

CONTENTS

- 1 Zhuk L.**
Basic Principles of Scientific Research
in Higher Education Institutions: Management
and Financing
- 15 Zagorodniy A., Olikhovskiy V.**
Concept of Tax Planning at the Enterprise
- 25 Stets O., Krykavskyy Ye.**
Effectiveness of Innovative Value-Oriented
Marketing Solutions on Dairy Market
- 33 Kosar N., Kuzo N.**
Increasing the Level of Customers Service
at Service Centres as a Factor of Mobile
Operators Competitive Position Strengthening
- 41 Kuzmin O., Stanasyuk N., Olikhovska M.**
Application of Cluster Approach
to the Development of Industrial Potential:
Innovative Policy and Management Support
- 49 Voytsekhovska V., Symak A.**
The Impact of Immigration Processes on Country's
Development, Case Study of the United Kingdom
- 55 Lytvynenko N.**
Basic Objects of Control Organization
- 61 Kuzmin O., Prokopenko I.**
Model of Economic Evaluation of Intellectual Capital
of Machine-Building Enterprises and Potential of their Development
- 73 Nakonechna T., Hryniv N.**
Strategic Segmentation of Customers
in the Market of Primary Real Estate
- 83 Yaremko I., Karkovska V.**
Assessment of Governmental Bodies Officials
Activity Results Based on Factor Model Development
- 91 Kuzmin O., Tsisar N., Yastrubskyy M.**
University Policy as an Object
of Harmonious Development and State Regulation

BASIC PRINCIPLES OF SCIENTIFIC RESEARCH IN HIGHER EDUCATION INSTITUTIONS: MANAGEMENT AND FINANCING

Abstract. The article analyzes basic principles and specifics of managing and financing research activities in higher education institutions. The state of scientific research and the sources of its financing are analyzed, problems and prospects of scientific activities are explored. The necessity of introduction and implementation of state target scientific and technical programmes, as well as procedures of state certification of scientific activities of higher education institutions is justified. Recommendations for improving management and financing of scientific research are formulated.

Keywords: higher education institutions, management of scientific activities, financing of scientific research.

Formulation of the problem. Ukrainian scientific research and scientific technological potential is concentrated in academies, industries and universities. During 2016, scientific and scientific-technical research works were conducted by 972 organizations, 46.6 % of which were from public sector¹ (including institutions of the National Academy of Sciences of Ukraine, National Academies of Agrarian, Medical, Pedagogical and Legal Sciences as well as National Academy of Arts); 37.7 % belonged to business sector² (in particular, research institutes, research and production associations subordinated to profile ministries and solving problems of particular industries); and 15.7 % were from higher education

sector³ (higher education institutions incorporating scientific research units in their structure (research institutes, scientific research centers, research laboratories, fundamental research laboratories, applied research laboratories as components of scientific research departments, sectors etc.) (Fig. 1) [1]. The largest financial support is provided to the public-sector organizations, it being about 75 % of budget financing for science (the National Academy of Sciences receiving 75 %). The higher education sector receives 13 %, and the business sector gets 12 % of budget financing for science.

Reduction of the total number of organizations involved in scientific research in Ukraine (by 35 % during the last 10 years) occurs mainly in the business sector, thus reflecting the actual state of the present-day economy of Ukraine, the number of organizations and institutions in the higher education sector remaining practically unchanged during this period.

Higher education institutions (HEIs) provide powerful intellectual resource for conducting scientific research and they are important in the system of organizations carrying on scientific and technological research. By integrating education and science, higher schools provide solutions to complex tasks in scientific and technological sectors of the national economy as well as in the economy as a whole, and train scientific and pedagogical professionals for all branches of the economy. It is at higher education institutions that the traditions formed by scientific schools during generations have been preserved and developed.

¹ Public sector – non-profit economic entities (budget-funded scientific organizations, institutions subordinated to government authorities, as well as organizations providing services to them).

² Business sector – businesses, i.e. organizations and enterprises engaged in activities related to manufacturing products (works and services) for sale, regardless of their type (research institutes, design organizations, R&D organizations, industrial enterprises, research bases and organizations that directly serve them).

³ Higher education sector – higher education institutions irrespective of subordination, sources of funding or legal status, as well as research institutes (centers), design organizations, R&D organizations, research enterprises subordinated to higher education institutions, as well as organizations that directly serve them).

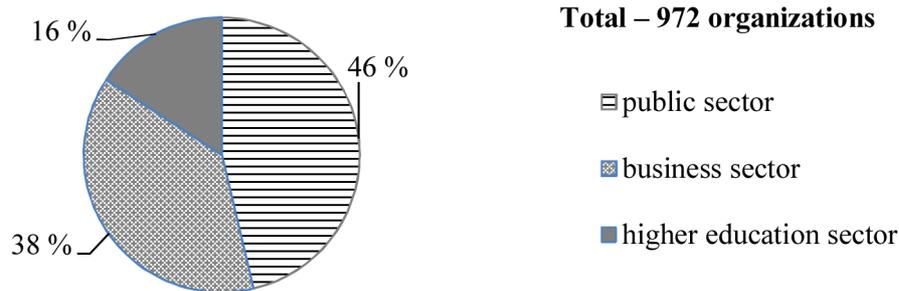


Fig. 1. Organizations engaged in scientific and scientific-technical activities in Ukraine in 2016 by sectors (according to the local industry classification system).

At the beginning of 2016/17 academic year there were 657 HEIs in Ukraine, 287 of them (41.6 %) being universities, academies and institutes doing fundamental and applied research [2].

Personnel potential of HEIs is crucial for scientific research in Ukraine: the overwhelming majority of the total number of doctors and candidates of sciences (70.9 % and 72.9 %, respectively) work in the system of higher education.

According to the data of the State Statistics Committee, at the beginning of 2016/17 academic year, 110.1 thousand research and teaching personnel, 97.1 thousand of them being full-time employees, were working at 287 universities, academies, and institutes [2], combining teaching with scientific and scientific-technical activities. There are 6,700 full-time researchers more in R & D units and sectors of HEIs.

At the same time, in all other research institutions and organizations (from both public and business sectors) only 74.7 thousand staff researchers are directly engaged in research work [3].

Thus HEIs possess powerful scientific potential to drive effective development of all sectors of the national economy. However, the rational use of this potential is possible only if its management is based on systems approach, integrity, efficiency and flexibility.

Analysis of recent research and publications.

Scientific research, as well as a complex of issues and problems associated with its implementation, has always been the focus of attention of politicians, government officials and scientists. Management, functioning and development of scientific research activities are dealt with in the works of M. V. Strikh, S. M. Nikovayenko,

A. A. Mazaraka, O. Ye. Kuzmin, Yu. V. Kovbasiuk, K. O. Vashchenko, Yu. P. Surmin, M. M. Bilynska, M. M. Izha, V. I. Luhovyi, V. S. Zahorskyi, D. V. Cheberkus, V. A. Landsman, A. A. Popok, S. M. Seriohin, I. V. Valentiuk and others. However, the issues related to science competitiveness, the demand for science by industry and society are relevant and require further research and consideration.

The purpose of the research is to analyze the basic principles and specifics of managing and financing scientific research at HEIs for further working out recommendations on its improvement. The object of this research is higher education institutions of Ukraine that perform fundamental and applied research, they being universities, academies and institutes.

Materials and results. The effectiveness of scientific research in HEIs is determined by a number of factors, in particular, by the system of management at all administrative levels, as well as financing.

The system of management. Ukraine has a state system of management of scientific research activities. The Verkhovna Rada of Ukraine defines the main goals, directions and principles of the state policy in the field of scientific and scientific-technical activities as well as international scientific and technical cooperation, approves the priority directions of science and technology development [4, 5].

The powers of the President of Ukraine are to specify the system of executive bodies that realize public management in the field of scientific and scientific-technical activities in Ukraine; to ensure control over the formation and functioning of the public administration system in the field of scientific and scientific-technical activities [4].

The Cabinet of Ministers of Ukraine is responsible for development and state support of the scientific, technical and innovation potential of the country, development and implementation of national scientific and technical programmes, coordination of measures for the development and improvement of infrastructure for scientific and technological activities [4, 6].

In order to ensure effective interaction of representatives of the scientific community, executive authorities and the real sector of the economy in the formation and implementation of a unified state policy in the field of scientific and scientific-technical activities, the Cabinet of Ministers of Ukraine forms the National Council of Ukraine for Science and Technology Development, it being a permanent advisory body [7]. According to the recommendations made by the commission of independent experts and leading specialists of the profile ministries of the EU countries in the framework of the international audit of Ukrainian research and innovation system and formulated in the Background Report “Peer Review of the Ukrainian Research and Innovation System” [8], The National Science and Technology Council should take strategic measures for reforming and reorienting the system of science and technologies in Ukraine on the basis of the priorities agreed on by all stakeholders, including the Ministry of Education and Science of Ukraine, the future

National Fund for Research, the National Academy of Sciences, and, in particular, it should introduce a comprehensive process of identifying primary national research areas in the general list of national social and economic priorities.

The Ministry of Education and Science of Ukraine is the main body in the system of central executive authorities responsible for formation and implementation of state policies in the areas of scientific, scientific-technical and innovative activities. One of the tasks of the Ministry of Education and Science of Ukraine is to develop principles of scientific and scientific-technical development, to form state target scientific and scientific-technical programmes, to manage the system of scientific and scientific-technical expertise and to ensure organization of activities in the field of scientific- technical information etc. [9]. Other central executive authorities are to ensure implementation of scientific- technical policies in their profile areas and development of scientific-technological potential of specific industries.

Among the 287 HEIs (universities, academies, institutes), whose employees carry on fundamental and applied research, 138 (48 %) institutions are subordinated to the Ministry of Education and Science of Ukraine. Other higher schools (52 %) belong to other ministries and government agencies (Fig. 2) [2].

Total – 287 higher education institutions

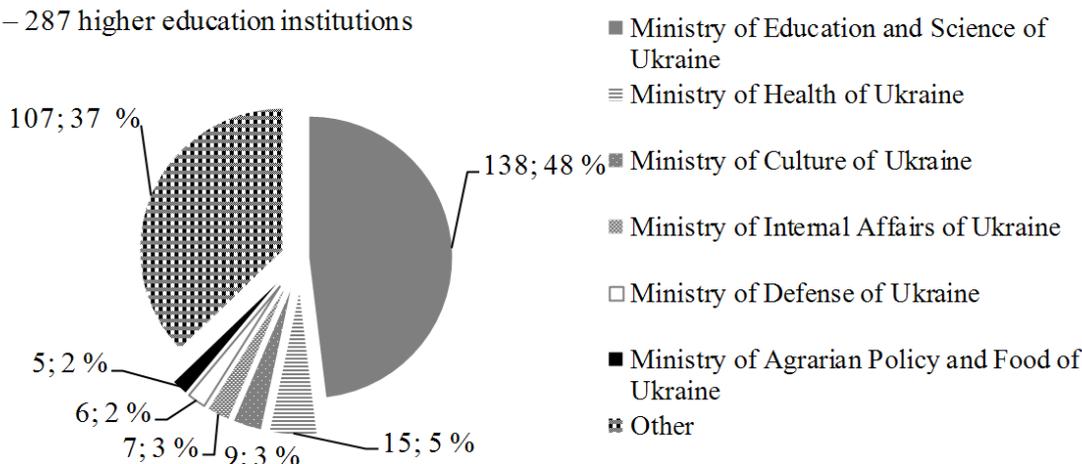


Fig. 2. Higher education institutions (universities, academies, institutes) according to their subordination (at the beginning of 2016/17 academic year)

During the last decades there have existed a number of problems in the sphere of public administration of scientific research. Firstly, the declared reforms of the Ukrainian economy and a number of programmes offered by the Ukrainian government, unfortunately, have no effect on the growth of demand for production and the needs of the economy for research and development. Secondly, there has not been yet put into effect long-term and medium-term forecasting and planning of social and economic development [10]. Thirdly, there is no clear regulation of scientific activities; there is a mutual mismatch between some legal and regulatory documents in the field of scientific activity. Fourthly, the attempts to solve issues of the scientific sphere without taking into account the current state of individual industries

and the economy as a whole still remain “a weak point”.

Financing of scientific activities of higher education institutions of Ukraine. In Ukraine there are higher educational institutions of state, communal and private property (Fig. 3) [2]. All these institutions have equal rights in conducting scientific activities.

Financing of scientific activities of Ukrainian HEIs is carried out in accordance with the Law of Ukraine “On Scientific and Scientific-Technical Activities” [4]. State-funded HEIs are financed by the state budget; municipal higher schools receive financing from the local budgets; private HEIs are financed at the expense of their founders [11]. Besides, all these HEIs can be financed by domestic and foreign institutions, organizations and enterprises, international grants and other sources (Fig. 4).

Total -287 higher education institutions

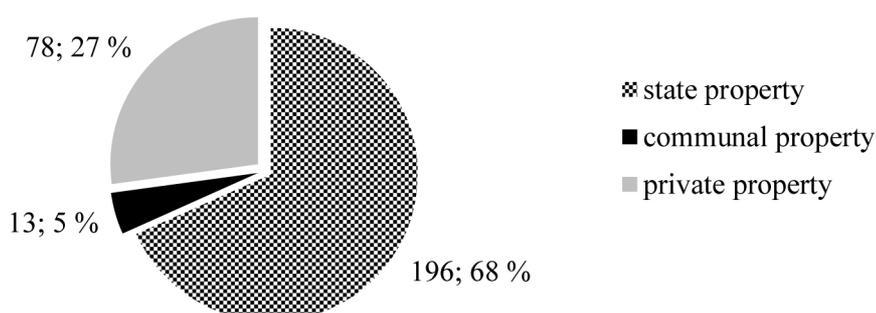


Fig.3. Higher education institutions of Ukraine (universities, academies and institutes) by the form of property (at the beginning of 2016/17 academic year)



Fig. 4. Sources of funding scientific activities in Ukraine

According to [4], the state is supposed to allocate at least 1.7 % of GDP of Ukraine to scientific and scientific-technical activities. However, the actual expenditures on scientific activities, despite the declared “gradual increase”, tend to continuously decrease (Fig. 5). In 2015 the funding of scientific and scientific-

technical activities in Ukraine from different sources amounted to UAH 12 236.16 million, including UAH 4 254.49 million (0.21 % of GDP) from the state budget [12]. In 2017 the planned funding of these activities from the state budget of Ukraine is UAH 6 337.2 million, or 0.24 % of GDP [13].

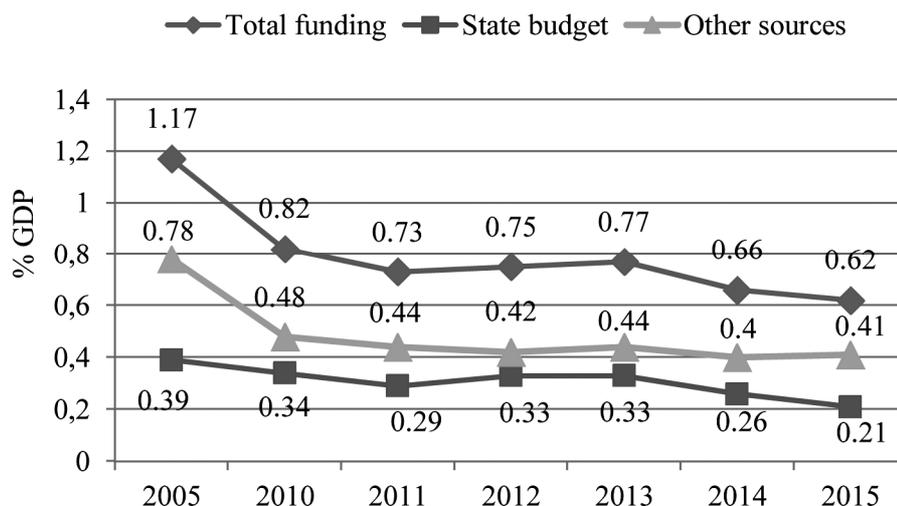


Fig. 5. Dynamics of expenditures on scientific activities by sources as a percentage of GDP (dynamics of R&D/GDP intensity)

According to [4], the state budget finances the following:

- fundamental and applied research, scientific-technological developments, research-related infrastructure, preservation and development of scientific objects of national heritage; access to scientific-technical information and literature etc. This refers to basic funding;
- scientific and scientific-technological programmes and projects, performed on government orders and within state target scientific and scientific-technological programmes; projects in the frames of international cooperation. This funding is provided on a competitive basis.

The new law “On Scientific and Scientific-Technical Activities” [4] states that the basic financing of HEIs is determined on the basis of state attestation of their scientific activities, taking into account its quality, availability of scientific, research and technical personnel, as well as material and technical support. Thus, following the Law “On Higher Education” [14], a research university has the right to receive the basic funding for conducting scientific research activities in the amount of not less than 25 % of the funds provided by the state for this university maintenance, in accordance with a separate budget programme in the State Budget of Ukraine. But at present there is no state attestation of the research

activities at HEIs. The documents that regulate the procedure of such attestation [15, 16] require improvement with the account of certain specifics of scientific research. In 2016 a new draft of Regulations on state attestation of HEIs was made public.

At present actually only one HEI in Ukraine, Kyiv Taras Shevchenko National University, receives basic financing of its scientific research activities by a separate programme of state budget (the code of the program classification of expenses (PCE) of the budget being 2201290 titled Research, scientific and technical developments, scientific events conducted by Kyiv Taras Shevchenko National University, financial support of scientific objects of national heritage). The amount approved by the passport (descriptor) of the budget programme for 2017 is UAH 98571.5 thousand [17]). Other HEIs do not receive such budget financing, thus jeopardizing the development of scientific schools, scientific infrastructure of HEIs, and the educational function of science. Financing of scientific research at these HEIs is provided exclusively on the competitive basis (according to PCE code 2201040 titled Research, scientific and technical developments, execution of works on state target programs and government orders, training of scientific personnel, financial support of scientific infrastructure, scientific press and

scientific objects of the national heritage, ensuring the activities of the State Fund for Fundamental Research, the approved amount for 2017 being UAH 621 476.6 thousand [17]).

The competitive approach to financing, on the one hand, ensures the selection of projects with the highest score, and, therefore, the most up-to-date and most promising scientific projects (since the competition procedure involves assessment of projects and the achievements of authors by a large number of criteria), however, on the other hand, creates a risk of terminating important scientific research after failing the competition (since the developed system of criteria is not always able to

objectively estimate the achievements of authors in certain industries).

In addition, the level of funding for projects based on the results of the competitive selection should reflect the relevance of research done at HEIs and correlate with the results of national ratings (since, as it is known, in the set of criteria provided by the methods of evaluation, the determinative contribution is made by the indicators related to scientific activity). However, among the 10 HEIs that received the largest budget financing in 2017 (Table 1), only 65 % are among the leaders in national ratings.

Table 1

Financing of fundamental research, applied research, scientific and technological (experimental) developments of some HEIs in 2017 (PCE 2201040)

No.	Spending unit	Amount, thousand UAH	Share of the total funding	Line in the national rating of Ukrainian HEIs (2016)		
				Consolidated rating of Ukrainian HEIs	Rating by Scopus score	TOP -200
1.	V.N.Karazin Kharkiv National University	48431.9	9.88 %	2	2	3
2.	National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"	26399.7	5.39 %	3	6	1
3.	National University of Life and Environmental Sciences of Ukraine	21608.9	4.41 %	11	27	10
4.	National Technical University "Kharkiv Polytechnic Institute"	21385.2	4.36 %	4	9	4
5.	Odessa Mechnikov National University	20703.4	4.22 %	7	4	17
6.	Lviv Polytechnic National University	18976.7	3.87 %	6	10	5
7.	National Aviation University	14835.3	3.03 %	14-15	29	19
8.	Lviv Ivan Franko National University	13544.4	2.76 %	5	3	9
9.	National Aerospace University – Kharkiv Aviation Institute	11973.1	2.44 %	12	20	14
10.	Oles Honchar Dnipro National University	10427.2	2.13 %	10	8	11

	Total	490173. 7				

This fact testifies to the need for the immediate introduction of the procedure of state certification of scientific activities of HEIs and the development of objective criteria for their evaluation.

Another component of the budget financing of HEIs is funding of scientific and scientific-technical programmes and projects that are carried out:

- on government orders (coded PCE 2201040);
- within the framework of state target scientific and scientific-technical programmes (coded PCE 2201040);
- within the scope of international cooperation (coded PCE 2201380).

According to [5], these programmes are the main instrument for implementing the priority directions of the development of science and technology in Ukraine. Programme-oriented management of scientific and technological development is used in advanced, high-tech economies of the world. However, in Ukraine, this component of budget financing is insignificant.

Thus, in 2016, the total amount of budget financing of research and development in Ukraine was UAH 3272.67 million. The share of budget financing on the development of most important innovative technologies on the government order was 0.89 % (UAH 29.22 million). Within the framework of state target scientific and scientific-technical programmes, the share was 5.78 % (UAH 189.05 million); in the sphere of international cooperation it was 0.09 % (UAH 2.93 million). Within these amounts, the expenditures on the implementation of priority directions of science and technology development constituted 0.99 % (UAH 29.22 million), 0.3 % (UAH 7.78 million) and 0, respectively [18].

By the decision of the Cabinet of Ministers of Ukraine [19], the implementation of state target programmes was pre-terminated, among them being three scientific-technical programmes. The last Resolution of the Cabinet of Ministers of Ukraine [20], which approved the list of state scientific and scientific-technical programmes on the priority areas of science and technology

development, was adopted yet in 2001. The Resolution approved the list of state scientific and scientific-technical programmes for 2002–2006.

In addition, the order [21] cancelled the order “On Approval of the Regulations on the Procedure for the Formation and Implementation of State, Industry (Multi-sectoral), Regional Scientific and Technical Programmes, Scientific and Technical Parts of Investment, Social and Other Programmes”. The Commission of Independent Experts [8] proposes to gradually increase the share of competitive research costs (within these programmes) in the total amount of public research expenditures to 20 % in 2018; 30 % in 2020 and 40 % in 2022.

Another important source of funding research at HEIs is funding received from domestic and foreign enterprises, institutions and organizations. As stated in the Memorandum on the Results of the Scientific and Technical Activities of Higher Education Institutions and Research Institutions for 2015, taking into account the provisions of the Law of Ukraine “On Higher Education” [22], the funding of HEIs in the system of the Ministry of Education and Science at the expense of this source constituted UAH 140.6 million. The share of financing of these universities in the total amount of research funding is 25 % [22].

Financing of scientific activities of HEIs at the expense of domestic and foreign enterprises, institutions and organizations is done on the basis of economic contracts. The leading universities of Ukraine are traditionally the leaders among universities in terms of attracting such financial resources. In 2016 the amounts of economic contracts on research work and scientific and technical services to domestic and foreign enterprises and institutions were the following: National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute” – about UAH 30 mln., Taras Shevchenko National University of Kyiv – UAH 12 900.7 thousand [23], Lviv Polytechnic National University – UAH 11 279 thousand, National Technical University “Kharkiv Polytechnic Institute” – UAH 6 602.7 thousand [24].

