of human rights, labor protection, ecology and corruption.

After that, the dangerous zones in the supply chain are identified, namely:

1. Identification of risky events that may interfere with the achievement of the set goals.
2. Assessment of the likelihood of occurrence of risky events and the severity of the consequences that may arise in this case.

Choosing a supplier, in addition to determining the price of its products, companies often evaluate a range of other issues, for example, quality and safety, continuity of delivery and speed of delivery, compliance with intellectual property rights.

When raw materials and inputs for production come from low-income countries, an analysis of the costs and benefits of such a supplier should, from the outset, take into account issues of working conditions and respect for the environment. At the same time, the company must remember the context of the activities of this supplier - which in his country has social and environmental legislation, what level of control authorities have in terms of production conditions, etc. It is possible that for such a supplier it will be very difficult to implement the company's requirements and to facilitate its integration of these changes, one of the main tasks for the company should be not only to promote its requirements to the supplier, but also to help and encourage the creation of its own responsible practices.

The essential advantages that the supplier himself receives are primarily related to the commercial benefits that are achieved by improving the quality of products, increasing the efficiency of activities, extending contracts with customers and a measurable reduction in employee turnover.

The purpose of this stage of the company's activities on the way to the introduction of the CRMS program is to identify priority suppliers, given that over time, companies are becoming more experienced and able to manage chains more efficiently, which means that the program limits will be extended. For the segmentation of the supply chain, it is useful to consider risks and areas:

1) risks:

- for society: where in the supply chain are the greatest risks from the point of view of human rights, labor, environment and ethics?

- for business: are the risks in the supply chain of the company likely to affect the company's ability to conduct its business?

2) spheres:

- Costs: which suppliers form the largest expenditure items (direct and indirect) of the company, and therefore potentially have the greatest impact?

- Country: in which countries do the suppliers, products and processes that are most critical to the company operate?

- communication: with which suppliers does the company work directly, and which are subcontractors?

- type of transactions: what is the impact of the supplier's participation in the supply chain - is the supplier's activity transparent, or vice versa, reducing openness?

Consider the third stage - implementation.

Implementation assumes:

- ensuring coordination of efforts between company departments;

- a clear implementation of the program for the plan in close engagement of suppliers;

- ensuring the transfer of data and information about the need for correction within the company.

Successful introduction of programs for responsible supply chain management involves the involvement of employees of the company in the activity of 3 levels:

1) Senior management;

2) Purchasing managers;

3) Heads of the company's divisions, which will deal with the work with suppliers.

Elements of the internal system of responsibility for sustainable development of the supply chain: senior management – long-term perspective, supervision and support, procurement managers – implementation, managers – coordination between units.

The top management of the company sets the direction of the responsible supply chain management program and determines the key principles of its operation. The manager should clearly speak out the company's vision (vision), management approaches, key indicators and milestones. For effective work with suppliers, the key stage is the coordination of cooperation within the company – between its divisions, which in the future will directly cooperate with suppliers.

The greatest responsibility for this is assigned to purchasing managers who must voice the company's expectations from suppliers, to say new terms of cooperation and to integrate the program of sustainable development of the supply chain into decisions that will be taken to select new suppliers. At the same time, it is necessary to convince existing suppliers to work in accordance with the requirements defined by the company.

The management of the company should clearly see the process of introducing the program of the QMSS not as a one-sided process, where the company only establishes its requirements to the supplier, but as a bilateral one, whose goal is to form a common understanding on the sustainable development, vision, strategy and activities of the company, and to establish closer cooperation over joint projects.

To help understand and accept the customer's requirements to suppliers, it is often easier to work in partnership with colleagues (sometimes in partnership with competitors), creating and developing joint initiatives. Realizing that the requirements of responsible business are put forward not only to one particular supplier, but to all participants of the market as a whole, it is easier for suppliers to work out a common policy of implementing the principles of social responsibility and draw up a plan of action for necessary changes within organizations.

In addition, joint efforts allow fewer companies with less resources to participate and contribute to the continued sustainable development of the supply chain. The main risks and opportunities for sectoral cooperation are given in the table 4.

Table 4

**Opportunities and risks of sectoral cooperation for the company-customer**

Capabilities	Risks
Advantages when working with suppliers: When customers create partnerships, the requirements will be discussed and heard, and hence the "voice" of the company becomes stronger.	Internal understanding Participation in partnerships can be a big challenge for some companies, especially if potential partners are competitors in the market and are at different stages of implementation and understanding of responsible supply chains.
Demonstration of awareness when working with groups of influence. Participating in industry associations, the company can show that it understands the challenges that form before the supply chain and is ready to discuss and solve them. Work in associations will help resolve conflicting issues with groups of suppliers, which are not always convenient to negotiate when meeting with the supplier.	Loss of resources Sectoral cooperation requires considerable resources, which can not always bring the expected results.
Exchange of resources It is known that suppliers often have to introduce significant changes in their work to fulfill the requirements, and this requires considerable resources - financial, temporary, human. This issue is especially acute for small producers. Participation in partnerships allows customers to allocate resources to help suppliers more easily adapt to new requirements.	Unwillingness to change policy It is likely that the changes already agreed upon by several companies that are involved in the partnership will not be accepted by the new participants.