Despite the fact that the effective operation of industrial enterprises is impossible without the development and introduction of new products and new technologies into the market, there is a low interest of these enterprises in scientific and technical cooperation with HEIs. This is due to the low readiness status of scientific and technical products obtained in the result of performing fundamental and applied works. In addition, as of today, there is no developed mechanism for introducing university developments into production. Levying a value-added tax on

scientific and technical products greatly increases its value and, accordingly, reduces the interest of enterprises in cooperation with HEIs.

The interest of enterprises in financing and implementing Ukrainian innovation developments would increase due to exemption from taxation of the part of their income (regardless of the form of the enterprise property), which is directed to financing research at universities, as well as the introduction of mechanisms for insurance of innovative risks of enterprises when investing in the production of new goods and services.

Table 2

**Participation of Ukrainian HEIs in EU Framework Programme
for Research and Innovation HORIZON 2020 (as of July 7, 2017)**

No	Ukrainian HEI-participant (partner) of the project	Total amount of project financing / funding of Ukrainian HEIs, Euro	Project name, Deadline
1	2	3	4
1	Odessa State Ecological University	3 996 405/ 28 187.50	Preparatory phase for the pan-european research infrastructure danubius-RI the international centre for advanced studies on river-sea systems (2016-2019)
2	National Forestry University of Ukraine	4 734 594.50/ 10 233.75	Distributed, integrated and harmonised forest information for bioeconomy outlooks (2015-2019)
3	National Aerospace University "Kharkiv Aviation Institute"	1 996 662.50/ 115 000	Facilitating Collaboration in Research and Development to Foster Further Innovation in European Aeronautics (2016-2019)
		1 000 000/ 134 125	Strategic and Targeted Support for Europe-Ukraine Collaboration in Aviation Research (2016-2019)
4	National University of Kyiv "Mohyla Academy"	2 495 674/ 54 218	Good intentions, mixed results – A conflict sensitive unpacking of the EU comprehensive approach to conflict and crisis mechanisms (2016-2019)
5	National Aviation University, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"	1 034 227/ 112 500/ 78 750	Ukraine Replication, Awareness and Innovation based on EGNSS (2015-2016)
6	Taras Shevchenko National University of Kyiv	1 411 162.50/ 56 000	FREE and open source software tools for WATER resource management (2015-2017)
7	Kharkiv National Economic University named after Semen Kuznets	1 857 217.50/ 123 500	Gender Equality Plans for Information Sciences and Technology Research Institutions (2016-2019)

1	2	3	4
8	Lviv National Medical University named after Danylo Galytskyi	580 500/ 76 500	Pathogen and Graphene (2016–2019)
9	Uzhgorod National University	3 325 755/ 37 511	ACCELERATing Europe's Leading Research Infrastructures (2017–2020)
10	Odessa I.I.Mechnikov National University	1 665 000/ 63 000	Knowledge Exchange and Academic Cultures in the Humanities: Europe and the Black Sea Region, late 18th – 21st Centuries (2017–2020)
11	Science park “Kyiv Taras Shevchenko University”	891 000/ 288 000	Carbon-based nano-materials for theranostic application (2017–2019)
	Total	24 988 198/ 1 177 525.25	

Another important resource of financing scientific research at universities is international grants, in particular, grants within the EU Framework Programme “Horizon 2020”, grants from NATO within the Program “Science for Peace and Security” (SPS), other European programmes, and funds of international organizations. According to data from CORDIS [25], starting from 2015, 11 Ukrainian HEIs are taking part in 12 projects of the “Horizon 2020” programme, with a total budget of over 24 988.2 thousand euros. The volume of funding received by Ukrainian HEIs is 1 177. 53 thousand euros (4.71 % of the total budget) (Table 2). Within the NATO Science for Peace and Security (SPS) programme, Ukrainian HEIs and research institutions perform 39 long-term projects. Their total cost to Ukrainian participants is more than 10 million euros [26].

The expansion of the Ukrainian HEIs participation in international grants programmes depends on the level of their scientific research, which is determined, first of all, by the availability of materials, technologies and equipment, as well as access to international information resources. This problem could be solved, in particular, by resuming state programmes “Science in Universities” (which included, among other tasks, the updating of the material and technical base); and by scientific

training of postgraduate students, doctoral students, scientific and pedagogical workers in leading higher educational establishments and scientific institutions abroad [27] (this programme was aimed at conducting research using modern equipment and technologies, providing information exchange, and expanding international scientific contacts).

The budget financing received by HEIs for carrying out scientific research (the list of these research works and developments is included in the thematic plan of research works, which are executed on the order of the Ministry of Education and Science of Ukraine) is a component of the general fund of the state budget of HEIs, while the funds received for the implementation of scientific and scientific-technical programmes and projects (on government order, within the framework of state target scientific and technical programmes and international cooperation), funds of domestic and foreign institutions, organizations and enterprises, as well as grants, and other sources are components of the special fund. Fig. 6 presents the structure of HEI budget for scientific research.

The correlation between the special and general funds in a certain way indicates the effectiveness of using budget funds. Table 3 shows the amount of funding for scientific

research activities of the leading Ukrainian HEIs. The efficient use of budget funds (i.e., greater than unity) is observed mainly in technical HEIs of Ukraine. This is due to their performing applied

research and scientific and technical developments on the orders of foreign and domestic enterprises, which make major contributions to the special fund of the overall budget.

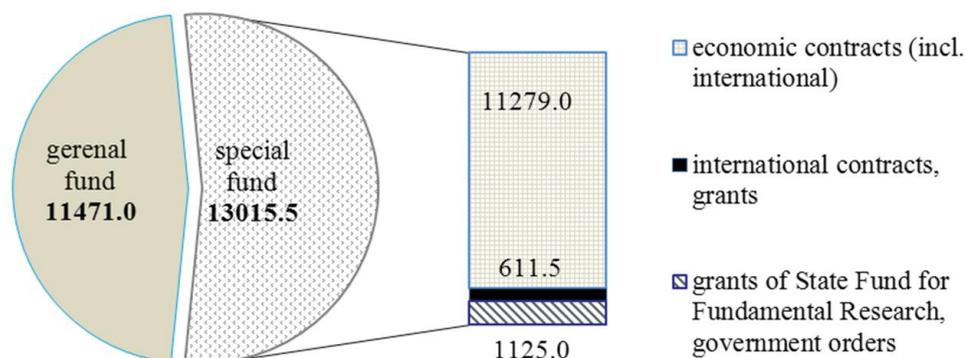


Fig. 6. Sources of forming state budget funds of a HEI for scientific research and the amount of funding by sources; thousand UAH.

(Lviv Polytechnic National University, 2016, as an example)

Table 3

Funding of scientific research activities of leading Ukrainian HEIs in 2016

No.	Higher Education Institution	Funding (thousand UAH)		Efficiency of using budget funds	Line in consolidated rating of HEIs in 2016
		General fund	Special fund		
1	Taras Shevchenko National University of Kyiv [23]	74 914.9	39 517.7	0.55	1
2	V.M. Karazin Kharkiv National University [28]	31 500.0	12 002.0	0.38	2
3	National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" [29]	21 283.6	37 877.3	1.78	3
4	National University of Life and Environmental Sciences of Ukraine [30]	20 870.7	16 916.9	0.81	11
5	National Technical University "Kharkiv Polytechnic Institute" [31]	17 050.7	8102.0	0.48	4
6	Lviv Polytechnic National University	11 471.0	13015.5	1.14	6
7	Lviv Ivan Franko National University [32]	10 099.0	4347.0	0.43	5
8	Odessa I.I.Mechnikov National University [33]	13 667.0	4432.0	0.32	7
9	Sumy State University	5 325.0	13 271.0	2.49	8
10	Chernivtsy Yurii Fedkovych National University [33]	6857.9	233.8	0.03	9
11	Oles Honchar Dnipro National University [33]	8500.1	3541.8	0.42	10

Conclusions. The tasks facing higher education institutions in the field of scientific research activities require solving a number of problems, in particular legislative, regulatory and

financial. Among the measures that need to be taken to improve scientific research activities of HEIs, it is important to distinguish the following:

- to harmonize legislative and regulatory documents in the field of scientific research activities of HEIs;

- to provide budget allocations of at least 1.7 % of GDP, stipulated in the Law of Ukraine “On Scientific and Scientific-Technical Activities”;

- to improve legislative framework for insurance of innovative risks, preferential taxation, technology transfer;

- to introduce basic funding of the leading Ukrainian HEIs, declared in the Law of Ukraine “On Higher Education” and to improve the principles of financing scientific research activities;

- to resume state target scientific and technical programmes, in particular, “Science in Universities”, as well as the state programme of internship of scientific and academic workers at foreign universities and scientific institutions in order to strengthen integration into the international scientific research area, to expand participation of scientists and researchers from Ukrainian HEIs in international projects;

- to improve the system of expert evaluation of scientific projects funded by the Ministry of Education and Science of Ukraine and criteria for evaluating scientific projects;

- to grant HEIs the right to manage the funds received for performing research work directly through bank accounts, freeing them from limiting the distribution of funds by articles;

- to develop innovation infrastructure of academic entrepreneurship in HEIs, to further develop cooperation with the business environment;

- to develop partnership relations with leading foreign universities.

In addition, to further develop scientific research activities of HEIs, it is important to improve their planning, organization, motivation and control. These issues will be dealt with in future publications.

References

1. *Naukova ta innovatsiina diyalnist Ukrainy. [Scientific and Innovative Activity of Ukraine], Statistical Data Collection, 2016. Available at:*

http://www.ukrstat.gov.ua/druk/publicat/kat_u/publ_nauka_u.htm.

2. *Osnovni pokaznyky diyalnosti vyshchyykh navchalnykh zakladiv Ukrainy na pochatok 2016/17 navchalnoho roku. [Key Performance Indicators of Higher Education Institutions of Ukraine at the beginning of 2016/17 academic year]. Statistical bulletin, 2017. Available at: http://www.ukrstat.gov.ua/druk/publicat/kat_u/publosvita_u.htm.*
3. *Zdiisnennia naukovykh doslidzhen i rozrobok v Ukraini. 2016. [Realization of scientific research and developments in Ukraine. 2016] Report, 2017. Available at: http://www.ukrstat.gov.ua/druk/publicat/kat_u/publnauka_u.htm.*
4. *Zakon Ukrainy Pro naukovu i naukovo-tehnichnu diyalnist, vid 26.11.2015, № 848-VIII [Law of Ukraine On Scientific and Scientific-Technical Activity]. Voice of Ukraine, 2016. No. 6.*
5. *Zakon Ukrainy Pro prioryetni napriamy rozvytku nauky i tehniky vid 11.07.2001 № 2623-III [Law of Ukraine On Priority Areas of Science and Technology Development, dated July 11, 2001 No. 2623-III], Bulletin of the Verkhovna Rada of Ukraine, 2001, No. 48.*
6. *Zakon Ukrainy Pro Kabinet Ministriv Ukrainy vid 27 liutoho 2014 № 794-VII [Law of Ukraine “On the Cabinet of Ministers of Ukraine”, dated February 27, 2014, No. 794-VII], Bulletin of the Verkhovna Rada of Ukraine*
7. *Postanova Kabinetu Ministriv Ukrainy Pro Utvorennia Natsionalnoi Rady Ukrainy z Pytan Rozvytku Nauky i Tehnologiy [Resolution of the Cabinet of Ministers of Ukraine “On the Formation of the National Council of Ukraine on Science and Technology Development”], Uryadovyi Courier, 2017, No. 72.*
8. *Peer review of the Ukrainian research and innovation system. Horizon 2020 policy support facility, background report - Study: PDF / European Commission, 2016, 83.*
9. *Postanova Kabinetu Ministriv Ukrainy “Pro zatverdzhennia polozhennia pro Ministerstvo osvity i nauky Ukrainy” vid 16.10.2014, № 630 [Resolution of the Cabinet of Ministers of Ukraine “On Approval of the Regulation on the Ministry of Education and Science of Ukraine” dated October 16, 2014, No. 630]. Government Courier, 03.12.2014, No. 225.*
10. *Kuzmin O. Ye., Pyrog O.V., Matviyishyn V. Ye. Assessment of the stability of the national economy development in the postindustrial society.*

- Economics, Entrepreneurship, Management*, 2014, Vol. 1, No. 2, 41–46.
11. Kuzmin O., Khodykina I., Podolchak N. Rozvytok finansovoho mehanizmu investuvannia osvithnoi sfery [Development of the financial mechanism for investing in the educational sphere]. *Culture of the Black Sea Peoples*, 2005, Vol. 74, No. 1.
 12. Stan rozvytku nauky i tehniki, rezultaty naukovoï, naukovo-tehnichnoi, innovatsiinoï diyalnosti, transferu tehnolohii za 2015 rik [The state of development of science and technology, the results of scientific, scientific and technological, innovative activities, technology transfers in 2015]. Analytical reference, 2016. Available at: <http://mon.gov.ua/content/%D0%94%D1%96%D1%8F%D0%BB%D1%8C%D0%BD%D1%96%D1%81%D1%82%D1%8C/%D0%9D%D0%B0%D1%83%D0%BA%D0%B0/2-3-ad-kmu-2015.pdf>.
 13. Finansuvannia nauky u tsentri uvahy profilnoho komitrtu Verhovnoi Rady Ukrainy [Funding of science is in the focus of attention of the profile committee of the Verhovna Rada of Ukraine]. Available at: <http://www.nas.gov.ua/tradeunion/news/Documents/%D0%A4%D1%96%D0%BD%D0%B0%D0%BD%D1%81%D1%83%D0%B2%D0%B0%D0%BD%D0%BD%D1%8F%20%D0%BD%D0%B0%D1%83%D0%BA%D0%B8%2027.02.17.pdf>.
 14. Zakon Ukrainy Pro vyshchu osvitu [Law of Ukraine On Higher Education], July 1, 2014 No. 1556-VII, *Bulletin of Verhovna Rada of Ukraine*, 2014. No. 37-38, 2004.
 15. Postanova Kabinetu Ministriv Ukrainy Pro zatverdzhennia Polozhennia pro derzhavnu atestatsiyu naukovo-doslidnykh (naukovo-tehnichnykh) ustanov [Resolution of the Cabinet of Ministers of Ukraine On approval of the Regulation on state attestation of research (scientific and technical)institutions]. *Official Bulletin of Ukraine*, 1998, No. 14.
 16. Nakaz Ministerstva Osvity i Nauky Ukrainy Pro zatverdzhennia Polozhennia pro provedennia derzhavnoi atestatsii vyshchych navchalnyh zakladiv III-IV rivniv akredytatsii Ministerstva osvity i nauky Ukrainy u chastyni naukovoï, naukovo-tehnichnoi ta innovatsiinoï diyalnosti vyshchych ta Metodyky reitynhovoho otsiniuvannia naukovoï, naukovo-tehnichnoi ta innovatsiinoï diyalnosti vyshchych navchalnyh zakladiv III–IV rivniv akredytatsii MON, vid 30 bereznia 2010 roku №277 [The Order of the Ministry of Education and Science of Ukraine “On approval of Regulations on conducting the state certification of higher education institutions of the III-IV accreditation levels of the Ministry of Education and Science of Ukraine in the part of scientific, scientific and technical and innovation activities and the Methodology of rating assessment of scientific, scientific and technical and innovation activity of higher educational institutions of the III-IV accreditation levels of the Ministry of Education and Science, March 30, 2010, No. 277].
 17. Vykonnannia derzhavnoho buidzhetu 2017 roku. Analiz stanu finansuvannia po navchalnym zakladam ta ustanovam i orhanizatsiam, pidporiadkovanyim Ministerstvu osvity i nauky Ukrainy za sichen – cherven 2017 roku [Implementation of the state budget in 2017. Analysis of funding for educational institutions and organizations subordinated to the Ministry of Education and Science of Ukraine for January-June 2017]. Available at: <http://mon.gov.ua/about/byudzhet/vikonannya-derzhavnogo-byudzhetu-2017-rik.html>.
 18. Ministerstvo Osvity ta Nauky Ukrainy, Ukrainyskyi Instytut Naukovo-Tehnichnoi Ekspertyzy ta Informatsii. Analitychna dovidka. Realizatsiya priorityetnyh napriamiv rozvytku nauky i tehniki ta otrymani rezultaty u 2016–2017 rokakh [Ministry of Education and Science of Ukraine, Ukrainian Institute of Scientific and Technical Expertise and Information. Analytical reference. Realization of the priority directions of science and technology development and the results obtained in 2016–2017]. Available at: <http://mon.gov.ua/content/%D0%94%D1%96%D1%8F%D0%BB%D1%8C%D0%BD%D1%96%D1%81%D1%82%D1%8C/%D0%9D%D0%B0%D1%83%D0%BA%D0%B0/01/ad-vru-2017-prav-1.pdf>.
 19. Postanova Kabinetu Ministriv Ukrainy 71 Deyaki pytannia optymizatsii derzhavnyh tsiliovyh proham i natsionalnyh proektiv, ekonomii biudzhetnyh koshtiv ta vyznannia takymy shcho vtratly chynnist deyakyh aktiv Kabinetu Ministriv Ukrainy [Resolution of the Cabinet of Ministers of Ukraine “Some issues of optimization of state target programs and national projects, saving of budget funds and recognition of certain acts of the Cabinet of Ministers of Ukraine as invalid”], 2014, V. No. 51.
 20. Postanova Kabinetu Ministriv Ukrainy №1716 Pro zatverdzhennia pereliku derzhavnyh naukovykh i naukovo-tehnichnyh proham z priorityetnyh napriamiv rozvytku nauky i tehniki na 2002–2006 roky [Resolution of the Cabinet of Ministers of

- Ukraine “On approval of the list of state scientific and scientific and technical programs on the priority directions of development of science and technology for 2002–2006”, 2002, No. 52.
21. Nakaz Ministerstva osvity i nauky Ukrainy, Natsionalnoi akademii nauk Ukrainy, Ministerstva finansiv Ukrainy, Ministerstva ekonomichnoho rozvytku i torhivli Ukrainy // “Pro vyznannia takym shcho vtratyv chynnist nakazu Derzhavnoho komitetu Ukrainy z pytan nauky i tehnologii, Natsionalnoi akademii nauk Ukrainy, Ministerstva finansiv Ukrainy, Ministerstva ekonomiky Ukrainy vid 19 travnia 1994 roku No. 83 [On the recognition of the invalidity of the order of the State Committee of Ukraine on Science and Technology, the National Academy of Sciences of Ukraine, the Ministry of Finance of Ukraine, Ministry of Economy of Ukraine of 19 May 1994, No. 83], Vol. 54.
 22. Rishennia Kolehii Ministerstva osvity i nauky Ukrainy vid 26 travnia 2016 “Pro pidsumky naukovo-tehnichnoi diyalnosti vyshchych navchalnyh zakladiv ta naukovykh ustanov za 2015 rik z urahuvanniam polozhen Zakonu Ukrainy “Pro vyshchu osvitu” [Decision of the Collegium of the Ministry of Education and Science of Ukraine dated May 26, 2016”, On the results of scientific and technical activity of higher education establishments and scientific institutions for 2015 with the account of the provisions of the Law of Ukraine “On Higher Education”], 2016. Available at: <http://mon.gov.ua/content/%D0%9F%D1%80%D0%BE%20%D0%9C%D1%96%D0%BD%D1%96%D1%81%D1%82%D0%B5%D1%80%D1%81%D1%82%D0%B2%D0%BE/%D0%9A%D0%BE%D0%BB%D0%B5%D0%B3%D1%96%D1%8F/2016/10/rishennya-pro-nauku-26.05.2016.pdf>.
 23. Naukovo-doslidnytska robota u Kyivskomu natsionalnomu universyteti imeni Tarasa Shevchenka: pidsumky za 2016 rik i zavdannia na 2017 rik [Research work at Taras Shevchenko National University of Kyiv: results for 2016 and tasks for 2017], 2017. Available at: http://science.univ.kiev.ua/research/report/ZVIT_SCIENCE_2016.pdf.
 24. Informatsiya pro naukovu ta naukovo-tehnichnu diyalnist Natsionalnoho tehnichnoho universytetu “Kharkivskiyi politehnicnyi instytut” za 2016 rik [Information on scientific and scientific-technical activities of National Technical University “Kharkiv Polytechnic Institute” for 2016], 2017. Available at: http://science.kpi.kharkov.ua/wp-content/uploads/2017/04/NTU_KhPI_ZVIT_2016_f_or_web.pdf.
 25. Community Research and Development Information Service. Available at: [http://cordis.europa.eu/search/result_en?q=programme/code%3D%27H2020%27%20AND%20contenttype%3D%27project%27%20AND%20\(address/country%3D%27UA%27%20OR%20relatedRegion/region/euCode%3D%27UA%27\)&p=1&num=10&srt=/project/contentUpdateDate:decreasing](http://cordis.europa.eu/search/result_en?q=programme/code%3D%27H2020%27%20AND%20contenttype%3D%27project%27%20AND%20(address/country%3D%27UA%27%20OR%20relatedRegion/region/euCode%3D%27UA%27)&p=1&num=10&srt=/project/contentUpdateDate:decreasing).
 26. Novyny Ministerstva Osvity i Nauky Ukrainy “Vcheni Ukrainy ta NATO spilno shukayut yak protydiyaty kiberzahrozam, vyjavlyaty miny ta riaturvaty poranenyh” [News of the Ministry of Education and Science of Ukraine “Scientists from Ukraine and NATO are working together to counteract cyber-threats, detect mines and rescue wounded people”], 5.07.2017. Available at: <http://mon.gov.ua/usi-novyni/novini/2017/07/05/vcheni-ukrayini-ta-nato-spilno-shukayut,-yak-protidyati-kiberzagrozam/>.
 27. Pytannia navchannia studentiv ta stazhuvannia (naukovoho stazhuvannia) aspirantiv, adiunktiv i doktorantiv, naukovykh i naukovo-pedahohichnykh pratsivnykiv u providnyh vishchych navchalnyh zakladah ta naukovykh ustanovah za kordonom. Postanova Kabinetu Ministriv Ukrainy vid 13 kvitnia 2011 r. No. 411. [Issues of student training and internship (scientific internship) of postgraduate students, adjuncts and doctoral students, scientific and pedagogical workers in leading higher educational establishments and scientific institutions abroad. Resolution of the Cabinet of Ministers of Ukraine dated April 13, 2011, No. 411]. *Government Courier*, 05.05.2011, No. 80.
 28. Pro robotu v 2016 r. Dopovid na konferentsii trudovoho kolektyvu Kharkivskoho natsionalnoho universytetu imeni V. N. Karazina [About the work in 2016. Report at the conference of the labor collective of V. N. Karazin Kharkiv National University]. Available at: <http://www.univer.kharkov.ua/docs/work/dopovid-rektora2016-4.pdf>.
 29. Naukova ta innovatsiina diyalnist v umovah implementatsii novoho zakonodavstva. Zi zvytu prorektora z naukovo roboty M. Yu. Ilchenka pro robotu v 2016 rotsi [Scientific and innovative activities in conditions of implementing new legislation. From the report of the pro-rector on scientific work M. Y. Ilchenko about work in 2016], 2016. Available at: <http://kpi.ua/science-2016>.

30. *Zvit pro diyalnist Natsionalnoho universytetu bioresursiv ta pryrodokorystuvannia Ukrainy za 2016 rik [Report on activities of National University of Life and Environmental Sciences of Ukraine for 2016]*, 2017. Available at: https://nubip.edu.ua/sites/default/files/u18/zvit_2016.pdf.
31. *Informatsiya pro naukovu ta naukovo-tehnichnu diyalnist Natsionalnoho tehnichnoho universitetu "Kharkivskii politechnichniy instytut" za 2016 rik [Information on scientific and technical activities of the National Technical University "Kharkiv Polytechnic Institute" for 2016]*, 2017. Available at: http://science.kpi.kharkov.ua/wp-content/uploads/2017/04/NTU_KhPI_ZVIT_2016_for_web.pdf.
32. *Zvit Rektora Lvivskoho natsionalnoho universytetu imeni Ivana Franka za 2016–2017 rokiv [Report of the Rector of the Ivan Franko National University of Lviv for 2016–2017]*. Available at: http://www.lnu.edu.ua/wp-content/uploads/2017/06/zvit_rektora-2017.pdf.
33. *Ministerstvo osvity i nauky Ukrainy. Finansuvannia naukovykh doslidzhen i rozrobok v universytetakh zbilshylos maizhe na 40 % [Ministry of Education and Science of Ukraine. Funding of scientific research and developments at universities increased by almost 40 %] 01-03-17*. Available at: <http://mon.gov.ua/usi-novivni/novini/2017/03/01/finansuvannya-naukovix-doslidzhen-i-rozrobok-zbilshilos-majzhe-na-40/>.

UDC 336.22

A. Zagorodniy

PhD in Economics, Professor

V. Olikhovskiy

PhD Student, Assistant

Lviv Polytechnic National University

CONCEPT OF TAX PLANNING AT THE ENTERPRISE

Abstract. One of the main tasks of financial and economic activities of the enterprise is the receipt of a profit, which remains at its disposal after the payment of taxes and other mandatory payments. Therefore, the focus of enterprise management should be on increasing revenues, reducing costs and minimizing tax payments.

For the effective enterprise management work on minimizing tax payments, the authors offer to use a systematic approach to the organization of tax planning at the enterprise, which is a new concept of tax planning.

In the article the essence of the term “concept of tax planning” and its components is disclosed, the principles of tax planning are studied and the content of each of them is shown up, as well as the methods of tax planning and the sequence of their use. The authors offer to distinguish three groups of special methods of tax planning, consider tax planning tools and ground the sequence of steps for the development of tax planning tools.

Keywords: taxes, tax planning, minimization of tax payments, concept of tax planning, principles of tax planning, methods of tax planning, tools of tax planning, schemes of tax planning.

Formulation of the problem. Taxes are components of the cost of products (services), prices, revenues and profits. They play a significant role in the financial and business activities of an enterprise and affect the final financial result of its activities.

Frequent changes in the country’s state policy in the area of tax legislation, its contradictory nature, ambiguity, and subjectivity in the interpretation of tax rules by regulatory authorities, force owners and managers of the enterprise to look for the ways to reduce a tax

burden on the company in order to strengthen its competitiveness in the market.

The urgency of the chosen topic lies in the implementation of the concept of tax planning at the enterprise through its components – principles, methods, tools and schemes.

Analysis of recent research and publications.

The issues of the nature, methods and organization of tax planning are considered in the works of many Ukrainian and foreign scholars. In particular, it is worth mentioning the works of I. B. Atamenko, S. V. Barulyn, P. K. Bečko, O. S. Vylkova, Ya. I. Hlushchenko, T. A. Gusieva, A. V. Yeliseiev, E. A. Yermakova, Yu. B. Ivanov, T. V. Kalinescu, L. N. Karpov, V. V. Karpova, A. Ya. Kizyma, A. I. Krysovatyi, N. V. Lysa, A. S. Lukiyanenko, V. V. Maslii, M. I. Migunova, V. V. Muraviov, N. M. Prytuliak, N. S. Prokopenko, M. R. Romanovskiy, V. I. Salo, N. N. Seleznieva, S. A. Suprunenko, O. V. Khodiakova, T. M. Cherniakova, Yu. I. Shvabu and many others. However, the current issues of the formation of the concept of tax planning, in particular of such its components as principles, methods, tools and schemes remain relevant.

The purpose of the research is to form the essence of the concept of tax planning and to offer ways of its implementation through the use of principles, methods, tools and schemes inherent in it.

Material and results. The Great Explanatory Dictionary of the modern

Ukrainian language reveals the term “concept” as “a system of evidence of a certain position, a system of views on a particular phenomenon; a way of understanding, interpreting some phenomena” [5, p. 571].

Tax planning at the enterprise level is a choice between different variants of financial and economic activity and an enterprise assets allocation in order to achieve the lowest level of tax liabilities that arise at the same time. Tax planning is implemented only within the framework of the current tax legislation and is based on the maximum use of all statutory tax privileges and possible ways to minimize tax payments [7, p. 41; 8, p. 528; 21].

The concept of tax planning is the system of taxpayers’ opinions on maximizing the use of the current legislation in order to reduce tax payments or delay their payment and, accordingly, increase income and profits of business entities. The concept of tax planning at the enterprise is based on relevant principles and is implemented through using methods, tools and schemes for minimizing tax payments, which permits to control the implementation of tax liabilities, improve tax planning efficiency, delay or minimize tax payments. The relationship between the components of the implementation of the tax planning concept at the enterprise is shown in Fig. 1.

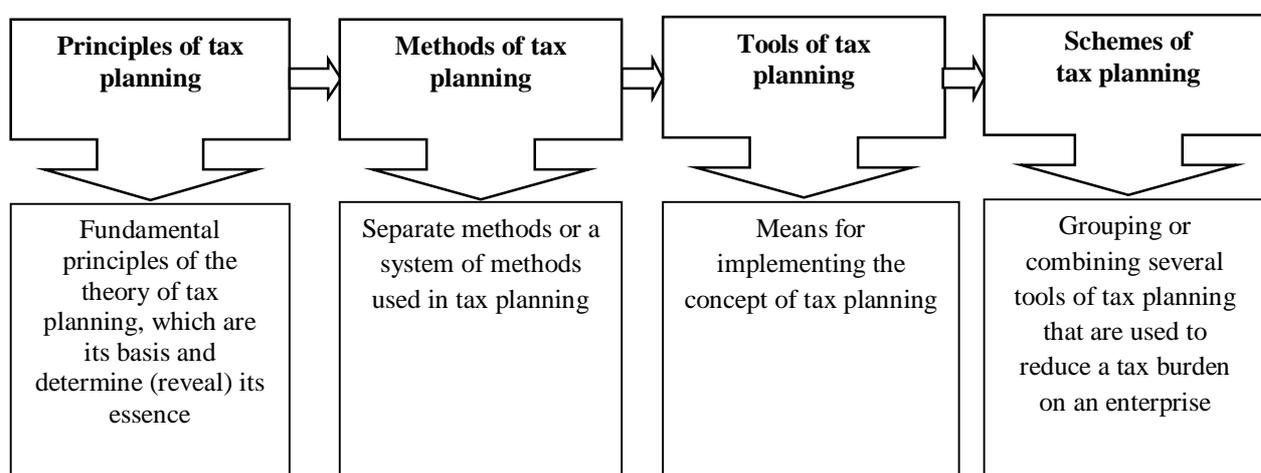


Fig. 1. Relationship of the components of the implementation of the tax planning concept at the enterprise

Source: authors’ own development

The most important part of the concept of tax planning is its principles – basic theoretical statements that determine the nature and basis of tax planning and their theoretical justification. Currently, there is no unanimity among the scientists regarding the principles of tax planning. Given the size and variety of interpretations of the principles of tax planning, they can be classified into general and special ones. General principles of tax planning characterize the relationship of intra-firm planning and management with tax planning. These principles are inherent in any kind of business planning, including tax planning as a subsystem of intra-firm planning and

management (enterprise management). They include the following principles: systematicity, participation (collegial), continuity, flexibility and accuracy. At the same time, special principles are inherent only in tax planning. They determine the specifics of the tax planning process, its distinctive features in the management system of the enterprise. They include the principles of legality, optimality, alternativeness, complexity, perspectivity and naturality.

According to the results of the analysis of literary sources by the authors, the essence of the main principles of tax planning is disclosed in Table 1.

Principles of tax planning

Principles of tax planning	Essence of tax planning principles
1	2
General principles of tax planning	
The principle of unity (systematicity)	System planning is inherent in tax planning, which lies in the relationship between the planning of tax payments and general plans of the enterprise. Non-coordinated actions lead to negative deviations in the performance of tax plans.
The principle of participation	All employees of the enterprise involved in the implementation of tax planning measures should participate in the development of schemes for minimizing tax payments.
The principle of continuity	The process of tax planning is carried out continuously, while previously developed schemes for minimizing tax payments need to be constantly analyzed and adjusted in accordance with changes in the legislation.
The principle of flexibility	Tax deductibility schemes are designed to allow the authors to subsequently adjust them to unforeseen changes in the environment (for example to changes of the tax or other legislation).
The principle of accuracy	Schemes for minimizing tax payments must be accurate, concretized and detailed to the extent that allows internal and external factors (conditions) to be taken into account.
Special principles of tax planning	
The principle of perspectivity	In the process of tax planning, possible changes in the tax legislation in the future and other external factors should be taken into account.
The principle of legality	Tax planning should be implemented in accordance with the current law. At the same time, both a direct scheme for minimizing tax payments and their documentary (actual) support should conform to the legislation. Using this principle allows differentiating between tax planning and tax evasion.
The principle of complexity	Tax planning of all tax payments must be carried out in a complex, taking into account their mutual influence. This is due to the fact that different taxes and fees have common (or interrelated) elements of the tax bases, and they themselves can be attributed to the tax base under other taxes or fees.
The principle of alternativeness	The choice and development of schemes for minimizing tax payments must be carried out on an alternative basis, taking into account all possible options for conducting business transactions. The availability of alternatives makes it possible to expand the choice of a tax option with optimal indicators, thereby improve the efficiency of the results from the implementation of tax planning.
The principle of optimality (optimal relationship of risks and benefits)	It implies the search and use of the most effective economic decision that allows minimizing tax payments (reducing the tax base). It determines that the economic effect of optimization measures used in tax planning should outweigh possible costs of their implementation taking into account risks. According to this principle, tax planning should be based on the fact that the profitability of a business transaction should be maximum and risks – minimum.
The principle of naturalness	The scheme for minimizing tax payments used in tax planning should not significantly differ from the usual procedure for conducting business transactions so as not to attract unnecessary attention from control authorities. Considering a certain variant of minimizing tax payments, it is necessary to analyze whether the taxpayer has sufficient material, resource and the other base for conducting such transactions.

Source: own development on the basis of [1, p.335–341; 2, p.129–131; 3, p. 230–233; 5, p. 124–125; 7, p. 55–57; 9, p. 32–46; 10, p. 144–150; 11, p. 50–52; 12, p. 19–23; 14, p. 429–440; 18, p. 97–100; 19, p. 42–49; 20, p. 400–401; 21, p. 214–215; 22, p.56–59].

Methods of tax planning are individual techniques or a system of techniques used in tax planning. As to the methods of tax planning, in the

economic literature in the field of tax planning, scientists distinguish two groups of methods: a general one and a special one (see Fig. 2).

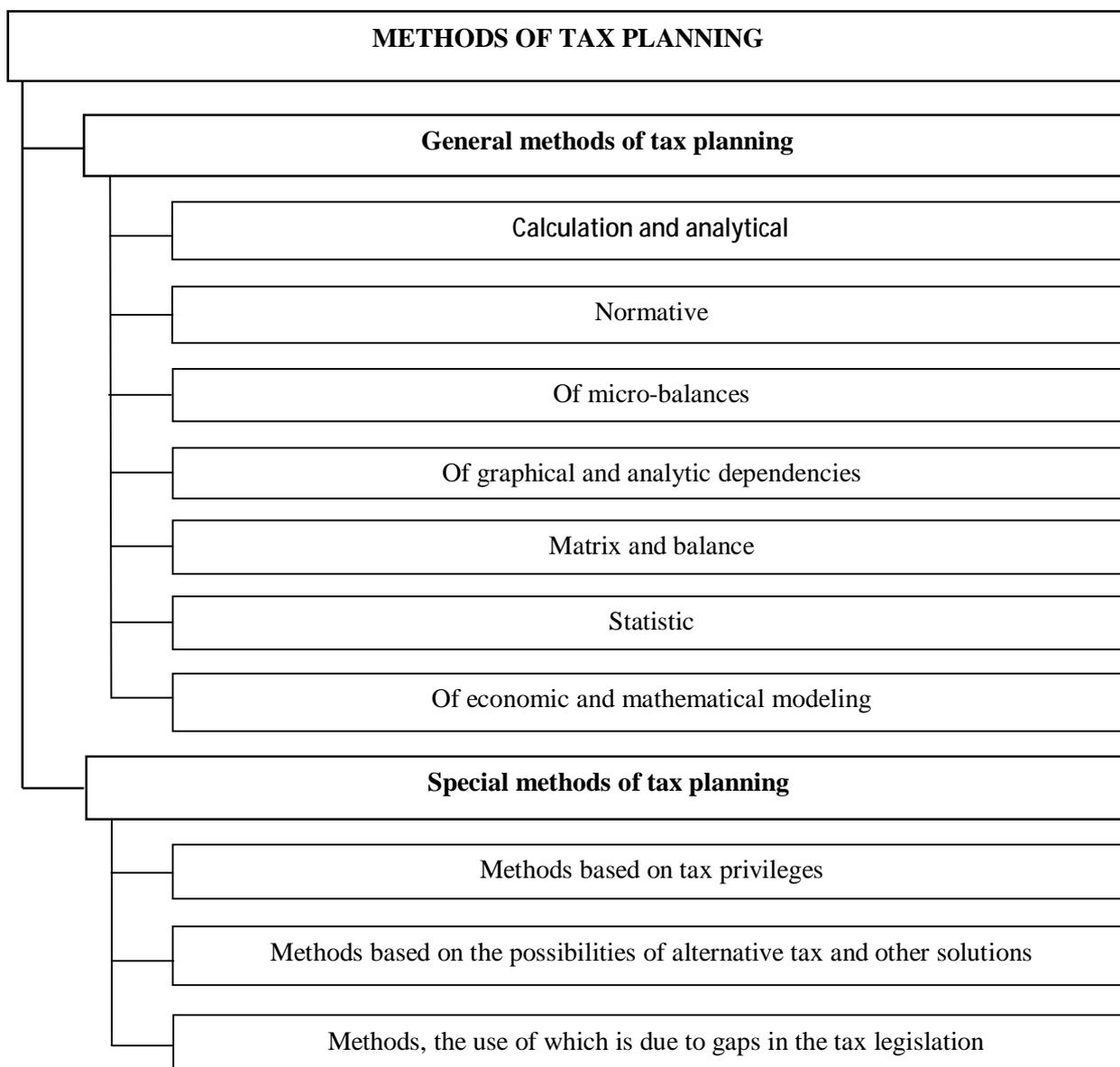


Fig. 2. Methods of tax planning

Source: own development on the basis of [2, p. 114–119, 134–136; 3, p. 217–225; 5, p. 118–124; 6, p. 139–248; 7, p. 52–54; 9, p. 46–65; 10, p. 151–157; 11, p. 52–57; 14, p. 441–452; 17, p. 106–110; 18, p. 115–117, 296–336; 20, p. 401–402; 21, p. 216–218; 22, p. 59–67].

Common methods of tax planning include methods that have a wide scope of application, and can be used on the whole for budgeting and planning of financial and economic activity of the enterprise, as well as for tax planning. They include the following methods: calculation and analytical, normative, of micro-balances, of

graphical and analytic dependencies, matrix and balance, statistic, of economic and mathematical modeling. These tax planning methods are used to assess the expediency of tax planning and settling issues related to the implementation of the concept of tax planning. The general methods of tax planning are shown in Fig. 3.

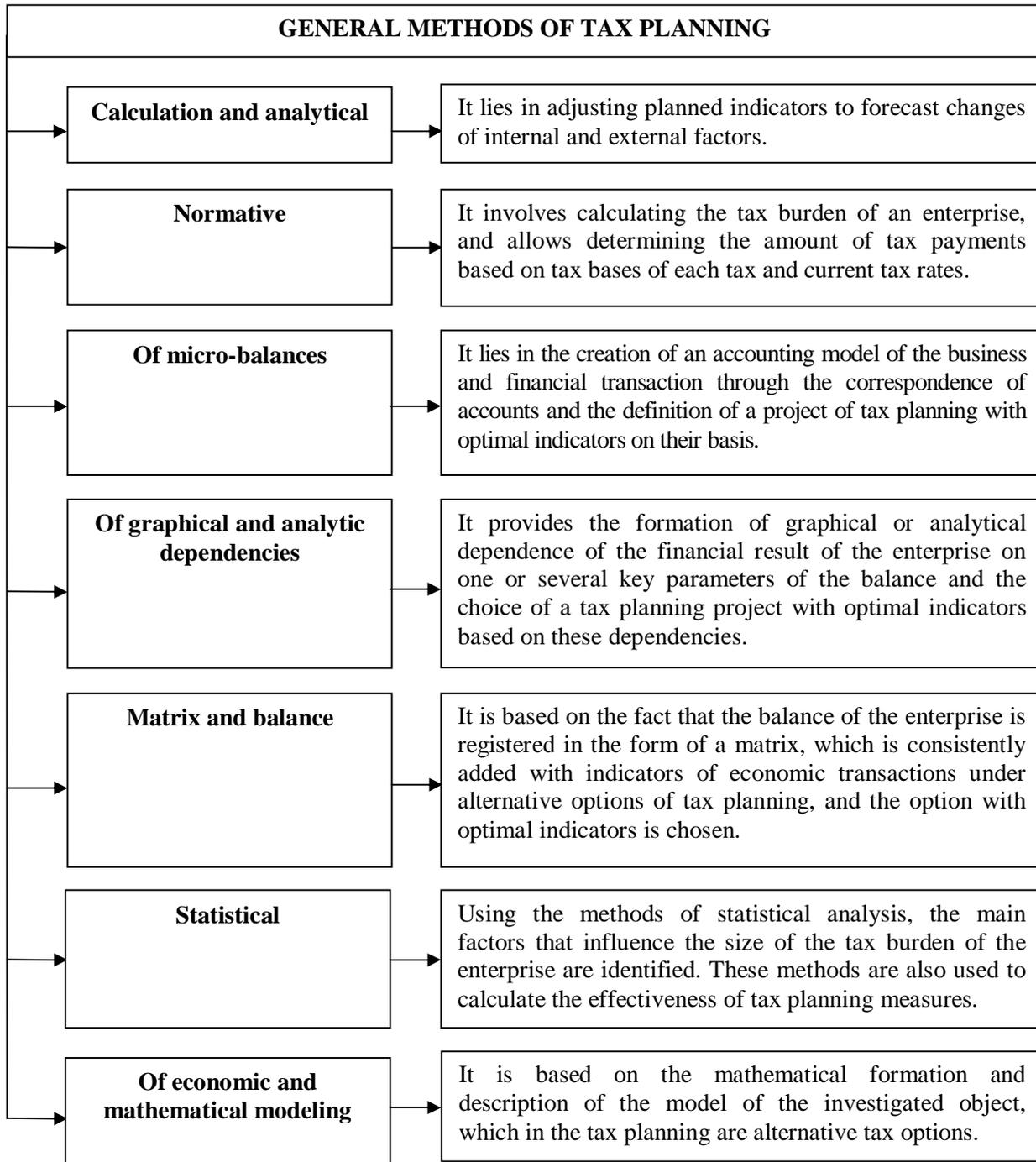


Fig. 3. General methods of tax planning

Source: own development on the basis of [2, p. 114–119, 134–136; 3, p. 217–225; 5, p. 118–124; 6, p. 139–248; 7, p. 52–54; 9, p. 46–65; 10, p. 151–157; 11, p. 52–57; 14, p. 441–452; 17, p. 106–110; 18, p. 115–117, 296–336; 20, p. 401–402; 21, p. 216–218; 22, p. 59–67].

Special methods of tax planning include methods that are used exclusively in enterprise tax planning to model alternative taxation options. The analysis of literary sources on tax planning allows the authors to distinguish three groups of special methods of tax planning:

- methods based on tax privileges – use of tax privileges, choice of a taxpayer registration place etc.;
- methods based on the use of alternative tax and other decisions – replacement (distribution) of relations, change in the timing of tax payments, use

of elements of the accounting policy and various taxation systems, delegation of taxes, choice of a type of labor relations with employees, definition and change in the capital structure, rational profit allocation, choice of activity and product structure etc.;

– methods, the use of which is caused by gaps in the tax legislation, which lie in using different interpretations of legislation norms in various normative documents.