Usually, there are 2 types of cooperation of the company with customers:

- 1) Sharing best practice practices
- 2) Development and implementation of common standards

To work with supply chains, companies can also attract other influence groups. Many of them are sufficiently knowledgeable in the issues of sustainable development and can become useful partners not only in sharing experience and advice, but also in jointly solving the challenges of supply chains. They can help suppliers understand the context of the requirements that the

company puts forward, help find answers to "painful" questions and, finally, work as local partners in implementing the principles of responsible activity.

Let's consider the fourth stage of the implementation of the TSMS - evaluation. At this stage, progress is being tracked in the implementation of responsible principles of activity on the part of suppliers.

When the principles of cooperation between the supplier and the customer are proclaimed, negotiated and signed contracts with the new conditions, suppliers understand that the control over their activities has significantly increased, and the prospects for long-term co-

operation with the customer in the majority depend on the ability and desire to fulfill the new obligations undertaken.

For its part, the company – customer seeks to track the work that it pays and which, possibly, is a significant part of its costs, and assess the compliance of agreements with its business partners, and, consequently, the prospects for further cooperation.

In order to measure the performance of suppliers on the way to achieving the goals set by the company, the latter will have to collect and analyze a large number of indicators from time to time. To do this, the company should begin by analyzing all existing indicators and data. The next step will be the standardization of indicators so as to obtain unified data from different parts of the company, for example, by the volume of use of water resources by different enterprises belonging to the group of companies, and so on.

The collection of information can be a real challenge for the company, given the number of suppliers, the variety of countries in which they operate, and the number of sources from which this information will flow. It should also be realistic to look at the openness of suppliers to providing their performance indicators to other companies, even if they are their customers. Not understanding what specific information will be used without being confident of its confidentiality, due to various circumstances, there may be a lack of confidence in any external influence groups that will not contribute to the customer company's goal of realizing the supply chain.

There are a large number of external platforms for data exchange between companies that will help collect, group and further manage the information received. Also, with sufficient resources, a company can develop its own internal information platform. The monitoring system carried out by the contracting company (the buyer company) enables it to obtain information on compliance with the requirements specified in the contracts and codes and to justify its expectations. The monitoring process in each case will depend on each individual supplier.

Often companies prefer to order an appropriate audit of the supplier's activities in an external company - or created specifically for conducting social audits or audit companies that provide a full range of services - both financial and social audit. In this case, it is the external organization that will be responsible for the quality and reliability of the information collected and analyzed and, in accordance with this, the provided conclusions.

The effectiveness of audits in supply chains depends on many subjective and objective factors, among which it is common to identify the main (by the example of production):

1. Preparation for the inspection and familiarization with the activities of the enterprise by employees before the beginning of the visit.

2. Independence from the management of the company – the supplier, which will help gain the trust of employees.

3. Conducting a random sample of employees to conduct interviews at all stages of the evaluation.

4. Conduct informal conversations with employees during and on the spot, where they feel comfortable and safe.

5. Collect information that will enable us to understand the conditions of production.

6. Documenting information and assessing the trust of the supplier's employees to the auditor.

7. Verification of information provided by employees in other sources.

8. Observance of confidentiality and safety of employees.

After some period of cooperation (usually from half a year to a year), the company must decide whether its supply chain is sufficient to meet production requirements, quality management and social responsibility criteria established by it. Accordingly, the following steps should be:

1. Providing incentives to those suppliers that adhere to the arrangements.

2. Termination of contracts with those suppliers who have not fulfilled their agreements.

In order to avoid possible misunderstandings between the company - the customer and the supplier company - it is recommended that the contract between the parties contain information about the control actions that the customer will perform. In the event that as a result of one of the inspections revealed violations and decided to terminate the contract, the contract can become a legal confirmation of the legitimacy of the customer's act.

There are three standards: ISO14001, SA8000, OHSAS18001. The ISO14001 standard defines the requirements for the company's environmental risk management system and aims to facilitate organizations to develop and implement environmental policies and goals consistent with government regulations. The standard refers to those environmental aspects that the organization defines as those that can be controlled and influenced, but does not establish any special environmental criteria. The standard certifies the type of management, rather than the company's products.

The international voluntary social standard SA8000, which allows companies to measure the effectiveness of their activities and carry out responsible supply chain management.

The standard, based on the conventions of the International Labor Organization, the Declaration of Human Rights and the UN Convention on the Rights of the Child. The standard assesses the following elements: child labor, forced labor, labor protection, freedom of association and the right to collective agreements, discrimination, discipline, hours of work, remuneration, management systems.

OHSAS18001 is a voluntary standard for assessing the OSH management system in the enterprise. The standard helps to reduce risks in the workplace, occupational diseases and accidents and establishes requirements for compliance with a safe work environment.