Special methods of tax planning are shown in Fig. 4

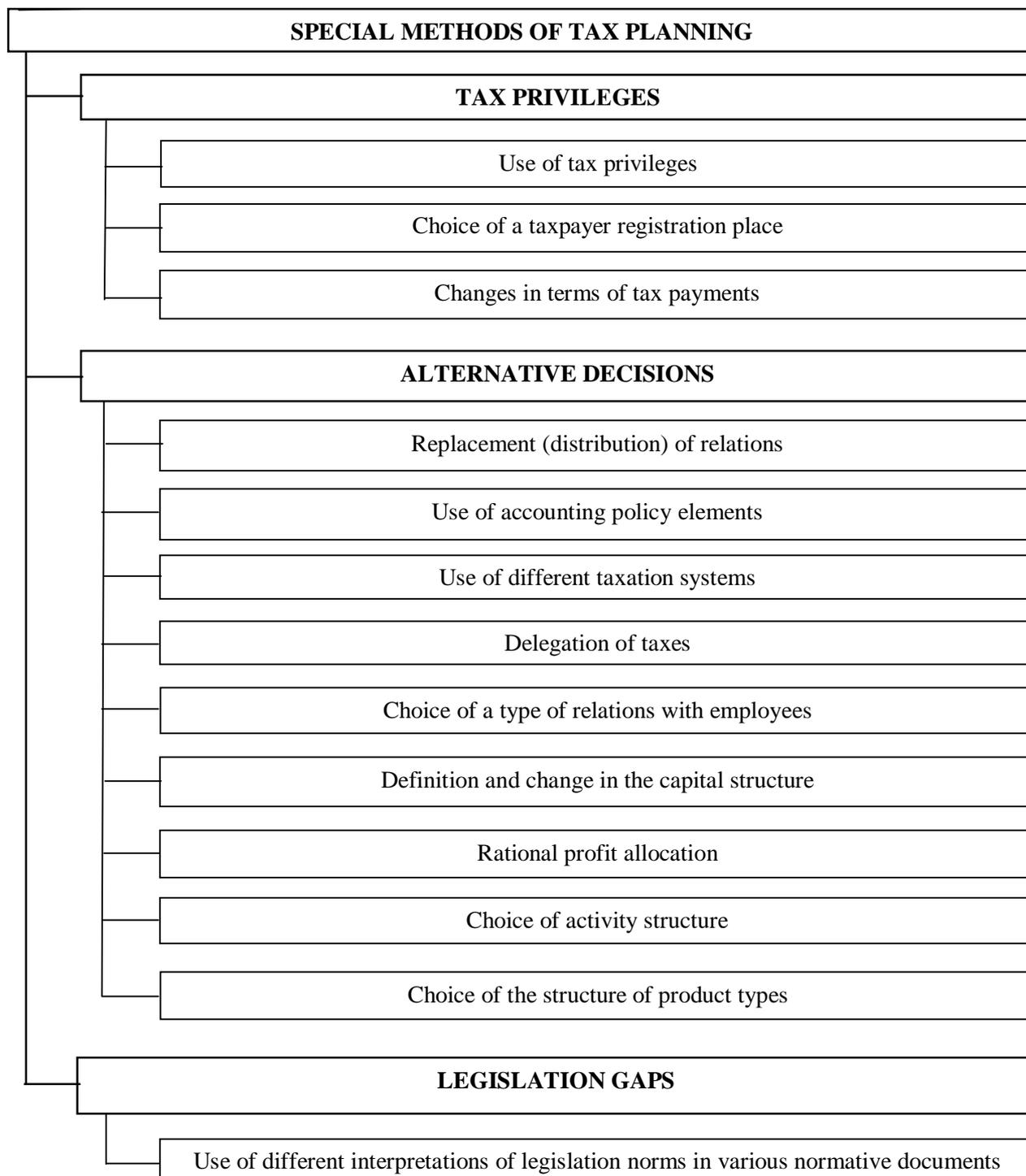


Fig. 4. Special tax planning methods

Source: the authors' own development

Concept of Tax Planning at the Enterprise

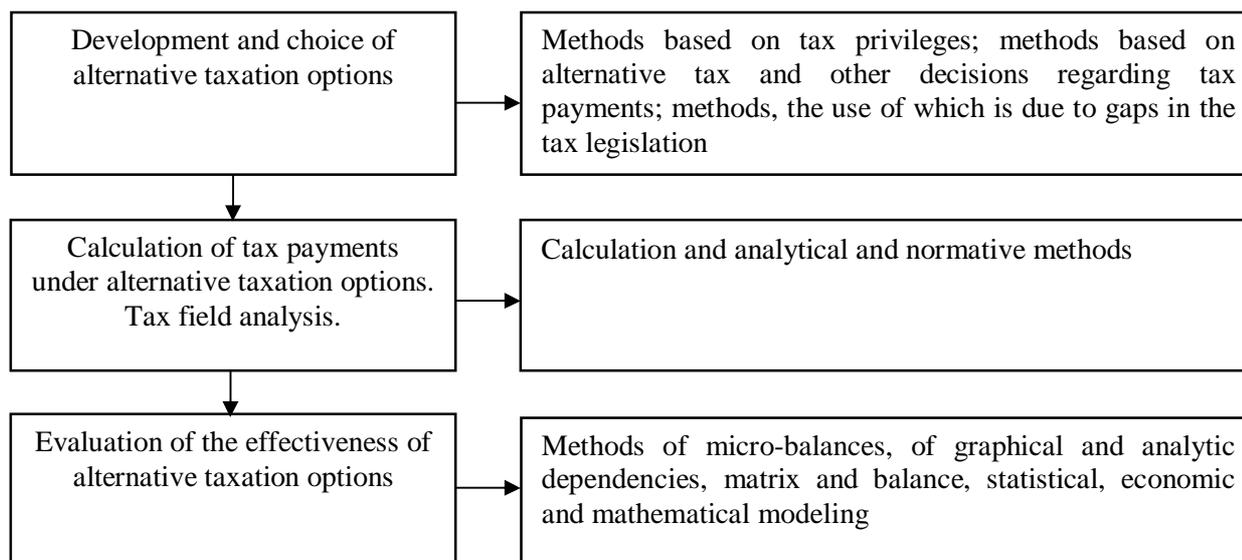


Fig. 5. Sequence of the use of tax planning methods

Source: own development based on [9, p. 64; 10, p. 157]

The sequence of the use of tax planning methods is shown in Fig. 5

The choice of special methods of tax planning is made depending on the characteristics of the organization and activities of the enterprise (organizational and legal form, type of activity, tax field of the enterprise etc.) and they are implemented through the use of tax planning tools and schemes.

Tax planning tools are tools for realizing the concept of tax planning, they include: replacement and distribution of relationships, change in the timing of tax payment, choice of activity and product types, choice of special taxation regimes, write-offs of inventories, depreciation deductions, allocation of transportation and harvesting costs, formation of reserves (reserve capital), choice of a taxation system, transfer of a taxation object, type of relations, change in the structure of capital or its components etc.

In the process of implementing tax planning, a wide range of tools is used from the rules of the current legislation to the search of possible gaps in it.

The possibility of influencing the main elements of the tax: taxpayers, taxation object, taxation base, tax rates, procedure for calculating the tax, tax period, term and procedure of tax

payment, term and procedure for reporting on the calculation and tax payment is important in choosing such tools.

There are three groups of tools:

- tax privileges – tax and customs legislation provides for the taxpayer to be exempted from the obligation to charge and pay the tax and duty, pay less tax and duty upon the availability of the grounds specified in the Tax Code of Ukraine. Tax elements, grounds for tax privileges and the procedure for their application are determined solely by the Tax Code of Ukraine. Tax privileges are provided through tax deductions (discounts), which reduce the taxation base before the tax and duty charge; reduction of a tax liability after the tax and duty charge; establishment of a reduced rate of the tax and duty; exemption from the tax and duty;

- alternative decisions imply choosing the most appropriate decision on using certain tax schemes in terms of optimizing tax payments;

- gaps in the legislation are combination of contradictory provisions (norms) of the tax legislation with other normative acts to optimize tax payments, taking into account the presumption of the lawfulness of the actions of taxpayer's decisions.

In the process of developing tax planning tools, an enterprise must follow the steps outlined in Fig. 6.

Grouping (combining) tax planning tools to optimize tax payments is a tax planning scheme. The classification of tax planning schemes is considered in the works [9, p. 441; 10, p. 150-152] and shown in Fig. 7.

Schemes of tax planning are divided into global and local ones. Global schemes of tax planning include schemes that allow minimizing most tax payments for a long term without satellite structures. Local schemes are the ones that allow minimizing one or two tax payments for a limited

term. Local schemes are divided into dynamic and static ones. Dynamic schemes of tax planning include schemes that complement company's profitable transactions, where the amount of savings in tax payments is directly related to the amount of the profitable transaction, which makes it possible to minimize tax payments on an ongoing basis. Static schemes of tax planning include schemes that have one-time or restrictive nature and in which the amount of tax savings is not directly related to transactions of income generation. Static schemes are not flexible and are not always used, but only if necessary [9, p. 441; 10, p. 150–152].

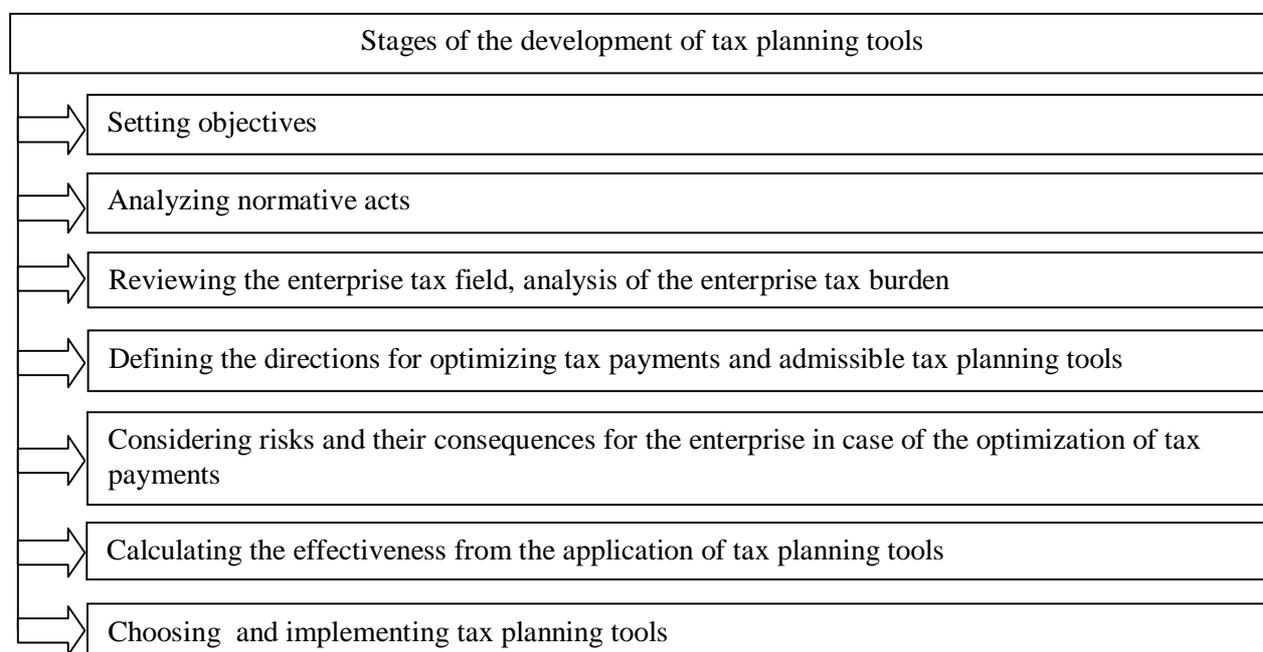


Fig. 6. Stages of the development of tax planning tools

Source: authors' own development

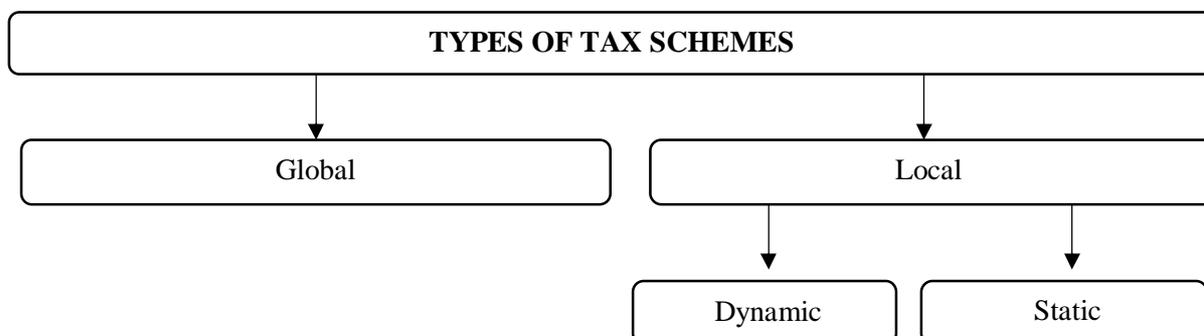


Fig. 7. Types of tax planning schemes

Sources: [9, p. 441; 10, p. 150–152]

Conclusions. The essence of the concept of tax planning and its components is disclosed in the article. The disadvantage of implementing tax planning at the enterprise is the lack of an integrated (single) approach. The implementation of tax planning through the concept of tax planning, which is based on the principles of both enterprise activity planning and tax planning itself is offered as a solution to this problem.

The methods, tools, schemes of tax planning, which are the constituents (elements) of the tax planning concept play an important role in the implementation of tax planning at the enterprise. The implementation of the concept of tax planning through its components permits to comply with the norms of the current legislation, control the implementation of tax obligations of economic entities, reduce a tax burden on the enterprise and direct the released funds for the enterprise development. All the components of the tax planning concept need further research.

References

1. Atamenko, I. B. (2010). *The effectiveness of tax planning methods*. *Visnyk Natsionalnoho universytetu "Lvivska politehnika"* [Bulletin of Lviv Polytechnic National University], 669. Retrieved from <http://ena.lp.edu.ua:8080/bitstream/ntb/7900/1/48.pdf> [in Ukrainian].
2. Barulin, S. V., Ermakova, E. A., & Stepanenko, V. V. (2007). *Nalogovyy menedzhment* [Tax management]. Moscow: Omega I. [in Russian].
3. Bechko, P. K., & Lysa, N. V. (2009). *Podatkovyy menedzhment* [Tax management]. Kyiv: Tsentr uchbovoi literatury. [in Ukrainian].
4. Busel, V. T. (2005). *Velykyi tumachnyi slovnyk suchasnoi ukrainskoi movy* [Great explanatory dictionary of modern Ukrainian language]. Kyiv: Irpin: Perun. [in Ukrainian].
5. Vylkova, E. S., & Romanovskiy, M. V. (2004). *Nalogovoe planirovanie* [Tax planning]. Sankt-Peterburg: Piter. [in Russian].
6. Guseva, T. A. (2006). *Nalogovoe planirovanie v predprinimatel'skoy deyatel'nosti: pravovoe regulirovanie* [Tax planning in business activity: legal regulation]. Moscow: Volters Kluver. [in Russian].
7. Zahorodnii, A. H., & Yelisieiev, A. V. (2003). *Podatky ta podatkovye planuvannia pidpriemnytskoi diialnosti* [Taxes and tax planning of business activity]. Lviv: Tsentr Biznes-Servisu. [in Ukrainian].
8. Zahorodnii, A. H., & Vozniuk, H. L. (2011). *Finansovo-ekonomichnyi slovnyk* [Financial and Economic Dictionary]. (3rd ed., rev.). Lviv: Vydavnytstvo Lvivskoi politehniky. [in Ukrainian]
9. Ivanov, Yu. B., Karpova, V. V., & Karpov, L. N. (2006). *Nalogove planirovanie: printsipy, metody, instrumentariy* [Tax planning: principles, methods, tools]. Khar'kov: INZhEK. [in Russian].
10. Ivanov, Iu. B. (2006). *Problemy podatkovoho rehuliuвання i planuvannia podatkovykh platezhiv* [Problems of tax regulation and planning of tax payments]. Kharkiv: KhNEU. [in Ukrainian].
11. Krysovatyi, A. I., Kizyma, A. Ia., & Maslii, V. V. (2007). *Planuvannia ta prohnozuvannia podatkovykh nadkhodzhen* [Planning and forecasting tax revenues]. Ternopil: Ekonomichna dumka TNEU. [in Ukrainian].
12. Migunova, M. I., & Tsyrukunova, T. A. (2007). *Otsenka finansovykh riskov v nalogovom planirovanii* [Assessment of financial risks in tax planning]. Krasnoyarsk: Krasnoyarskiy gosudarstvennyy torгово-ekonomicheskiiy institut. [in Russian].
13. Murav'ev, V. V. (2001). *Organization of tax planning in the enterprise. Audit i finansovyy analiz* [Audit and financial analysis], 2. Retrieved from: http://www.cfin.ru/press/afa/2001-2/11_mur.shtml. [in Russian].
14. Ivanov, Iu. B., Krysovatyi, A. I., Kizyma, A. Ia., & Karpova, V. V. (2008). *Podatkovyy menedzhment* [Tax management]. Kyiv: Znannia. [in Ukrainian].
15. Prytuliak, N. M. (2009). *To the question of tax planning at the enterprise*. *Zbirnyk naukovykh prats Natsionalnoho universytetu derzhavnoi podatkovoi sluzhby Ukrainy* [Collection of scientific works of the National University of State Tax Service of Ukraine], 1, 243–250. [in Ukrainian].
16. Prokopenko, N. S., & Shvabu, Iu. I. (2013). *Podatkove planuvannia v Ukraini* [Tax planning in Ukraine]. Lviv: Liha – Pres. [in Ukrainian].
17. Salo, I. V., & Yevchenko, N. H. (2009). *Podatkovyy menedzhment u banku* [Tax management at the bank]. Sumy: DVNZ UABS NBU. [in Ukrainian].
18. Selezneva, N. N. (2012). *Nalogovyy menedzhment: administrirovanie, planirovanie, uchet* [Tax management: administration, planning, accounting]. Moscow: YuNITI-DANA. [in Russian].
19. Sukhareva, L. O., Sukharev, P. M., & Hlushchenko, Ia. I. (2006). *Podatkove planuvannia v systemi*

- upravlinnia pidpriemstvom [Tax planning in the enterprise management system]. Donetsk: DonDUET. [in Ukrainian].*
20. Yefymenko, T. I., & Miarkovskyi, A. I. (Ed.). (2013). *Finansy. Biudzhet. Podatky. Natsionalna ta mizhnarodna terminolohiia [Finances. Budget. Taxes National and international terminology] (Vol 3). (2nd ed., rev.). DNNU Akademiia finansovoho upravlinnia. [in Ukrainian].*
 21. Khodiakova, O. V., & Luk'ianenko, A. S. (2012). *Concept of realization of effective tax planning at the enterprise. Finansy, hroshovyi obih i kredyt [Finance, money circulation and credit], 3, 213 – 218. [in Ukrainian]*
 22. Cherniakova, T. M. (2003). *Formuvannia ekonomiko-orhanizatsiinoho protsesu opodatkuvannia pidpriemstv Ukrainy [Formation of the economic-organizational process of taxation of enterprises of Ukraine]. Luhansk: SNU im. V.Dalia. [in Ukrainian].*

O. Stets

PhD student

Ye. Krykavskyy

Doctor of Economic Sciences, Professor

Lviv Polytechnic National University

EFFECTIVENESS OF INNOVATIVE VALUE-ORIENTED MARKETING SOLUTIONS ON DAIRY MARKET

Abstract. It has been found that optimum distribution of incomes has undergone certain transformational changes in current market conditions. Thus, internationally, the largest share of income (60 %) is the salary, while in Ukraine it makes only up to 35 % of the total income. Other 65 % comes from other sources. The purchasing power of the population is an important factor. In general, it has been proved (based on the average salary) that Ukrainians spend more than 50 % of their income on food.

Main suppliers and brands operating on the Ukrainian dairy products market (Molokiya™, Yagotynske™, Bila Linia™, Voloshkove Pole™, Slovianochka™, Activia™, Prostokvashino™, Galychyna™) have been assessed under such criteria as target audience, consumption purpose and product value. It has been established that there is a segment of premium goods consumers on the milk market who are ready to pay more for high quality products.

The expediency of introducing non-traditional methods of competition on the fast moving consumer goods markets has been substantiated. The most common example of such market is the market of dairy products, which are reasonably priced and have high level of nutrients, ensuring proper, normalized human diet.

The effectiveness of implementing innovative solutions to the marketing-mix development has been identified, the solutions focusing on such human values as natural and healthy food, environmentally friendly attitude (Fresh Milk technology, Pure-Pak Sense Aseptic packing).

It has been established that due to active use and modification of traditional marketing tools, Ternopil Dairy Factory PJSC (Molokiya™) showed impressive results as for the market share and geographic coverage of the market. The basis of these decisions was value-oriented approach, i.e. focusing marketing activities not

only on the product and the customer, but also on the traditional human values that are often not directly related to any goods or consumers. These are the following three topical areas:

– in the product policy – creation and/or modification of the products included in the healthy food diet with maximum preservation of natural properties;

– in the distribution policy – dramatic shortening of the production-consumption cycle, resulting in a very slight loss of natural properties, thus, radical reduction of the requirements for protective functions of packaging;

– in the distribution policy – maximum convenience of dairy products complete use and packaging recycling.

Keywords: dairy market, marketing-mix innovative solutions, human values.

Formulation of the problem. Dairy market, as one of traditional world markets, is highly competitive and has a quick product turnover. During its formation, this market has been going through traditional stages of development, being a seller's and a buyer's market and experiencing occasional domination of either suppliers of raw milk or dairy producers or domination of consumer behavior, both current and potential. This market was the first to experience the onset of the next stage of development characterized by domination of human values associated with environmentally friendly attitude, care about own and public health, concern for future generations. Such important human values components as empathy, sufficient awareness of negative climate change and topical processes (phenomena), convenience, simplicity as

well as consistency with own position and behavior also remain in the focus of attention. Therefore, the success of business in the market of dairy products in Ukraine actually depends on making non-standard, innovative decisions aimed at creating additional consumer values, often being close to spiritual values. Despite the fact that the issues of development and improvement of the dairy products marketing have always been in the focus of scientific research, constant changes taking place on the market and the emergence of new customer segments require finding new marketing solutions for its specific components.

Analysis of recent research and publications.

A considerable amount of research has been conducted to study so called FMCG (Fast Moving Consumer Goods) markets; in Ukraine – markets of daily-demand goods). The research has been aimed at creating long-term competitive advantages, strengthening and maintaining the market position by the major market participants due to availability (for potential customers) of milk

products, which are generated by dairy product producers, distributors and retailers. The most important scientific results have been presented in the studies of P.S. Berehivskiy [1], S. V. Vasylychak [2], O. K. Shafaliuk [3, 4], E. V. Krykavskiy [5, 6, 7], N. S. Kosar [6, 7], N. R. Kubrak [5, 7], O. Yu. Bochko [8], L. Ya. Yakymyshyn [9].

The purpose of the research is to substantiate the necessity of making value-oriented marketing solutions on the dairy market as part of FMCG market.

Materials and results. Foodstuffs are the most necessary things for healthy life of a human. However, their quality and taste must meet established standards and needs of consumers. In general, (based on the average salary), it has been proved that Ukrainians spend more than 50 % of income on food. As of the second quarter of 2016, after buying essential commodities 75 % of the population still has some money that they spend mostly on clothing and outside leisure activities (Fig. 1).

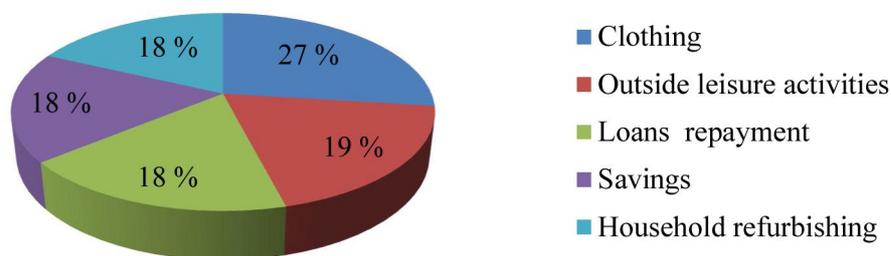


Fig. 1. Distribution of people's income after buying essential commodities, %

Source: [10]

Currently two methods for evaluating the distribution of people's income are used:

1) income-based method measures distribution relatively to income and capital accumulation that are actually combined by the accumulated capital dynamics equation and characterized by the following formula:

$$\frac{dK}{dt} = rK + y(t) - c(t), \quad (1)$$

where $y(t)$ is income at t time; $c(t)$ is consumption at t time; $K(t)$ is capital at t time; r

is interest rate on capital; dK/dt is the derivative from capital over time;

2) expenditure-based method measures the maximum amount of money, which an individual can spend during the month when the research is done.

While the first method is based on how much money *must* be spent, the second one represents how much people *can* spend for consumption. We can say that optimum distribution of incomes has undergone certain transformational changes under

Effectiveness of Innovative Value-Oriented Marketing Solutions on Dairy Market

current market conditions. Thus, internationally, the largest share of income is the salary, while in Ukraine it only makes up 35 % of income. The rest accounts for additional income, making the main basis of people's purchasing power. As for most European countries, the share of salary in the overall income is more than 60 %.

Now Ukraine is still one of the most pessimistic countries in the world. In addition, it occupies the 16th position in the rating of countries in terms of retailers' share in the total sales of the country (Fig. 2).

The most common products on fast moving consumer goods market are dairy products, which are reasonably priced and have high level of nutrients, ensuring proper, normalized human diet. Major suppliers of dairy products to fast moving consumer goods market in Ukraine are Molokiya™, Yagotynske™, Bila Linia™, Voloshkove Pole™, Slovianochka™, Activia™, Prostokvashino™, Galychyna™, which are presented in Table 1.

Fig. 3. shows the share of these brands within the studied market.

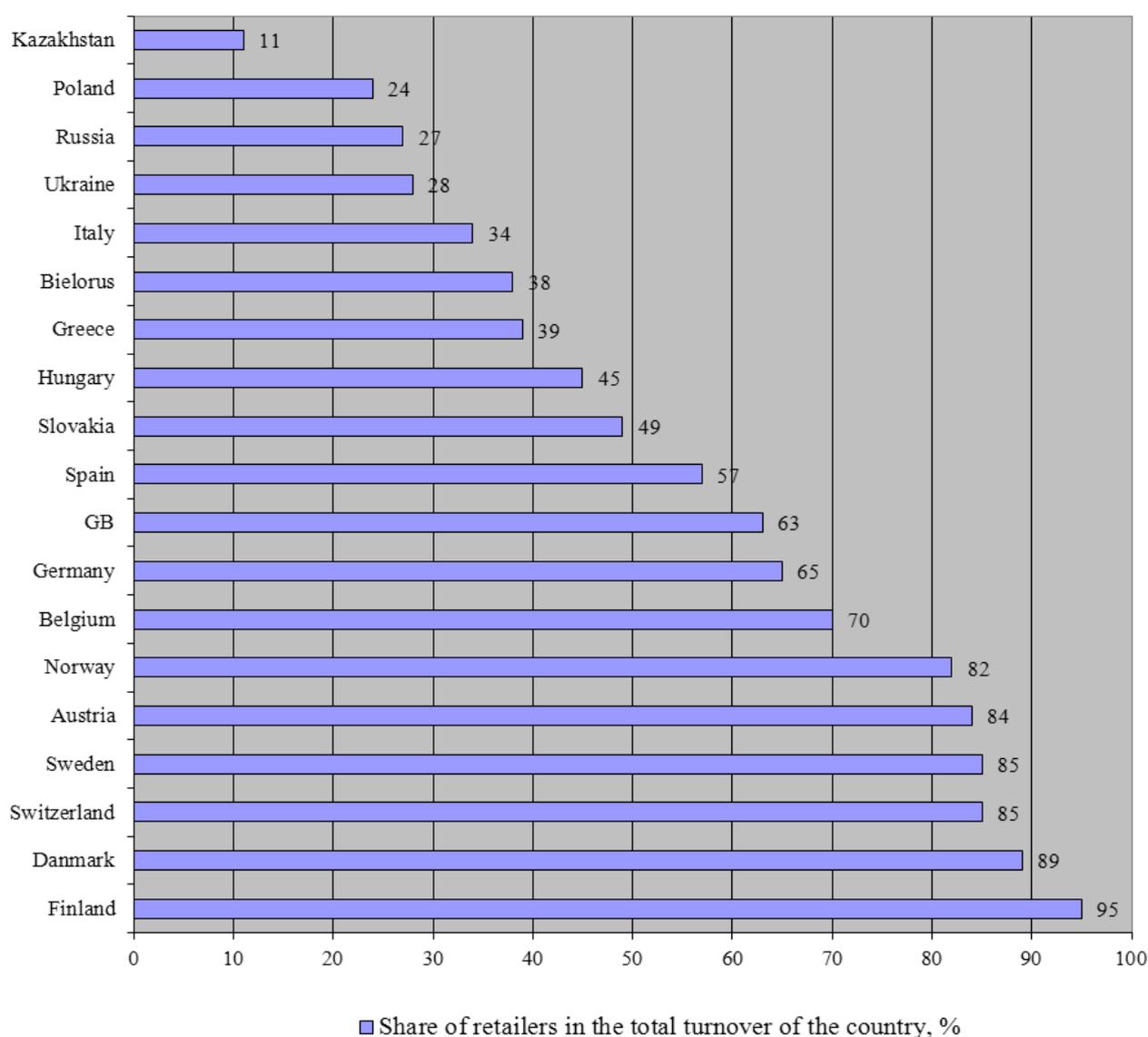


Fig. 2. The share of retailers in the country turnover, %

Source: [11]

Table 1

Characteristics of major dairy brands on the fast moving consumer goods market

Characteristics of the brand	Yagotynske	Bila Linia	Voloshkove Pole	Slovianochka	Activia	Prostokvashino	Molokia	Galychyna
Target audience	Women, families, children, elderly people	Women, families, children	Young families, children	Women, families, children	Young women	Young families, children	Women, families, children	Women, families, children
Term and aim of consumption	Health reasons, for breakfast, work lunch, dinner	Health reasons, for feeling of safety	Health reasons, for breakfast, lunch, dinner	Health reasons, for breakfast, work lunch, dinner	Health reasons, digestion, for the feeling of easiness	Health reasons, for the feeling of home environment	Health reasons, for breakfast, lunch, dinner	Health reasons, for the feeling of traditions
Emotions	Care about family health, special care about the health of children	Health, safety	Health, traditions	Health, natural usefulness, traditions	Care about oneself, "to be fit"	Health, nostalgic, tasty food	Health, natural usefulness	Power of nature, traditions, care about family health
Rationality	Promotes active longevity, lowers cholesterol, normalizes blood glucose	Modern technology, quality control	From house oven, natural ingredients, "live"	Live kefir culture, based on home recipes, convenient packing	Positive habit, 10 billion Actiregularis bifidobacteria	As in childhood, from grandmother, healthy bacteria, traditional recipe	Maximum preservation of natural qualities	Carpathian milk
Slogan	Yagotynske - for the whole family. Now, nationwide	White line - the line of quality	Voloshkove Pole - live product. Voloshkove Pole - exquisite taste of forgotten traditions.	Saving natural usefulness	My secret of easiness. Good mood starts from within	Fresh milk conveniently near! Prostokvashino - from dairy champion. Prostokvashino homemade style	Milk that loves you	Live among eternal values. Galychyna - the power of nature in you

Source: author's research

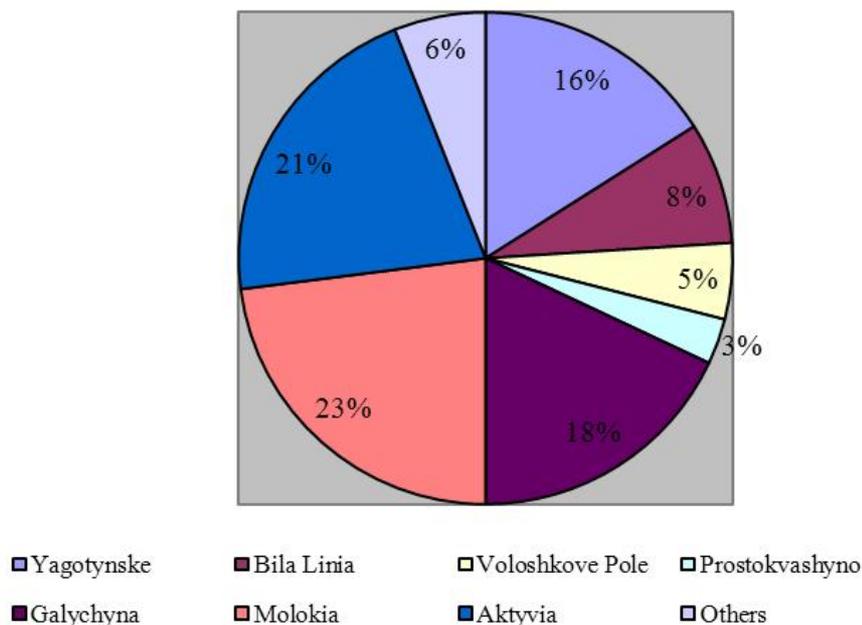


Fig. 3. The share of major dairy brands on the fast moving consumer goods market of the Western region

Source: based on the author's research

Ternopil Dairy Factory PJSC (Molokiya™) is one of Ukrainian companies operating on the retail market that has been effectively and dynamically developing for the past 20 years producing natural and healthy dairy products. Basic company product is milk which is produced by Fresh Milk technology, preserving its natural taste and useful properties.

Due to active use and modification of traditional marketing tools the company showed impressive results as for the market share and geographic coverage of the market. Following are the key factors of such success: first of all, the basis of the company development is value-oriented approach, i.e. focusing marketing activities not only on the product and a customer, but also on the traditional human values that are often not directly related to any goods or consumers. These are three topical areas:

- in the product policy – creation and/or modification of the products included in the healthy food diet with maximum preservation of natural properties;

- in the distribution policy – dramatic shortening of the production – consumption cycle, resulting in a very slight loss of natural properties,

thus, radical reduction of the requirements for protective functions of packaging;

- in the distribution policy – maximum convenience of dairy products complete use and packaging recycling.

It should be noted that implementation of these issues enables increased affordability of dairy products as it is directly reflected in the cost of production and distribution, promoting environmental consciousness, facilitating introduction of environmentally friendly consumer behavior in the context of package management.

Currently Ternopil Dairy Factory PJSC pays special attention to health. The main goal of all brands without exception is improving the health of their consumers.

The current paradigm of healthy food observed now is its naturalness. The basic principles of Molokiya™ are still fresh, straight from the garden with minimum processing! One of the main goods produced by the company, which we study in our research, is milk, which is a consumer food product sold on a daily basis and regardless of the economic situation in the country. However, not all buyers like the taste of pasteurized milk in ordinary packaging. Many

people go to the village in order to buy fresh milk or purchase it from farmers' barrels, which is not very convenient. A trip to the village takes time, and usually the barrels are brought only on certain days; besides, the quality of milk from the barrel does not always meet hygienic standards.

The way out of this situation was found by Ternopil Dairy Factory PJSC which was the first company in Ukraine to introduce a European Fresh Milk standard. It preserves the natural structure of milk and its useful properties. In this regard, the amount of ultra-pasteurized milk in Ukraine in 2016 rose by 28 % compared to 2015 [12]. Today 60 % of Ukrainian consumers prefer premium products, i.e. the products which cost about 20 % more than the products of average price. As for dairy products, it is 32 % of consumers who are willing to pay more for the proper quality products [13]. Increased demand for more convenient packaging led to the market growth of small size milk cartons. In this regard, Ternopil Dairy Factory PJSC started using Pure-Pak Sense Aseptic cardboard packing, which combines both design and functionality: it is easy to fold, easy to compress the package to pour out remaining milk, which helps to reduce food waste. Furthermore, the possibility to fold the packaging reduces the volume of waste to be transported and recycled.

Asymmetric top of the packaging allows using packaging of various sizes, while its attractive elegant shape improves brand image on the shelves of the supermarkets. Upper edge enables printing for better orientation and providing information about the benefits of the product as well as placing advertising messages. New Pure-Pak Sense Aseptic packaging is the latest innovation of Elopak research and development department, which is constantly designing something new to improve cardboard packaging and increase its added value. In addition, the company launched a line of small size thin beverage cartons in order to meet current market demand for small and convenient packaging. Pure-Pak Sens Aseptic cartons are intended for dairy products and have a base area of only 47×32.5 mm, making the packaging look very slim. Cartons range in size, having 7 packaging volumes: 80 ml,

90 ml, 100 ml, 110 ml, 125 ml, 150 ml and 180 ml. All of them are suitable for the same SIG Combibloc filling machine.

Thus, Ternopil Dairy Factory PJSC is one of the promising companies that seeks to improve public health.

ActiviaTM has the second biggest share on the dairy products market. The basic principle of the trademark under study is to get a good mood that starts from the inside.

Under the conditions of falling prices for milk and its increased supply, producers are forced to seek alternative markets and sales methods, resorting to automated selling of milk through vending-machines. Milk vending machines open up new business opportunities: buyers prefer quality affordable milk, thus investing in the dairy business results in rapid payback and profit growth. Consequently, the implementation of such an innovative project provides the opportunity to buy fresh milk near the house.

In the countries of America and Europe milk has been sold through vending machines for a long time. Such way of selling has become common, and milk business has become quite profitable. In the post-Soviet countries this business is completely undeveloped, although the investment is fully returned after a couple of months.

Main advantages of using milk vending machines for customers are:

- possibility to buy fresh milk quickly, at any time and without waiting in a line, close to one's home;

- availability of only high-quality milk delivered directly from the farm, with 3,7–4 % of fat, which makes it possible to use it for making cheese, yogurt, and sour cream;

- the price of tap milk is significantly lower than the price of the milk in cartons due to direct sale, significant reduction of packaging costs and absence of the vendors' pay;

- the machine preserves the taste and aroma of fresh milk;

- this method of selling complies with all hygiene standards.

Use of milk vending machines, where this good quality product can be purchased at a low price, results in increased product demand and turnover growth. Location of other consumer goods

next to milk vending machines will definitely increase sales, as together with milk buyers are likely to buy bread, pastry, cakes and other products from the range of food store.

As seen from above, purchasing of milk vending machines is a good investment for modern farms, which can provide them with steady income and rapid payback.

The first milk vending machine made by Swiss company BRUNIMAT GmbH appeared in Ukraine in the city of Uman in summer 2012 on the initiative of AVM Milk Producers' Association. At first, the citizens of Uman were surprised by the machine but it quickly gained popularity. Not surprising is the fact that the second milk vending machine was put into operation by AVM in October. Uman was not alone in this endeavor: automated points of milk sale appeared in other cities. Thus, spearheaded by AVM, they have been functioning in Odessa and Kirovograd regions. In current conditions, with the help of milk vending machines, Ukrainian farmers are trying to eliminate intermediaries in the chain of sales, relying on selling milk directly to consumers through such vending machines.

Conclusions. As a result of the study it was found that the quality of dairy products plays a special role on the fast moving consumer goods market. It was shown on the example of Ternopil Dairy Factory PJSC – the company that produces natural and healthy dairy products. The prospects for the development of the company in the present circumstances is to improve the quality of its products and to provide 24/7 availability of fresh goods for the public. Some steps have already been taken in this direction. Thus, the company has launched a new type of packaging – Pure-Pak Sense Aseptic. In order to provide availability of fresh milk around the clock, it is proposed that dairy enterprises use milk vending machines, which is a promising innovative way to expand their business.

References

1. Berehivskyy, P. S. & Zheleznyak, A. M. (2008). *Konkurentospromozhnist molokopererobnykh pidpriemstv: teoriia, metodyka, praktyka* [The competitiveness of dairy enterprises: theory, methodology, practice]. Lviv. [in Ukrainian].
2. Vasylychak, S. V. (2005). *Formuvannia ta rozvytok rehionalnoho rynku moloka i molochnykh produktiv* [The formation and development of the regional milk and dairy market: monograph]. Lviv: Scientific-Production Enterprise "Ukrainian Technologies". [in Ukrainian].
3. Shafalyuk, O. (2009). *Modern approaches in optimization of assortment portfolios and the brands architecture of enterprises on the example of the dairy industry. Marketing in Ukraine* [Marketing in Ukraine] 6, 49–58. [in Ukrainian].
4. Shafalyuk, O. (2008). *Reserves for the demand growth and efficiency of marketing activities in the markets of dairy products*. Marketing in Ukraine [Marketing in Ukraine] 4, 12–18. [in Ukrainian].
5. Krykavskyy, e. V. & Kubrak, N. R. (2010) *The current accents of the formation of enterprises' competitiveness. Visnyk Khmelnytskoho natsionalnoho universytetu: ekonomichni nauky* [Herald of Khmelnytsky National University: Economics Herald of Khmelnytsky National University: Economic Sciences] 3, 54–57. [in Ukrainian].
6. Krykavskyy, Ye. V. & Kosar, N. S. (2012). *The formation of marketing strategy of industrial enterprise. Menedzhment ta pidpriemnytstvo v Ukraini: etapy stanovlennia i problemy rozvytku. [Management and entrepreneurship in Ukraine: stages of formation and problems of development]* Lviv, 748, 357–361. [in Ukrainian].
7. Kubrak, N. R., Krykavskyy, Ye. V., & Kosar N. S. (2013). *Potensial elastychnosti u formuvanni konkurentospromozhnosti promyslovykh pidpriemstv* [The potential of elasticity in the formation of the industrial enterprises' competitiveness: monograph]. Lviv: Lviv Polytechnic Publishing House, 2013. (Series "The world of marketing and logistics", 4). [in Ukrainian].
8. Bochko O. Yu. (2016). *The current state of volumes of dairy production in Ukraine. International scientific journal*, 2016. 9, 13–15. [in Ukrainian].
9. Yakymyshyn L. Ya. (2015). *Strategic dimension of logistic operators in supply chains of products of daily demand. Economic Analysis: Sb. sciences works. Ternopil: Publishing and Printing Center of Ternopil National Economic University "Economic Thought".* V. 21, 2, 238–244. [in Ukrainian].
10. *Na chomu ekonomiat Ukraintsi? [How do Ukrainians economize?].* (2017). Retrieved from

- <http://www.nielsen.com/ua/uk/insights/news/2016/CCI-Q2.html> [in Ukrainian].*
11. *Global powers of retailing (2017). Retrieved from <http://www2.deloitte.com/uk/en/pages/consumer-business/articles/global-powers-of-retailing.html>*
12. *V Ukraini stvoryly mapu yakisnoho moloka [A map of high-quality milk was created in Ukraine]*
- Retrieved from <http://a7d.com.ua/novini/35524-ukrayina-zblshila-eksport-molochnih-produktv.html> [in Ukrainian].*
13. *Premialni tovary abo smak harnoho zhyttia [Premium goods or a taste of a good life] Retrieved from <http://www.nielsen.com/ua/uk/insights/news/2016/premiumization.html> [in Ukrainian].*

N. Kosar

PhD in Economics, Associate Professor

N. Kuzo

PhD in Economics, Associate Professor

Lviv Polytechnic National University

INCREASING THE LEVEL OF CUSTOMERS SERVICE AT SERVICE CENTRES AS A FACTOR OF MOBILE OPERATORS COMPETITIVE POSITION STRENGTHENING

Abstract. It has been established that despite the global trends, in Ukraine, the number of subscribers to services of mobile operators reduced. In order to strengthen the competitive position of mobile operators it is proposed to increase the level of the services provided in customer service centers, based on the evaluation of their current level. The research proved that special attention should be given firstly to the reduction of the waiting time of customers, to the increase of the speed of service provision as well as professionalism of the employees, providing consultation services.

Keywords: mobile communication, market of services, mobile connections, customer service centers, level of service.

Formulation of the problem. The modern stage of socio-economic development of any country is characterized by the growing importance of service industries in providing comfortable living conditions for the population. The share of services in the economies of developed countries is about 70 % and tends towards further growth [1]. Significant role in human life and the economy is played by communication services, including the critical importance of telecommunication services, especially telephone and mobile communications. The increasing complexity of customer requirements to the activities of mobile operators makes the market of these services continuously develop. Recently, however, mobile operators are faced with the decrease of the number of customers, hence the need to find areas where they can strengthen their competitive advantage in the market.

Analysis of recent research and publications. In [2] there are considered the

problems of customer service from the perspective of performing the major logistics functions by manufacturing enterprises. [3] presents different approaches to the definition of a service, its features and standards, directions of its improvement, but specificity of services provided by enterprises of different industries is not taken into account. A large number of publications are devoted to improving the quality of services in tourism [4, 5] and banking [6, 7]. However, the problems of the services provided by mobile operators remain beyond the attention of scholars. In [8, 9] the results of the research of the Ukrainian mobile communications market, consumer motivations at the choice of operators on it and the results of analyzing the competitiveness of services are presented. The choice of mobile operator and customer retention, besides the high quality and cost of communication services, are also influenced by the level of services in the customer service centers, it being also beyond the attention of researchers.

The purpose of the research is to study trends in the development of the market of mobile communications services, to determine the directions of increasing the level of customer service by service centers of mobile operators.

Materials and results. In modern conditions, mobile communications play an important role in the exchange of information between people and entities both within the country and globally. The cost of communication services, which in a foreign country can significantly grow or be free (when taking an incoming call or when communicating in Skype and social networks) is often a limiting

factor [10]. This choice is made by subscribers, who compare advantages and disadvantages of different types of communication.

The rapid development of mobile communication in Ukraine until recently was due to the global trend of growth and increase in the number of middle class people. This process and the successful marketing activity of mobile operators in Ukraine have contributed to this. However, the specific feature of this market is its significant dependence on world telecommunication standards and their development. All technologies in the field of mobile communication in Ukraine have been developed outside of Ukraine and implemented here with significant lag [11].

The current development of communication is determined by the presence of four generations (1G, 2G, 3G, 4G), the evolution of which has contributed to the introduction of new services that have radically influenced the demand for mobile services and its speed. At the same time, mobile communication (1G) was characterized only by the offer of voice calls to subscribers and the lack of the ability to call between different networks. Each new generation of mobile communication was associated with the further development of the Internet, the development of SMS and MMS services, a significant increase in the speed of information transmission, which greatly simplified communication between subscribers and provided them with the opportunity to receive additional functions: watching videos, playing games etc.

It is expected that 5G will contribute to satisfaction of fundamentally new market needs through the emergence of “smart” cities, remote surgery, cars without drivers, and significant improvement of online commerce. The speed of mobile communication will grow significantly. Today, engineers are already able to transfer information at a rate of 940 MB / s, and in a moving car – up to 150 MB / s. Equipment manufacturers are trying to implement the fifth generation of communication in a timely manner, in particular [12]:

- in South Korea, Samsung wants to launch a test 5G network prior to the 2018 Winter Olympics;
- Chinese manufacturer Huawei plans to expand the 5G network before the World Cup 2018.

Major mobile operators in Ukraine, including such companies as Lifecell, Huawei and Ericsson, have signed an agreement to promote 5G in Ukraine, which is a prerequisite that this generation of mobile communication will be introduced here synchronously with its launch on a global scale in 2019–2020 [13].

However, the acceleration of the scientific and technological progress leads to the fact that scientists are also developing 6 G and 7 G systems. It is planned that the 6 G system will provide ultra-fast Internet access; the data transfer rate will reach 10-11 Gbit. The 7G system is designed to provide uninterrupted wireless access to information anytime and anywhere with the best quality performance at high speed, increased bandwidth of communication networks and reduced cost [14].

The emergence of various mobile communication systems not only had a positive impact on living standards, satisfying various needs, but also affected the economies of particular countries and the world economy as a whole, as evidenced by the following data of secondary marketing information [15]:

- mobile communications provide contribution to the global economy at a rate of 3.6 % of total world GDP; investment in this sector in 2015 amounted to 336 billion dollars, in this area there appeared 10.5 million jobs;
- the emergence of additional bandwidths in the development of communications systems in the United States will contribute to the creation of 150 thousand jobs; and by 2021, it will supplement the budget by \$ 4.5 billion, through the tax system;
- mobile communication promotes active development of mobile advertising and changes organizational structures of many companies. In 2015 revenues from mobile advertising reached almost 24 billion dollars.

According to the predictions of experts, in 2019 mobile penetration worldwide will grow from 96.4 % to 125 % due to increased demand for smart phones and tablets, availability of several cards for subscribers to the Internet [16]. The number of mobile connections in the world will increase from 6.9 billion in 2014 to 9.5 billion in 2019.

Today, major operators in the mobile market of Ukraine are such companies as “Kyivstar”, Vodafone / MTS Ukraine and lifecell, which in total account for more than 97.5 % of the market.

Increasing the Level of Customers Service at Service Centres as a Factor...