The International Reporting Initiative (GRI) also contains indicators related to supply chains, shown in Table 5.

Table 5

#### Responsible supply chain management and GRI

GRI indicator	Description
General information 3.6	Report boundaries (for example, countries, divisions, branches, leased equipment, joint ventures, suppliers)
General Information 4.14	List of influence groups of the organization, for example, suppliers
EC6	Policies, practices and share of costs for local suppliers in key regions of operation
NP2	The percentage of significant suppliers and contractors that have been evaluated from a human rights perspective and the activities undertaken as a result of this assessment

Social audit is one of the ways to measure and report on the effectiveness of the company in social and ethical aspects. The purpose of such an audit is to accelerate social and environmental change, as well as to build the capacity to cope with the supply chain.

The last stage is the report. At this stage, after the whole process of data collection, the company should clearly understand how it will use the information received:

the data should be grouped and presented at the board meeting - this will help to carry out an internal evaluation of the performance of both the company's own divisions and the activities of suppliers;

the data should be used by the procurement department to identify suppliers, fulfill the requirements, and consequently, with which the customer will continue to cooperate, and with which such cooperation will end;

the data should be used to identify the "Weaknesses" in the company's policy to convey the motives for implementing the responsible chain management program.

**Conclusions.** Unlike corporate and business levels, there is little research examining corporate social responsibility at the functional level of the firm including supply chain strategy. The results of a firm-level investigation show that supply chain management aimed on sustainability and partnership with suppliers is enhancing corporate social responsibility internal awareness. Also it is reveal that monitoring of environmental practice of suppliers and the sustainability of whole supply chain are positively related to the corporate social responsibility performance. Furthermore, the impact of corporate social responsibility on firm performance is

mediated by the functional behavior of supply chain partnership formation. The study approved the conclusion that including supply chain sustainability management into corporate social responsibility strategy would support for awareness and image of a corporation. The scheme of social audit of supply chain in order to build confidence in its sustainability is presented in the paper.

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#### **Кітріш К. Ю. Роль стійкості ланцюгів постачання у стратегії корпоративної соціальної відповідальності**

У статті зроблена спроба узагальнити сучасні підходи до організації управління ланцюгами постачання в контексті забезпечення стійкості бізнесу, яка має на увазі забезпечення балансу між економічними, екологічними і соціальними компонентами функціонування бізнесу. Розглянуто роль і місце зусиль менеджменту щодо забезпечення стійкості ланцюгів постачання в реалізації стратегії корпоративної соціальної відповідальності. Введення сучасної системи управління ланцюгами постачання в ділову практику мають велике значення для промислових підприємств країн з ринковою економікою, зокрема для металургійних компаній України. Гострота цієї потреби для них значно зростає в сучасних умовах, коли вони змушені переорієнтуватися на нові ринки сировини і збуту продукції, забезпечують стійкість бізнесу і тим самим зміцнюють конкурентоспроможність підприємства і його імідж.

*Ключові слова:* ланцюги постачання, управління, стійкість, вплив на навколишнє середовище, ризик, стратегія, корпоративна соціальна відповідальність.

#### **Кітріш Е. Ю. Роль устойчивости цепей поставок в стратегии корпоративной социальной ответственности**

В статье сделана попытка обобщить современные подходы к организации управления цепями поставок в контексте обеспечения устойчивости бизнеса, которая подразумевает обеспечение баланса между экономическими, экологическими и социальными компонентами функционирования бизнеса. Рассмотрена роль и место усилий менеджмента по обеспечению устойчивости цепей поставок в реализации стратегии корпоративной социальной ответственности. Введение современной системы управления цепями поставок в деловую практику имеют большое значение для промышленных предприятий стран с развивающейся рыночной экономикой, в частности для металлургических компаний Украины. Острота этой потребности для них значительно возрастает в современных условиях, когда они вынуждены переориентироваться на новые рынки сырья и сбыта продукции, обеспечивают устойчивость бизнеса и тем самым укрепляют конкурентоспособность предприятия и его имидж.

*Ключевые слова:* цепи поставок, управление, устойчивость, воздействие на окружающую среду, риск, стратегия, корпоративная социальная ответственность.

#### **Kitrish E. The role of supply chain sustainability in a corporate social responsibility strategy**

The paper attempts to generalize modern approaches to the organization of supply chain management in the context of ensuring business sustainability, which implies a balance between economic, environmental and social components of business functioning. The role and place of management efforts to ensure the sustainability of supply chains in the implementation of the strategy of corporate social responsibility is considered. The introduction of a modern supply chain management system into business practice is of great importance for industrial enterprises of countries with developing market economies, in particular for Ukrainian metallurgical companies. The sharpness of this need for them increases significantly in modern conditions, when they are forced to reorient to new markets for raw materials and marketing products, ensure the sustainability of business and thereby strengthen the enterprise's competitiveness and image.

*Keywords:* supply chain, management, sustainability, environmental impact, risk, strategy, corporate social responsibility.

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