As of April 2016, the number of subscribers of “Kyivstar” amounted to 25.3 million cards, of MTS Ukraine / Vodafone – to 20.7 million cards, of lifecell – to 9.7 million cards [17].

The first two mobile operators, which are leaders in the Ukrainian market, have gradually mastered various technologies, and at the time of creating Lifecell, SMS, MMS, the Internet and their various tariff features have already been tested and should only be copied. The company lifecell began to pay considerable attention to social work. Initially, it worked with social networks, helping subscribers with natural disasters.

Mobile communication leaders, in particular, such companies as Kyivstar, Vodafone / MTS Ukraine and lifecell, receive competitive advantages on the market first of all due to the wide availability of their services for subscribers and their proper service through the creation of appropriate centers in all regions of Ukraine.

Despite significant advantages and prospects, in 2016, the number of mobile subscribers in Ukraine declined because consumers began to use less mobile communication. The smaller number of subscribers uses several SIM-cards. In particular, this is due to the fact that fewer subscribers use several SIM-cards.

The number of subscribers of all mobile operators is shrinking. Particularly, at the beginning of 2016, the largest mobile operator “Kyivstar” observed decrease in the customer base, in the first quarter of 2016 – from 800 thousand to

25.3 million. However, the company Vodafone in the first quarter of 2016 reached a minor increase in the number of subscribers, it being 400 thousand (20.7 million SIM cards), which is partly due to the purchase of this operator's SIM cards for resale in Europe due to its profitable pricing policy in the field of international calls [18].

As a result of reduced incomes, the subscribers do not want to pay for services of two mobile operators, the prices of which increase slightly, when all services can be obtained from one operator. In particular, the mobile operator lifecell average subscriber’s check in the second quarter of 2016 increased by 11 % – to 38.2 UAH. By the results of the first quarter of 2016, the average subscriber’s check of “Kyivstar” increased by 16 % – to 41.7 UAH.

However, the rejection of the second SIM-card was caused not only by economic reasons, but also by the lack of memory.

Reduction of the number of mobile subscribers in Ukraine is confirmed by official statistics. According to the results of the second half of 2016, 56.7 million SIM-cards were used in Ukraine (Table 1), while for the same period in 2015 there were 60.7 million of them, that is, the decrease was 6.59 %.

To describe the trends that prevailed there were used linear, quadratic, and exponential functions. The highest coefficient of determination (0.875) was defined for the quadratic model. This model best describes the trend that prevailed. Table 2 shows the main results of this trend.

Table 1

The number of subscribers and profitability of mobile communication in Ukraine

Period	Number of mobile subscribers/ millions cards	Deviation (to the previous six months), %	Revenues from providing mobile services	
			Total mln. UAH	To population mln. UAH
1 st half of 2013	61.7	–	15268.9	12006.2
2 nd half of 2013	62.5	1.30	16136.9	12307.7
1 st half of 2014	59.4	-4.96	15147.6	11753.2
2 nd half of 2014	61.2	3.03	16418.7	11243
1 st half of 2015	61.7	0.82	16369	10674.8
2 nd half of 2015	60.7	-1.62	16836.6	10998
1 st half of 2016	56.7	-6.59	17174.5	10533.5
2 nd half of 2016	56.7	0.00	16902.6	10495.2

Compiled from [19]

Fig. 1 shows the trend models built for forecasting revenues from providing mobile communication services in Ukraine.

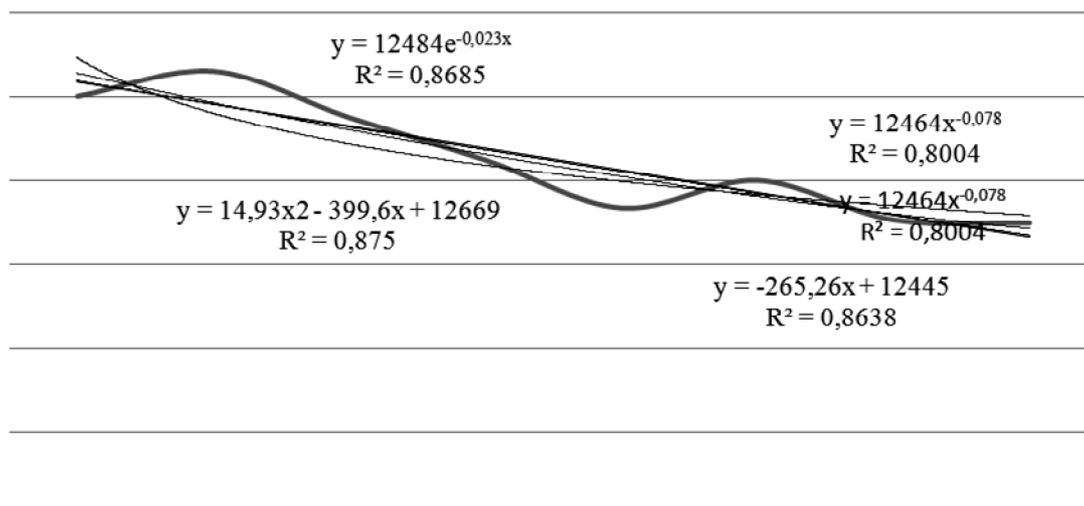


Fig. 1. Trend models for forecasting revenues from providing mobile communication services to the population (million UAH)

Note: Compiled by the authors

Table 2

Results of the quadratic trend study

Indexes	Quadratic model	Result
The coefficient of determination	0.875	There is a significant relationship
Criterion of Fisher	17.5	As the determined value of the Fisher's criterion is more than the critical value, it can be concluded that the relevant model is adequate
The critical value of the Fisher's criterion	5.79	
Forecast for the 1st half of 2017, mln. UAH.	10281.65	
Lower limit of the confidence interval for the forecast for the 1st half of 2017, mln. UAH.	9797.2	With a probability of 0.95 in the first half of 2017 the predicted value of revenues from mobile services will be from 9797.2 to 10766.1 million UAH.
Upper limit of the confidence interval for the forecast for the 1st half of 2017, mln. UAH.	10766.1	
Forecast for the 2nd half of 2017, mln. UAH.	10165.7	
Lower limit of the confidence interval for the forecast for the 2nd half of 2017, mln. UAH.	9681.25	With a probability of 0.95 in the second half of 2017 the predicted value of revenues from mobile services will be from 9 681.25 to 10 650.15 million UAH.
Upper limit of the confidence interval for the forecast for the 2nd half of 2017, mln. UAH.	10650.15	

Note: Compiled by the authors on the basis of the research conducted

So, given the results of the study, we can conclude that revenues from mobile services in the 1st and 2nd half of 2017 will be reduced provided that the trends in the market persist.

The number of SIM-cards in the mobile market of Ukraine continues to decline, despite the growing number of smartphones with support for two SIM-cards. Specifically, in the second quarter

of 2016 in the target market there were sold 1.1 million mobiles that are 43 % more than during the same period in 2015. Mobile phones with two SIM-cards account for 93 % of sales [18].

National Commission of Communications and Information is the regulator on the Ukrainian telecommunications market. Further reduction of the number of SIM-cards in the market was caused by its policies as well. In 2015 the National Commission for Communications Regulation has reduced the rate of access to networks of mobile and fixed operators from 0.36 UAH. to 0.23 UAH per minute. In the future there is a possibility of another reduction of this rate in order to reduce it to zero. This will allow subscribers not to block traffic within the networks of the main operators, they will be able to call any networks at no extra cost and they will simply not need the second SIM-card.

However, mobile operators do not reduce the price of calls in the network of competitors. In the “Kyivstar” network, in the “Calls +” tariff plan, a minute of talk with a subscriber of another network costs 0.6 UAH, the standard cost of talking to other numbers in the lifecell is 50 kopecks per minute. Cheaper minutes to other networks need to be purchased separately (10 UAH for 50 minutes).

Another reason for the decrease in the number of SIM-cards is the active use by subscribers of Internet services, through which people can communicate without restrictions.

Overcoming the negative effects of reduced demand in the mobile communication market of Ukraine provides for its further development through the introduction of innovative technologies of future generations while simultaneously optimizing the pricing policy by operators and increasing service quality in customer service centers to meet the requirements of different market segments.

Increasing the level of service of subscribers in service centers of mobile operators will allow them to keep existing customers and attract new ones. Today, almost 50 % of all claims and claims of clients concern the services provided.

To develop substantiated recommendations for improving the level of customer service in service centers, it is necessary to analyze its existing level. For such an analysis, we use the methods of determining the relative competitiveness assessment for individual indicators, presented in [20] and expert assessments. According to [21], depending on the specificity and subject of the study and the method used to handle the

expert data, estimates may have different measurement scale: from 0 to 1, from 0 to 10, and from 0 to 100. There is no fundamental difference in these scales, the choice of that or the other is largely determined by the convenience of obtaining and processing evaluations, as well as the choice of the researcher.

The research was conducted for consumers, for whom personal service in mobile communication is important, first of all, they are senior citizens and persons for whom it is important to have a personal contact with the manager.

To conduct the research, there is used the qualitative evaluation scale, which is presented in Table 3.

Table 3

The service quality evaluation scale

Service quality	Points
High level	50
Sufficient level	40
Average level	30
Low level	20
Very low level	10

Note: developed by the authors

The choice of the evaluation scale is due to the sufficient differentiation of the ratings and the convenience of processing the results.

We determine the level of service at the service centers of the mobile operator of “Kyivstar”. To evaluate, we will use specifications and their basic values given in Table 4.

Table 4

Specifications for determining the customer service level in “Kyivstar” service centers

No	Specifications for determining the quality of service	Basic score
1	Service waiting time, min.	5
2	Consultation expertise, points	50
3	Assessment of customer needs satisfaction, points	50
4	Ability of quick self-service, points	50
5	Wide range of optional accessories or services, points	50
6	Politeness of personnel, points	50
7	Competence of personnel, points	50

Note: developed by the authors

In order to receive the ratings, we monitored customer service at the Kyivstar service centers during December 2016 – January 2017 and March – April 2017. The results of the survey were summarized by means of methods of processing expert assessments.

A random sample was used for the study, the size of which was determined by the formula given in [22]. The observation was carried out on 68

people, the errors made in the results, obtained during the formation of the sample, amounted to 0.05. In this case, the maximum value of the dispersion of 0.25 is taken into consideration. The reliability of the research results is 0.90.

Let's compare the obtained characteristics as a result of observing the level of service in three Kyivstar service and sales centers in the city of Lviv and the base values (Table 5).

Table 5

**Results of customer service survey
in Kyivstar service and sales centers in the city of Lviv**

No	Specifications for determination of the level of service	Average value	Baseline value	The coefficient of variation, %	Relative evaluation
1	The waiting time for service, min.	10.00	5	29.75	0.500
2	Consultation expertise, points	40.12	50	12.28	0.802
3	Assessment of customer needs satisfaction, points	36.18	50	17.21	0.724
4	Ability of quickly self-service, points	37.88	50	13.35	0.758
5	Wide range of optional accessories or services, points	40.53	50	11.58	0.811
6	Politeness of personnel, points	39.82	50	14.34	0.796
7	Competence of personnel, points	40.74	50	14.16	0.815

Note: developed by the authors

According to the calculated data, we can make the following conclusions:

- the level of the service provided is above the baseline, if all relative ratings are greater than 1;
- the level of the service provided is basic, if all relative assessment is equal to 1;
- the level of the service provided is below the baseline, if all the relative ratings are less than 1.

So, given all the relative ratings obtained are less than 1, it can be concluded that the level of services provided at the service and sales centers of “Kyivstar”, which have been observed, requires significant improvement.

The greatest improvement is the reduction in customer waiting time. It is necessary to improve the possibility of quick service and professional advice of staff that will significantly increase the number of re-purchases. It is also important to constantly increase the competence of the staff.

An increase in the level of service in mobile service providers’ customer service centers can be achieved by the following measures:

- continuous training of employees as to studying the needs of clients and maximizing their satisfaction;

- specialization of personnel in the sale of certain products and services;

- improvement of the system of personnel motivation for achievement of high performance.

Improvement of the final results of the staff of the customer service centers can be achieved through the proper system of their motivation using the following elements: a 2 % bonus based on the sales volume; a system of points that will allow the employees to form their own social package; allowances for seniority (5 % increase to the received points for each year of work). This will facilitate simultaneous implementation of the elements of internal marketing in the mobile communication service and sales centers and will encourage its staff to work more efficiently.

Conclusions. Despite the fact that in the world there is a forecast for the increase of the level of penetration of mobile communication on a global scale to 125 % in 2019, in Ukraine during the last year the number of cards that subscribers have reduced.

The growth of prices for mobile communications, the active use of the Internet for

communication between subscribers, has led to the fact that lately the incomes of mobile operators are increasing, but the number of SIM-cards is decreasing. This affects the number of subscribers of mobile operators.

Today, the main operators in the Ukrainian mobile communications market are companies such as Kyivstar, Vodafone / MTS Ukraine and lifecell, whose market share is 97.5 %. These mobile operators create subscriber service centers to maintain appropriate positions. In order to maintain existing customers and attract new ones, it is recommended to increase the level of service in such centers based on the assessment of the existing level.

In the future, it is advisable to conduct research on the needs of mobile operators' clients with the collection of primary marketing information and, on this basis, develop standards for their servicing at relevant service centers, bringing this information to the clients themselves.

References

1. Yuriy, Yu. M. (2010). *Rol' ta znachennia sfery posluh v ekonomitsi derzhavy [The role and importance of the service sector in the economy]*. Retrieved from http://www.rusnauka.com/34_NIEK_2010/Economics/75523.doc.htm. [in Ukrainian].
2. Chukhraj, N. I. (2006). *Lohistychne obsluhovuvannia [Logistics service]*. Lviv: NU "Lvivska politekhnika". [in Ukrainian].
3. Lahuta, Ya. M. & Koval'chuk, O. A. (2015). *Improving the customer service company*. Visnyk ZhDTU "Ekonomichni nauky". [Bulletin ZSTU "Economics"], 4(74), 130–138. [in Ukrainian].
4. Nezveschuk-Kohut, T.S. (2015). *Problemy ta napriamy pidvyschennia efektyvnosti upravlinnia iakistiu obsluhovuvannia na turystychnykh pidpriemstvakh [Problems and efficiency rise trends of quality management services at tourism sector enterprises]*. *Efektivna ekonomika [Effective economy]*, 4. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=3995> [in Ukrainian].
5. Kozlov's'kyj, Ye. V. (2014). *Kul'tura obsluhovuvannia ta zakhyt prav spozhyvachiv u sferi turyzmu [Culture of service and consumer protection in the tourism sector]*. *Pytannia kul'turolohii: Zbirnyk naukovykh prats' Kyivs'koho natsional'noho universytetu kul'tury i mystetstv. [Issues of Cultural Studies: Proceedings of the Kyiv National University of Culture and Arts]*, 30. Retrieved from <http://knukim.edu.ua/wp-content/uploads/2016/06/111.pdf>. [in Ukrainian].
6. Biloshapka, V. S. & Korchan, A. V. (2013). *Bazovi osnovy protsesu rozrobky i vprovadzhennia standartiv iakosti obsluhovuvannia kliientiv banku [The basic foundations of developing and implementing quality standards for customer service bank]*. *Stratehiia rozvytku Ukrainy. Ekonomika, sotsiologhiia, pravo. [Strategy of Ukraine. Economics, sociology, law]*, 2. Retrieved from jrn1.nau.edu.ua/index.php/SR/article/download/6217/6936. [in Ukrainian].
7. Kubiv, S. I., Krykavskij, Ye. V. & Kosar, N. S. (2006). *Marketynhova kontseptsiiia formuvannia pryvablyvosti komertsijnoho banku [Marketing concept formation attractiveness of commercial banks]*. Lviv: NU "Lvivska politekhnika". [in Ukrainian].
8. Yaremenko, S. S. (2015). *Researching of the competitiveness of mobile communications. Yevropejs'kyj vektor ekonomichnoho rozvytku [The European vector of economic development]*, 1(18), 227–235. [in Ukrainian].
9. Hranaturov, V. M., Lytovchenko, I. V. & Korablinova, I. A. (2013). *Upravlinnia konkurentospromozhnistiu operatora telekomunikatsij [Management of competitive telecommunications operator]*. Kyiv: Kafedra. [in Ukrainian].
10. Priamukhina, N. V. (2013). *Place of communications services in the financial market of Ukraine. Innovatsijna ekonomika.. [Innovative Economy]*, 2 (40), 204–209. [in Ukrainian].
11. Mamchyn, R. O., Isakovych, I. I. & Markhevska, I. I. (2012). *Features of the development of the mobile market in Ukraine. IX Mizhnarodna naukovopraktychna konferentsiia "Marketynh ta lohistyka v systemi menedzhmentu". [Abstracts of Papers: Ninth International Scientific Conference "Marketing and logistics management system"]*. (pp. 267–269). Lviv: NU "Lvivska politekhnika". [in Ukrainian].
12. *Yak zv'iazok 5G zminyt' svit [How do connection 5G will change the world]*. internetua.com. Retrieved from <http://internetua.com/yak-zv-yazok-5G-zm-nit-sv-t>. [in Ukrainian].
13. *V Ukraini do 2020 roku z'iavyt'sia mobil'nyj zv'iazok 5G [Mobile communication 5G will be in Ukraine in 2020]*. ipress.ua. Retrieved from http://ipress.ua/news/v_ukraini_menshe_anizh_za_try_roky_zyavytsya_5g_190677.html. [in Ukrainian].

14. *Evolution of Mobile Communication from 1(G) to 4G, 5G, 6G, 7G ...* linkedin.com. Retrieved from <https://www.linkedin.com/pulse/evolution-mobile-communication-from-1g-4g-5g-6g-7g-pmp-cfps>
15. *Shyrokosmuhovi systemy bezdrotovoho dostupu: vid tekhniky do ekonomiky [Broadband wireless access systems from engineering to economics]*. portaltele.com.ua. Retrieved from <http://portaltele.com.ua/news/technology/shyrokosmugovi-sistemi-bezdrotovogo.html>. [in Ukrainian].
16. *Do 2019 roku pronyknennia mobil'noho zv'iazku v sviti dosiahne 125 % [Mobile penetration worldwide will reach 125 %in 2019]*. cikavosti.com. Retrieved from [http://cikavosti.com/do-2019-roku-proniknennya -mobilnogo-zv-yazku-v-sviti-dosyagne-125](http://cikavosti.com/do-2019-roku-proniknennya-mobilnogo-zv-yazku-v-sviti-dosyagne-125). [in Ukrainian].
17. *Kil'kist' abonentiv mobil'noho zv'iazku rizko zmenshylasia [The number of mobile subscribers has decreased dramatically]*. visnyk.lutsk.ua. Retrieved from <http://visnyk.lutsk.ua/news/ukraine/24184>. [in Ukrainian].
18. *Ukrayntsy postepenko otkazyvaiutsia ot lyshnykh SIM-kart [Gradually ukrainians refuse from extra SIM-cards]*. tc.ua. Retrieved from <http://www.tc.ua/news/ukrainsyi-postepenko-otkazyvayutsya-ot-lishnih-sim-kart>. [in Ukrainian].
19. *Informatsijne suspil'stvo [Information society]*. ukrstat.gov.ua. Retrieved from <http://www.ukrstat.gov.ua>. [in Ukrainian].
20. Illiashenko, S. M. (2005). *Marketynhova tovarna polityka [Marketing product policy]*. Sumy: VTD Universytets'ka knyha [in Ukrainian].
21. Holubkov, E. P. (2000). *Marketynhovye yssledovanyia: teoriya, metodolohyia y praktyka [Market Research: theory, methodology, practice]*. Moscow: "Fynpress". [in Russian].
22. Krykavskyj, Ye. V., Kosar, N. S., Mnykh, O. B. & Soroka, O. A. (2004). *Marketynhovi doslidzhennia [Market Research]*. Lviv: NU "Lvivska politekhnik", "Intelekt-Zakhid". [in Ukrainian].

O. Kuzmin

Doctor of Economic Science, Professor

N. Stanasyuk

Ph.D. in Economics, Associate Professor
Lviv Polytechnic National University

M. Olikhovska

Ph.D. in Economics, Associate Professor
Lviv Institute of the Interregional Academy of Personnel Management

APPLICATION OF CLUSTER APPROACH TO THE DEVELOPMENT OF INDUSTRIAL POTENTIAL: INNOVATIVE POLICY AND MANAGEMENT SUPPORT

Abstract. In modern conditions, the role of industrial potential is increasing, which will ensure the modernization of the national economy. The emergence of crisis phenomena of clusterization in the industrial sector of the state is deepening due to the lack of directions in the management of its development. Therefore, the purpose of our article is to study the peculiarities and benefits of using the cluster approach in the management of industrial potential, to identify the main disadvantages of domestic clustering, taking into account foreign experience, and to elaborate of proposals for the development of industrial clusters in Ukraine.

The article deals with the economic interpretation of the term "cluster" and highlights the main characteristics and factors of the cluster problem presented in the scientific papers of scientists. The authors ground the main advantages of the cluster approach to the development of industrial potential and identify the main obstacles to the successful application of clustering in Ukraine. The relationship between the benefits and results of the application of the cluster approach for the formation of innovation-industrial policy in the state is established. During the research, the world experience in applying the cluster policy mechanism has been studied, and the directions of state support in the formation of favourable conditions for the development of clusters in industry have been proposed.

Keywords: cluster, cluster approach, clustering, industrial cluster, industrial potential.

Formulation of the problem. The role of the industrial potential as the basis of state functioning is rising nowadays, ensuring modernization of the national economy. Ukraine tries to reach the economic

level of the developed countries of the world, targeting the European direction. Ukraine has insufficient, but its own experience of clusterization of certain regions. In future the country needs to think it over, compare it with the experience of other countries and try to define its own problems and outline possibilities and prospects of expanding the national industrial potential under the conditions of cluster approach application. The absence of the clearly defined strategic directions in the management of its development is one of the reasons of the origin of clusterization crisis in the industrial sector of the state.

Analysis of recent research and publications.

Considerable contribution to the research of cluster approach application in the management of industrial potential development was made by the leading domestic and foreign scientists and economists, among them being N. V. Dehtiarenko [1], R.O. Kulyk [3], T. Y. Nakonechna [3], M. Porter [4], Young Louren [5], E. Bergman, E. Feser [6], G. Spencer [7] and others.

Notwithstanding multi-aspect scientific publications on the mentioned theme and the availability of a great number of practical recommendations aimed at increasing the level of industrial potential development, the issues of forming directions of the state support of its development including the application of cluster approach in management, in particular, able to optimize the prospects of domestic industry in the

context of modern vectors of national economy development are still insufficiently researched.

The purpose of the research is to study peculiarities and advantages of cluster approach application in the management of industrial potential development, to determine the main drawbacks of the domestic clusterization, taking into account foreign experience, and to elaborate proposals for the industrial clusters development in Ukraine.

Materials and results. The concept of a “cluster” was introduced in scientific circulation by the American scientist Michael Porter in his fundamental work “Competitive edges of countries” (1990), and appeared as a result of the systems study of the activities of successful American and European corporations.

The founder of the theory of clusters, the professor of Harvard business school M. Porter determines a cluster as a network of suppliers, producers, consumers, elements of industrial infrastructure and research institutions interconnected in the process of creation of added value. This approach is based on the account of positive synergetic effects of regional agglomeration, i.e. closeness of consumer and producer, network effects and diffusion of knowledge and abilities due to migration of personnel and allocation of business. There are no boundaries between sectors and types of activities, and all of them are considered in interconnection. The main characteristics and factors of the cluster problem, which were considered by the scientist, are generalized and presented in Table 1.

Table 1

Main characteristics and factors of the cluster problem in the works of the American scientist Michael Porter

Characteristics of clusterization	Factors of achieving the effect of clusterization
Clusters raise the enterprises efficiency in the places where they are created	<ul style="list-style-type: none"> • Better access to the workforce and suppliers; • Access to the specific information; Complementary products that become due to this more attractive for consumers; Access to institutions and public commodities; Better motivation of managers who want to get respect of local colleagues; Satisfaction of the market requirements in regular deliveries of goods and services that are produced within the framework of cluster enterprises and meet the latest quality requirements.
Clusters increase the rates of innovations and determine their direction, thus creating the basis for the future economic growth.	<ul style="list-style-type: none"> • Better market understanding; • Ability to implement rapid changes and sufficient flexibility; • Lower cost of the experiment; Provision of personnel teaching, market research, logistic and technological research; Pressure of the competitors and other producers of the cluster
Clusters stimulate creation of new enterprises, thus promoting cluster growth and strengthening.	<ul style="list-style-type: none"> More noticeable niches for new enterprises; Entrance of new markets of distribution on the basis of active marketing activity and policy of innovations; Availability of necessary raw materials, complementary parts and workforce; Creation of a new business is a part of the positive feed-back chain; Steady contacts with financial and credit institutions on the basis of the created image of a cluster.

Note: Generalized and composed by the authors on the basis of [1, 2, 3, 8, 9].

Z. Louren Young offers almost the same definition of clusters, his works being devoted to the role of clusters in the innovative development: "Clusters of firms are groups of companies located close to each other. In some cases, groups of companies form such concentrations that belong to the same industry" [5, p. 4]. In addition to the above cited general characteristics of clusters, Z. Louren Young also characterizes them with the following features: location of companies near larger research universities; their formation mainly of small private companies; employees having work experience in many firms.

An American scientist Wolfgang Price notes: "Creation of clusters and introduction of cluster model of enterprises amalgamation is a method of renewing trust between the government and business, as well as transformation of the isolated firms in an enterprise unity" [10, p. 7].

For example, foreign scientists-economists E. Bergman and E. Fether define industrial clusters as an amalgamation of firms and industries by different aspects of joint activity, for example, by geographic location, sources of innovations, suppliers, resources etc. Regional industrial clusters, in their opinion, are industrial clusters concentrated geographically within a certain region [16].

The Japanese scientist Nakamura Suidzi believed that clusterization had an identical positive effect on the increase of productive efficiency, retail and wholesale trade in Japan and Great Britain [11].

The English philosopher Herbert Spencer got the similar result of the research, pointing out that regions with higher percentage of employment in clusters attain better economic outcomes (level of earnings, indicators of employment) than regions with low cluster employment [7].

It's worth mentioning that application of the cluster approach in certain territories foresees the formation of clusters of the enterprises that perform different functions. They are united by a common technical productive process. Such a cluster includes the enterprises that performed scientific design and personnel training, as well as technologists, packers, and a dealer network. A

special feature of the cluster approach is that it takes into account the positive synergetic effect of the territorial agglomeration, a network principle of productive process organization and diffusion of knowledge and abilities due to the migration of the personnel. In this case, sectors of the economy and types of activities that are participants of a cluster are considered to be interconnected and complementary.

According to N. V. Dehtiarenko, "it is possible to expect that, in the nearest future, cluster development policy will play the main role in providing steady competitiveness of economies" [1, p. 112].

An effect of collaboration among cluster participants will be noticeable at once. The advantages of application of the cluster approach for the development of the industrial potential on the innovative basis is possible to see in the results of its introduction. We show it schematically in Fig. 1.

Clusters are able to increase the level of the productive efficiency and economic growth. Having examined 218 industrial districts, the economist Vernon Henderson found out that location of an enterprise of the same industry on their territory extremely increases its efficiency [12, p. 28].

Among all the advantages of cluster approach, the most essential is an access to the innovations, knowledge, and "know-how". In a knowledge-based economy, characterized by knowledge-intensive traditional industries as well as emerging industries, companies search for their main competitive advantage in ideas and talented workers. So this requires geographical closeness to skilled colleagues, the best suppliers, estimating consumers, highly qualified human resources, research and instruments of development, as well as leaders of an industry. Special knowledge and "know-how" of the industry are accumulated and spread through entrepreneur spheres and innovative companies. Cluster approach provides companies with quicker access to the information about advantages in technologies and changes in the benefits of customers and consumers. It stands to reason that it decreases transaction costs.

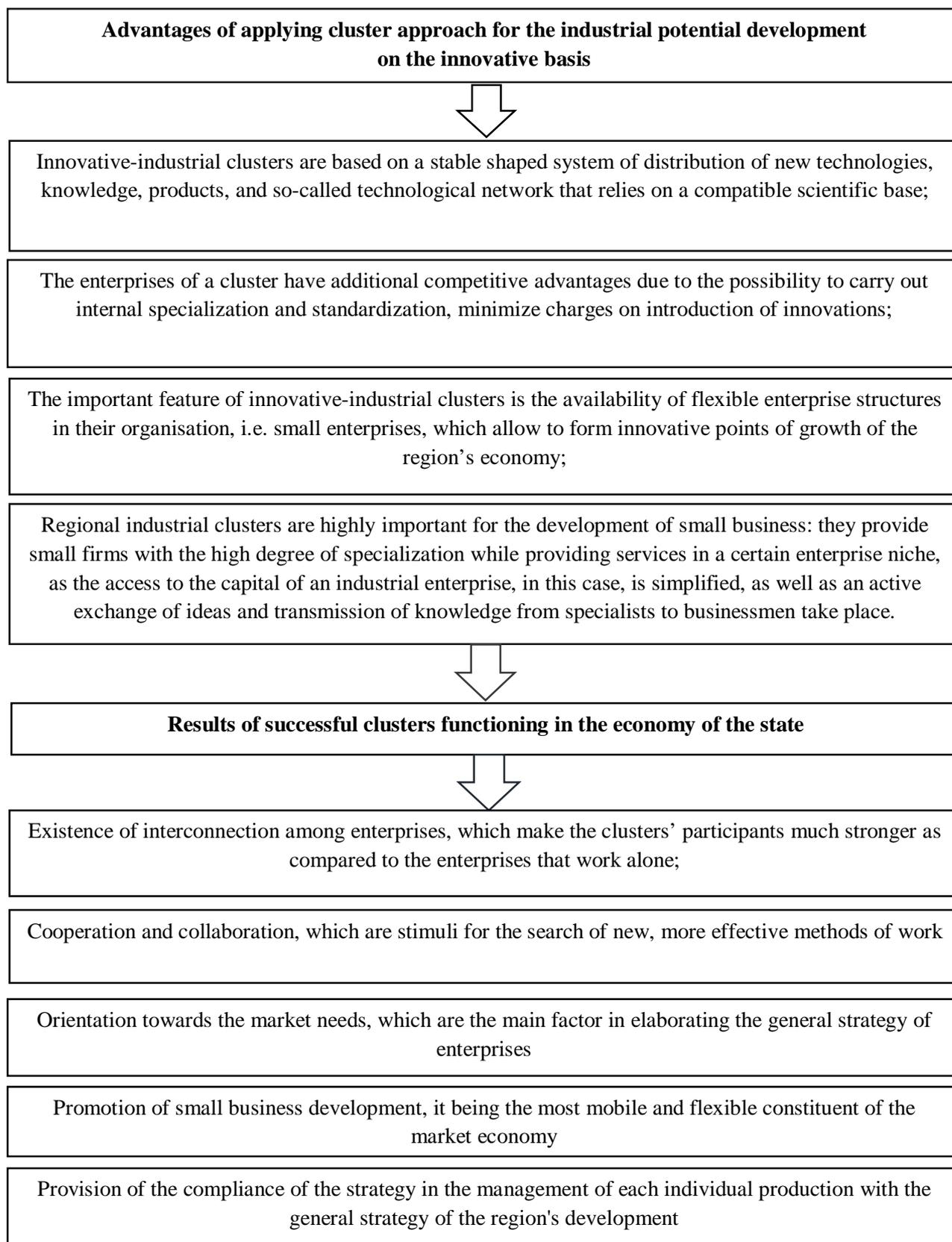


Fig. 1. Interconnection of advantages and results of cluster approach application for formation of innovative industrial policy of the state

Note: Authors' own project

However, notwithstanding the apparent advantages of the economy of cluster construction for a certain territory and for the state as a whole, there are various obstacles on this way, such as bad infrastructure, lack of capital and skilled workforce, a hierarchy of clusters that causes difficulties for the suppliers of a lower level, effect of blocking, i.e. certain companies can be more competitive in comparison with the cluster companies, a threat of hyper specialization of a cluster and excessive “branding”; indifference of state authorities, misunderstanding of benefits from the cluster approach.

Thus, in our opinion, the main problems of industrial cluster development today in Ukraine are:

- lack of qualitative organizational conditions for the development of clusters, in particular, of the practice of strategic planning of its support, quality management;

- imperfection and inaccessibility of transport and engineering infrastructure;

- lack of effective collaboration of business structures with education and scientific research institutions and the state;

- organizational structures of management and information communication systems among the cluster participants are not optimally constructed;

- limited access to the international market, the lack of a well-established regulatory framework for the organization and standardization of clusters;

- lack of interest of the state authorities in organization and financial support of clusterization.

The peculiarity of the development of clusters in Ukraine is the lack of well-established effective mechanisms for the interaction of industrial enterprises, scientific research, educational organizations and state authorities: the key partners of innovative enterprises are suppliers of equipment, materials, components or software, with only 17.1 % of enterprises and 9.9 % of clients or consumers maintaining close connections with them; whereas cooperation with the state scientific research institutes and educational establishments remains undeveloped: only 4.7 % and 3.4 % of enterprises have close connections with them, respectively [13].

The problem of creating clusters, the orientation of spatial development on a cluster model is a matter of state importance. It is the state level that has the necessary resource for conducting previous research, in particular, finding an effective relationship between industry, agriculture and the service sector, since it is not possible to move at the same time in all directions at one speed. The formation of clusters stimulates the development of industrial potential on an innovative basis. Therefore, the state itself should begin this work by creating an appropriate legislative framework with clearly understandable rules.

In 1998, Ukraine first tried to apply the concept of business clusters. This concept was absolutely new for Ukraine at that time. In order to improve conceptual economic and methodological knowledge about clusters, their development and management, much effort is needed to popularize the cluster concept [14]. However, in spite of difficulties in organization and support of the state, thousands of clusters are created and successfully operate in different branches of the economy in the world. It's worth remembering and agreeing with Bernard Show's saying that wisdom of people is not in their experience, but in the ability and desire to be enriched with this experience.

Interest in cluster innovation development in the second half of the twentieth century has steadily grown until it became explosive and reached North America and Europe in 1980–1990, and later, new industrialized countries. This interest was primarily due to the merger of Silicon Valley companies (California, USA). Within the framework of the “Silicon Valley” cluster only for the period from 1991 to 2001 venture capital investments increased from 2 billion dollars up to 68.8 billion dollars. An example of California was followed by other US states, having implemented relevant cluster development programmes: hundreds of cities and territories are implementing their cluster strategies.

In the USA, cluster formation committees are being set up. Necessary analytical work is carried out by scientific centres and universities. The initial capital is allocated by the state administration, and then the funds of private companies are involved. At the beginning of the XXI century in the USA, clusters involved 57 % of

the country's total workable potential, while the share of GDP produced by clusters was 61 %.

The modern economy of Canada was formed in the same way. An agricultural cluster in Saskatoon and a bio technologies cluster in Montreal (Quebec) are referred to its biggest clusters. [15, p. 21].

In the light industry, footwear clusters in Italy, knitwear and leather clusters in the USA, textile in Hungary, textile, knitwear and footwear clusters in Brazil, India, Korea, Mexico, and Peru have become the most widespread. So, for example, productive clusters in the USA, that produce fabrics, combine 27 783 companies and employ 1553.5 thousand people, and those producing knitwear goods bring together 21 073 companies and employ 1516.4 thousand people. In 1999, a cluster of knitted fabric and stocking wears in Tirupuri (India), which unites more than 7000 small and medium-sized enterprises, exported cotton stocking to the countries of the EU, Japan and the USA for about 650 million dollars, more than 80 % of all Indian exports of this product group [14].

An interesting example of clusters creation is the experience of the Japanese economy. In 1983, the law that confirmed the concept of technopolises, was adopted in the country and provided support to organization of centres of integration of industry, science and authority. A typical large Japanese cluster (there are about 600 clusters in Japan) consists of one main enterprise, which uses services of two or three levels of firms that are located, as a rule, geographically close to it.

Analysing world experience, a lot of researchers will come to the conclusion, that cluster models of amalgamation of enterprise structures can be effective and up-to-date for domestic enterprises, especially in times of Ukraine's exit from the protracted economic crisis.

Clusterization is widely spread in Italy and was legally adopted by law. Clusters unite small and medium innovative enterprises that specialize in the same industry and are located in the same geographical region. Firms cooperate with each other, share skills in different spheres, ideas and resources for a mutual benefit. There are plenty of very small enterprises in Italy due to this, and also

due to the existing favourable conditions for entrepreneurship [16].

Well-known examples of the cluster approach in the world are Silicon Fen (Cambridge, United Kingdom), Valley of Technology (Albany, USA), Finnish Marine cluster (Finland) [17].

Mechanisms of cluster policy to enhance the innovation potential of industry are actively used by many developed countries in the world. So, cluster politics is an important part of the national development strategies of Germany, Denmark, Norway and Finland, which are leaders in innovation development in Europe [18]. According to a study by Danish experts, companies that become cluster members have four times more opportunities to improve innovation activity than those outside the network, thus playing the role of innovation growth pillars in the country's economy [19].

The role of Germany in the development of clusterization of the economy is significant. Priority is given to the introduction of high technology through the consolidation of efforts of industry and research centers. In Germany, there are three of the world's top clusters of high technology, known as the "Silicon Valley of the 21st Century", they being Munich, Hamburg, and Dresden. In addition, there are many industrial clusters in the country, such as car clusters in 10 regions. Particular attention deserves the German program for the creation and development of biotech clusters based on the regional placement of firms. Industrial clusters get financial resources from federal and local sources.

Another striking example of successful clustering can be the development of the economy of Austria over the past 20 years. In the programme of clustering the following modules are involved: the system of stimulation of innovations; productivity growth; increase in employment; regulation of technological policy; consultancy [20, p. 395].

The experience of Finland shows that the methodological basis for its development should be innovation chains of creating additional value in the region, rather than artificially defined priorities [21].

World experience has shown that a cluster approach can increase the effectiveness of

interaction between the private sector, the state, trade and professional associations, research and education institutions in the innovation process.

Conclusions. The results of the research indicate that there are negative trends in the development and state support of clusterization in Ukraine. On this basis, we believe that the main tasks of the state in ensuring the formation of favorable conditions for the development of industrial potential on a cluster basis can be:

ü reduction or cancellation of administrative charges from clusters' participants;

ü provision of subsidies and loans or increase of expenses on creation of new products and technologies;

ü increase of effectiveness of the system of professional education and provision of consulting services;

ü creation of industrial parks and techno parks as infrastructures for cluster development;

ü special purpose investments in engineering and transport infrastructure development, housing construction, taking into account the tasks of cluster development;

ü creation of funds for the introduction of innovations with consideration of possible commercial risks.

References

1. Dehtyarenko, N. (2010). *Cluster concept in the innovative development of territorial-industrial complexes as an opportunity for post-crisis development. Modeli postkryzovoho rozvytku derzhav: analiz i prohnoz: materialy Mizhnarodnoi naukovo-praktychnoi konferentsii molodykh vchenykh i studentiv [Models of post-crisis development of countries: analysis and prognosis: Proc. Int. Applied Research Conf. Young Scientists and Students] (pp. 14–23). May 13–14, Tallinn, Estonia: Economics and Management Institute of Economics. [in Russian].*
2. Kulik, R. O. (2008). *Forms of interaction of large and small enterprises in the cluster structure. Ekonomika i rehion [Economy and region], 1(16), 41–45. [in Ukrainian].*
3. Nakonechna, T. YU. (2010). *Clustering as a catalyst for economic development of the regions and increasing the competitiveness of the country. Ekonomichni nauky. Seriya: Rehional'na ekonomika. Zbirnyk naukovykh prats. [Economic sciences. Series: Regional Economics. Collection of scientific works], 7 (27). Retrieved from http://archive.nbuv.gov.ua/portal/soc_gum/en_re/2010_7_4/14.pdf [in Ukrainian].*
4. Porter, M. E. (2006). *Konkurentsia. [Competition]. Moscow: Williams. [in Russian].*
5. Lawrence, E. Young (1995). *Tekhnoparky y klastery firm. [Technoparks and clusters of firms]. Kyiv. PERU. [in Russian].*
6. Bergman, E. M. & Feser, E. J. (1999). *Industrial and Regional Clusters: Concepts and Comparative Applications. Regional Research Institute: WVU Retrieved from <http://www.rri.wvu.edu/WebBook/Bergman-Feser/chapter3.htm> [in English].*
7. Spencer, G., Vinodrai, T., Gertler, M. & Wolfe, D. (2000). *Do clusters make a difference? Defining and assessing their economic performance. Regional Studies, 697–715. [in English].*
8. Kuzmin O. & Zjeuhha, V. (2010). *Clusters as a factor in the innovation development of enterprises and territorial entities. Ekonomika Ukrayiny [Ukraine economy], 2, 14–23. [in Ukrainian].*
9. Kvach, Ya. P. & Borisova, L. P. (2013) *Development of innovative entrepreneurship within clusters as a source of economic growth in the region. Zovnishnya torhivlya: ekonomika, finansy, pravo. [Foreign Trade: Economics, Finance, Law], 1, 127–132. in Ukrainian].*
10. Wolfgang Pr. (1999). *Human Behavior: The Factor in Applied Economics. Perspektyvnye yssledovanyia. [Perspective Studies], 2, 3–16. [in Russian].*
11. Nakamura, R. (2008). *Agglomeration Effects on Regional Economic Disparities: A Comparison between the UK and Japan. Urban Studies, 45 (9). 1947–1971. [in English].*
12. Henderson, J. V. (2002). *Marshall's Scale Economies. Journal of Urban Economics, 53, 20–28. [in English].*
13. Shchodo derzhavnoyi polityky pidtrymky rozvytku innovatsiynykh klasteriv u promyslovosti Ukrayiny [As for the state policy of supporting the development of innovation clusters in the Ukrainian industry] (2012). Retrieved from http://www.niss.gov.ua/articles/1069/#_ftnref10. [in Ukrainian].
14. Stvorenniya ta funktsionuvannya innovatsiynykh klasteriv [Creation and functioning of innovative clusters]. (2009). Retrieved from http://old.dknii.gov.ua/?q=system/files/sites/default/files/images/Stvor_ta...klaster. [in Ukrainian].
15. Vyshlova-Pileva, I. (2012). *Territorial clusters as a tool for improving efficiency regional management: foreign experience. Klastery yak instrumenty*

- rehional'noho rozvytku: Materialy naukovo-praktychnoho seminaru. [Clusters as tools of regional development: Proc. Applied Research Seminaru. (pp. 21–25). July 16–20, Feodosiya, Ukraine.: Kharkiv Regional Institute of Public Administration [in Ukrainian].
16. Sokolenko, S. I. (2009). *Modern economic development of the region on the basis of innovative industrial clusters. Rozvytok terytorial'noyi hromady na osnovi klasternoyi modeli vyrobnytstva: Seminar-Narada. [Development of a territorial community on the basis of a cluster model of production: Seminar-Meeting], January 23, Smila, Ukraine. Retrieved from <http://www.sokolenko.com/clusters/51>. [in Ukrainian].*
 17. *Kontsepsiya stratehiyi rozvytku intelektual'noho potentsialu Ukrayiny [Concept of the Strategy of Intellectual Potential Development in Ukraine] (2008). Retrieved from [http:// www.niss.gov.ua/Table/3006006/ConceptSID.ppt](http://www.niss.gov.ua/Table/3006006/ConceptSID.ppt). [in Ukrainian].*
 18. *Innovation Union Scoreboard – 2011. (2011) European Commission. Retrieved from: http://ec.europa.eu/enterprise/policies/innovation/files/ius-2011_en.pdf. [in English].*
 19. *Cluster and Network Policy Programmes in Europe. Retrieved from http://files.conferencemanager.dk/medialibrary/f13db635-416d-4cbc-a465-78f2ff8796c6/images/Cluster_policy_programmes_in_Northern_Europe_Article_2_.pdf. [in English].*
 20. *Semenov, V.F. (2008). *Rehional'na ekonomika. [Regional Economics]. Kyiv: "MP Lesya". [in Ukrainian].**
 21. *Klasteri konkurentospromozhnosti - opyt razvytyya klasterov Fynlyandyi. Clusters of competitiveness - the development of clusters in Finland (2009). Retrieved from <http://subcontract.ru>. [in Russian].*

V. Voytsekhovska

PhD in Economics, Associate Professor

A. Symak

PhD in Economics, Associate Professor

Lviv Polytechnic National University

THE IMPACT OF IMMIGRATION PROCESSES ON COUNTRY'S DEVELOPMENT, CASE STUDY OF THE UNITED KINGDOM

Abstract. In the article the recent immigration processes in the UK are studied. The key factors, which influence the global immigration policies, are considered.

The study is dedicated to the contemporary immigration processes in different countries and from different perspectives. The key factors, which influence global immigration processes were identified.

The significant difference in income inequality is observed, and the study of International Monetary Fund shows that as inequality increases, the growth decreases and will continue to do so in the future. The effect that the employment of immigrants has on the wages of workers depends heavily on the nature of the labour if immigrant labour is complementary to the labour and skills of native workers, it is likely to have a positive effect on wages. The extent to which immigrant labour is complementary or substitutable can also influence the long-run and short-run effects of immigrant labour. Substitutive immigrant labour provides competition for the native citizens, therefore decreasing the average wage in the host country. Nevertheless, in the long term, because a larger proportion of working immigrants can lead to an increase in productivity and consumption, the investment will also rise, so households will have more benefits. In such a way the presence of immigrants in the workplace helps the productive potential of the economy. These factors could benefit the host country, since they outweigh the loss made initially when immigrant labour is substitutive and lowers the average wage through increasing employment. The conclusion is made concerning the immigration trends and factors, which is necessary for the decision making for better immigration processes in Europe and the UK, in particular.

Keywords: immigration processes, labour market, wages, immigration policy.

Formulation of the problem. The new decade priorities for socio-economic development shall be

based on Sustainable Development Agenda and its 17 Goals until 2030, there are clear indicators for the regional and global development. However, there is a number of factors, which influence such development, immigration being one of the important ones. Our century is being a century of immigration from many points of view, due to political, economic, social or other issues. Intensification of international migration pressures makes many societies face major policy dilemmas. Most countries of the world are becoming more multicultural, multi-ethnic, multireligious and multi-lingual. The International Labour Organisation says that 175 million people today live outside of their motherland as immigrants or refugees, out of seven- billion world population. There are many conflicts in the world at present. These conflicts generate migration or immigration, among such conflicts being, for example, Ukrainian-Russian conflict and Syrian conflict. The number of not only economic migrants but the refugees as well is increasing day by day due to crises in Syria, Ukraine. The case study of the United Kingdom is particularly interesting, since the country has voted to leave the European Union, so it's crucial to study and evaluate the country's economic development from different perspectives, both social and economic.

Analysis of recent research and publications.

The vast array of studies were made for tackling migration, for instance by such institutions as IMO, ILO, UN, European Commission. Such researchers as S. P. Kerr, W.R. Kerr, I. P. Gianmarco, Peri, Giovanni, J.Kay dealt with the problem. We try to

separate two terms: the economic immigration implies individuals looking for better life and economic conditions, and the refugees are people being politically persecuted in their home country [1, 2, 4, 11]. As a nature of immigration becomes clear, the economic immigrants are able to return to their native country and settle there with money earned in host country, while refugees cannot return to their home country due to mostly political reasons or dangerous situation [2, 4, 6]. Last but not least, once refugees arrive to host country they have lower annual earnings, but then by means of investing in education, they pretend for better paid jobs, while with economic immigrants, the situation is slightly different, they usually do not have big increase in wages from date of entering to date of leaving and do not invest in education in host country. However, if they enter the host

country in the most productive cycle of life, they're likely to contribute most to the society and fill important niches in labour market.

Materials and results. According to ONS, the Britain's net migration stood at 333,000 in 2015, the second-highest figure on record in Europe. Net immigration from EU countries, particularly, central and eastern European member states Poland, Romania, Bulgaria, rose rapidly after their accession to the EU in 2004 and more recently when citizens of Bulgaria and Romania acquired the right to work and settle in the UK. Only by leaving the EU can the government reduce the numbers of EU migrants, which often claim social security and other types of assistance.

Can Britain cut migration significantly?

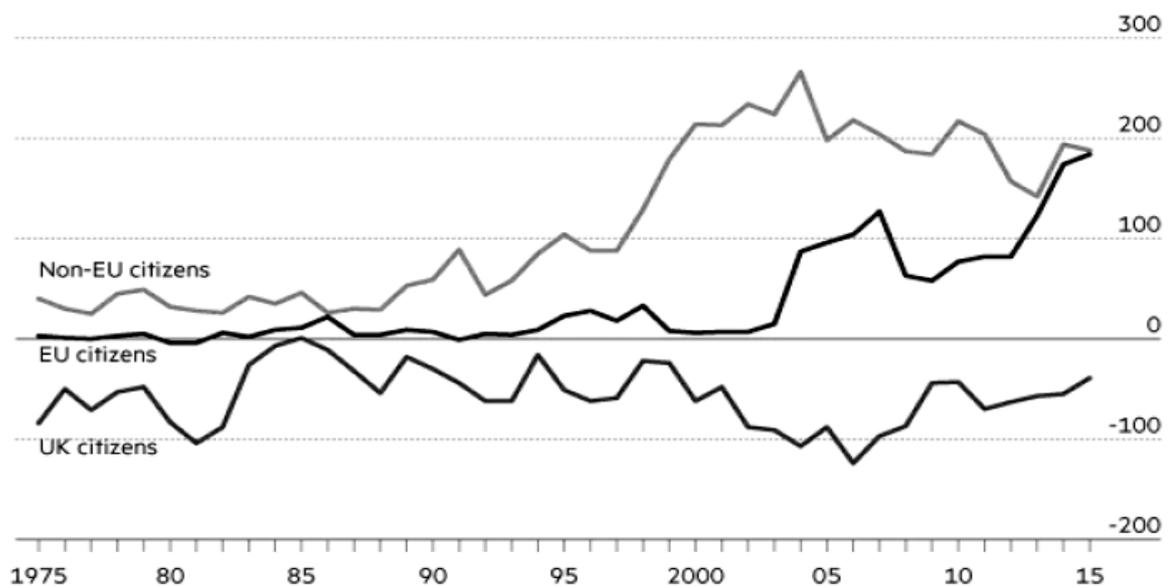


Fig. 1. The migration tendencies in the UK by citizenship, period 1975- 2015.

Source: Office for National Statistics, UK, 2016 [2].

EU migrants tend to be young and are likely to be employed. They contribute more to the UK public finances than they take out and much more than UK-born citizens. And their numbers already appeared to be plateauing, now that the initial surge from Romania and Bulgaria has abated.

Even if EU net migration was cut to zero, Britain would have far more migrants from non-EU countries than the prime minister's tens of thousands pledge. As long as Britain's economy does well, it will attract immigrants [1, 6].

DO IMMIGRANTS CONTRIBUTE TO LABOUR MARKET?

Over recent years, immigration increases significantly. The main European migration patterns today differ from those of even 60 years ago. Europeans emigrated heavily in the late 19th and early 20th centuries, but today the reception and assimilation of immigrants is a significant economic and social phenomenon in many previous emigration countries. Altogether 27m foreign nationals lived in European Union (EU15)

The Impact of Immigration Processes on Country's Development, Case Study of the United Kingdom

countries in 2007, accounting for about 7 % of the population. Figure 1 shows that most of the recent population growth in Europe results from migration. So in the United States immigrants represent 47 % of workforce, while in European

Union this figure approaches 70 % (OECD, 2012). The main migration channels are family, humanitarian and free-movement migration. Fig. 1 illustrates the changes in tertiary-educated labour force.

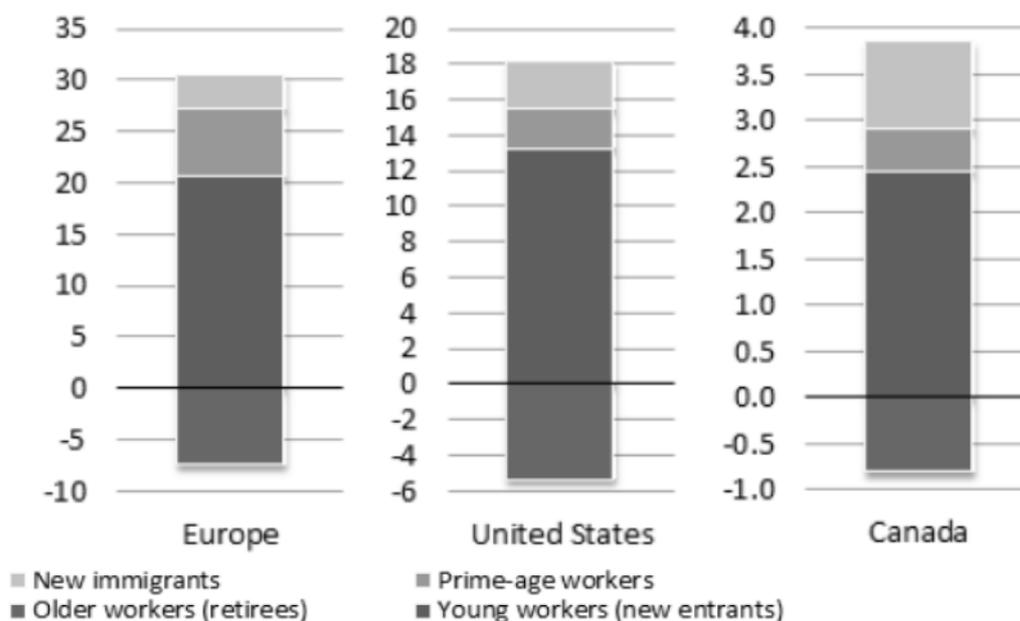


Fig. 1. Changes in the tertiary-educated labour force, 2000-10 by source, millions.

Sources: European countries: *European Labour Force Surveys (Eurostat), 2000 and 2010* United States: *2000 Census and American Community Survey 2010* Canada: *Survey of Labour and Income Dynamics, 1998-2008 [1]*.

This illustration considers legal migrants only, since the illegal migration would further increase the migrant share coming from outside the OECD for most host countries. As we can see from the listed above data, immigrants represent over 30 % increase in highly skilled of labour force in Canada, over 20 % in the United States and 14 % in Europe. The level of education also differs, younger economic migrants usually have better education than the older ones, which are closer to retirement age. Depending on the migration need, which has not only economic reasons, the migrants play an important role in the development of large economic sectors. It should be noted, that often immigrants are engaged in unpopular sectors of economy, such as crafting, houseworking, constructions, building, agricultural works and others. In Europe those occupations represent 24 %, while in the United States – 28 % of all

jobs. Often the locals do not want these kind of jobs, from the point of view of career perspective or unattractiveness of income, while in the home countries of immigrants, those wages are high enough even to support their family in the country of origin [7, 8].

As a matter of fact, by means of increasing the supply of educated and skilled workers, the presence of immigrants in the workforce results into higher labour productivity, most commonly measured as output per person. According to the report from the National Institute of Economic and Social Research (NIESR), the UK demonstrated a 1 % increase in the number of immigrants employed between 1997 and 2007, correlating with a rise in labour productivity of 0.06–0.07 % during this period. This increase in productivity occurs for many reasons: skilled immigrants are more willing to take on lower-skilled jobs, employing their expertise; the

diversity of teams with immigrant workers is conducive to productivity; immigrants' knowledge of their home countries; the more prevalent promotion of specialisation with immigrant workers present, but mainly, because of the hard-working nature of immigrants. An increase in productivity enhances the EU economy and makes it more competitive, effecting as a result the decrease of prices of goods and services. Furthermore, the NIESR has found evidence that the skills of immigrants are acting as a complement to those of native workers.

One of important issues is competition on labour market, the immigrant labour can be said to benefit the EU or be motivating for the EU born workers, that try and obtain the same level of education, same skills as immigrants. As a result, such competition could help the economy to expand through increasing the productive capacity of the European Union. As productivity of labour is linked with a country's standard of living, one of the most important ways of increasing economic growth in a country is through encouraging productivity in order to boost the potential capacity of the economy [5].

Often the wages earned by migrants in the EU are seen as more than could have been earned in their country of origin, national consumption would increase, as more of the population would be purchasing native goods. Further contributions to the economy would be lowering of prices, resulting from increased productivity and improved exports. This provides the means of economic growth as aggregate demand increases, which the economy can greatly benefit from. Therefore, often the immigrants to the EU or North America can help the economy through contributing their skills and education, which in turn will result in its growth.

A number of theoretical and empirical studies show that migration positively impacts the economic growth, however, the shortage of harmonised comparative data prevents us from making definite conclusions. The fact that skilled immigrants are beneficial for the

economy is evident, however, the fact that this impact is small and not significant should be also taken into consideration. Following the European Union enlargement initiatives in 2004 and 2007, the labour mobility significantly increased. This added to the adjustment of labour market capacity and flexibility. It is important to study the willingness and ability of immigrants to remain in the host country, whether they are willing to invest in language skills and other socio-related skills, once person made the decision to live in a certain country. Therefore it is important here to study the immigration's trends in order to make appropriate forecasting and decision making for labour market performance.

The IOM predicts that the total number of international migrants will approach 250 million by the year 2050. Such a prediction has to reflect many probable factors. These include the effects of war, famine, drought and epidemics, the increasing economic gap between rich and poor countries and the differential between countries in which population is growing and those where it is decreasing. On the basis of data on fertility rates, UN projections show significant decreases in the populations of many countries in Europe and some in other regions, contrasting with large projected increases in parts of Asia, Africa and the Americas[1].

Despite contributing to the economy in the mentioned ways, the 31st Nat Cen Social Research British Social Attitudes survey shows that almost 25 % of Britons believe the main reason workers immigrate to the UK is to claim benefits and over 75 % of the population have the view that immigration should be reduced. It is surprising therefore, that a study at University College of London discovered recent immigrants were 45 % less likely to receive money from the government through benefits between 2001 and 2011 than UK born workers. However immigrants add more in taxes than they claim from social benefits, so compared to recent immigrants from both the EEA and non-EEA, they have lower revenue to expenditure ratio over the past decade [9].

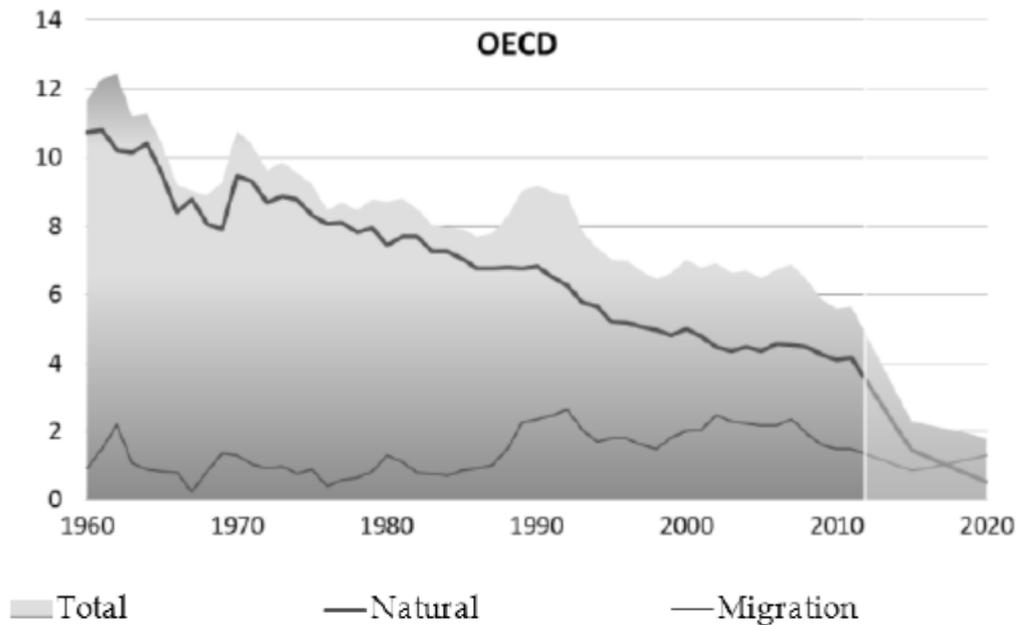


Fig. 2. The components of total population growth in OECD countries, 1960–2020 per thousand inhabitants [11]

Source: OECD Population and Vital Statistics database

The significant difference in income inequality is observed by the study of International Monetary Fund showing that as inequality increases, growth decreases and will continue to do so in the future. The effect of immigrant labour on the wages of workers depends heavily on the nature of the labour if immigrant labour is complementary to the labour and skills of native workers, it is likely to have a positive effect on wages. The extent to which immigrant labour is complementary or substitutable can also influence the long-run and short-run effects of immigrant labour. Substitutive immigrant labour provides competition for the native citizens, therefore decreasing the average wage in the host country. Nevertheless, in the long term, because a larger proportion of working immigrants can lead to an increase in productivity and consumption, the investment will also rise, so households will have more benefits. In such a way the presence of immigrants in the workplace helps the productive potential of the economy. These factors could benefit the host country, since they outweigh the loss made initially when immigrant labour is substitutive and lowers the average wage through increasing employment.

Conclusions. There is an objective need for a solution, which would be based on a transparent and realistic opinions, since depending on the host country and the country of origin of immigrants the immigration patterns differ. All in all, the positive trend from immigration is boost in working-age population and technological progress, in case of skilled workers migration. However, recent trends also show that a lot of investment in human capital is needed first for the immigrants from developing countries to become educated and skilled labour force and contribute actively to the economic development.

Therefore there cannot be used any single approach towards immigration policy. The key element here is to identify the main migration factors, as we see from the research those can be: institutional framework, social benefits attractiveness, labour market conditions and so on. The understanding of these factors is important if our society is planning to develop the strategies that would enable immigrants to fully integrate in the society, which in turn would be beneficial for immigrants and host countries.

The successful immigrant policy shall include both institutional and educational framework and easier access of immigrants to the

labour market, so both immigrants and host-countries shall profit from such a policy only in this case, the socio-economic impact of immigration will be positive.

References

1. *The World Migration Report, International Organisation for Migration, 2015, Geneva.*
2. *Dataset : Detailed estimates dataset by origin and destination local authorities, sex and single year of age, ONS, June, 2016.*
3. *Sari Pekkala Kerr, William R. Kerr Economic Impacts of Immigration: A survey Harvard Business School working paper, 2011, 48 p.*
4. *The truth about asylum – Who's who: Refugee, Asylum Seeker, Refused asylum seeker, Economic migrant, London: Refugee Council, 2015.*
5. *Park, A., Bryson, C. and Curtice, J., 2014, British Social Attitudes: the 31st Report, London: NatCen Social Research, available online at: www.bsa-31.natcen.ac.uk*
6. *Local area migration indicators suite QMI, ONS, United Kingdom, August, 2016.*
7. *Ottaviano, Gianmarco I. P.; Peri, Giovanni “The economic value of cultural diversity: evidence from US cities”, 2014, Journal of Economic Geography 6 (1), ISSN 1468-2702, p. 31.*
8. *Kay, J. The Economics of Immigration. Everlasting Light Bulbs: How economics illuminates the world.,2004. The Erasmus Press. p. 64–67.*
9. *Ostry, J., Berg, A. and Tsangarides, C. (February 2014). Redistribution, Inequality, and Growth. IMF Staff Discussion Note. No. 14/2. Available: <http://www.imf.org/external/pubs/ft/sdn/2014/sdn1402.pdf>*
10. *Rolfe, H., Rienzo, C., Lalani, M. and Portes, J. (November 2013). Migration and productivity: employers’ practices, public attitudes and statistical evidence. NIESR. Available: <http://niesr.ac.uk/sites/default/files/publications/Migration%20productivity%20final.pdf>*
11. *Ruhs, M. and Vargas-Silva, C. The Labour Market Effects of Immigration., 2014 Migration Observatory briefing, COMPAS. No. 2.*

N. Lytvynenko

PhD in Economics, Associate Professor
Lviv Polytechnic National University

BASIC OBJECTS OF CONTROL ORGANIZATION

Abstract. Modern approaches to the organization of effective control system, which is considered as a component of effective activity and development of enterprises, institutions and organizations, are summarized. The following basic objects of control organization: the structure of the controlling authorities, work of responsible parties, control maintenance, technology of the control process, program of the control system development, are formulated. It is substantiated that the structured combination in the system interconnection of the above-mentioned objects of the control organization provides an integrated approach for rational construction of the system of organization of external and internal control.

Key words: control, the organization of the control process, objects of the control organization, the structure of the controlling authorities, control maintenance, the technology of control process, work of responsible parties, the program of the control system development.

Target setting in general and its interrelation with important scientific or practical tasks. Organization of the effective control system is a component of effective activity and development of enterprises, institutions and organizations in the conditions of rapid changes in the environment, the complication of management process, distribution and permanent redistribution of ownership and management functions.

The rational organization of control should ensure the creation of a flexible, optimal and multifunctional system aimed at minimizing (primarily in a preventive manner) the possibilities of occurrence of deviations, errors, violations and other types of information distortion for its objective and impartial interpretation and presentation to the parties concerned, as well as its use in the process of fulfilling the activity tasks.

The need for theoretical and practical solution to the basic issues of control organization as a system process and activity, the definition of key objects of the control organization for the

construction of a unified organizational model that would provide the prerequisites for creation an effective rational and optimal control system, determine the relevance of the topic, its purpose and main tasks of the study.

Analysis of recent research and publications.

The analysis of scientific publications on this issue indicates that the issues of structuring the basic objects of control, the combination of which in the interconnection provides an integrated approach for the rational construction of the organization of external and internal control, has not been much focused on, since the authors of the scientific publications primarily emphasize on the individual procedural and methodological approaches to the control process.

Thus, V. Pikhotsky (2015), in the context of the scientific study of the conceptual foundations of the theory and practice of the system of state financial control in Ukraine, considers certain organizational principles of a procedural nature regarding the modernization of the system of state financial control (1, p. 312–331). T. Boholib (2013) explores new approaches to reforming and organizing public financial control in Ukraine. The author analyses the normative maintenance of the state control and outlines some technical and procedural steps which, in her opinion, “help to adapt the state financial control to international requirements, make it effective and efficient” (2, p. 138).

T. O. Murenko (2012) (in the context of scientific research on the organization of financial reporting of enterprises of railway transport of Ukraine) points to the following objects of control: the state of accounting and internal control at the enterprise, information, methodological approaches to the generalization and implementation of control results (3, p. 19).

While researching the functioning of the internal control system in a budgetary institution,

N. V. Syniuhina and Ye. V. Deineko (2013) structure the organizational maintenance for the preparatory phase of internal control. Organizational maintenance, according to the authors, includes the following elements: legislative, normative, methodological, staff, technical, informational and material. In addition to the organizational maintenance elements, attention is focused on the stages of control, i.e. on the technology of the control process (4, p. 65). Similar issues of organizational maintenance and technology of the control process are studied in the context of the research of the organization of audit activity (5, pp. 177–183).

Recent research has mainly focused on the issues of control organization related to such organization objects as maintenance or technology without an integrated approach to identifying basic control objects. Consequently, the theoretical basis for the organization of control (in terms of determining the basic objects of its organization) requires further thorough research.

The aim of the article is to improve certain theoretical principles of the organization of control as a type of activity and process, adequate to modern management conditions.

According to the stated aim, a set of basic tasks aimed at its achievement is defined: to identify the basic objects of control organization as a systemic activity and formulate directions of practical organization of the control process for individual objects.

Presentation of basic research material with full justification of the received scientific results.

“The notion “organization” is defined in different ways: as a process, as a state and as a system type. The functional purpose of the organization as a process is a creation of new and qualitative improvement of previously created, as well as operating systems of any type. Therefore, to organize means to create a system again or to improve its state in the process of functioning in accordance with changes in internal and external conditions” (6, p. 8).

“The object of organization is understood as the object (phenomenon or process), to which the organizational activity is directed” (7, p. 11).

Organization of control is the process of creating or improving a system that involves streamlining and coordinating the interaction of

control subjects and the complex application of their methods, techniques and means, norms and rules that ensure the effective functioning of control as a type of activity and process, and create the preconditions for its further development as a branch of scientific knowledge and sphere of practical activity.

The system approach to the organization of control (external or internal) involves its construction in two main directions:

1) the organization of the activity of the controlling authority or an entity performing this function within its functional purpose or type of economic activity;

2) organization of the control process.

The construction of this process combines the following objects in the logical interconnection: structure of the controlling authority, control maintenance, technology of the control process, work of the responsible parties, the program for the control system development (Fig. 1).

According to the form, control organization can be centralized or decentralized.

The end-to-end centralized form of control organization involves the full centralization of control over all its forms or only over one in the senior management authority, which is typical for state controlling authorities, departmental authorities or the main enterprise of a group of interconnected enterprises.

Under such an approach all subordinate controlling authorities are subordinated to the management authority of a certain level: ministries, departments or enterprises (auditing commission - general meeting of shareholders, internal audit service - supervisory board). That is, in essence, the centralization of control at the level of each individual authority or enterprise (which is part of a group of interconnected enterprises), but the work of each controlling authority within a controlled organization, institution or enterprise is autonomous (decentralized).

The centralized link(object)-based structure of the controlling authority can be considered as widespread and acceptable under current conditions of management for the internal controlling authority in the groups of interrelated enterprises. Under such a structure, “all primary control work is focused on the level of management and is carried out by a special service” (6, p. 94).

Basic Objects of Control Organization

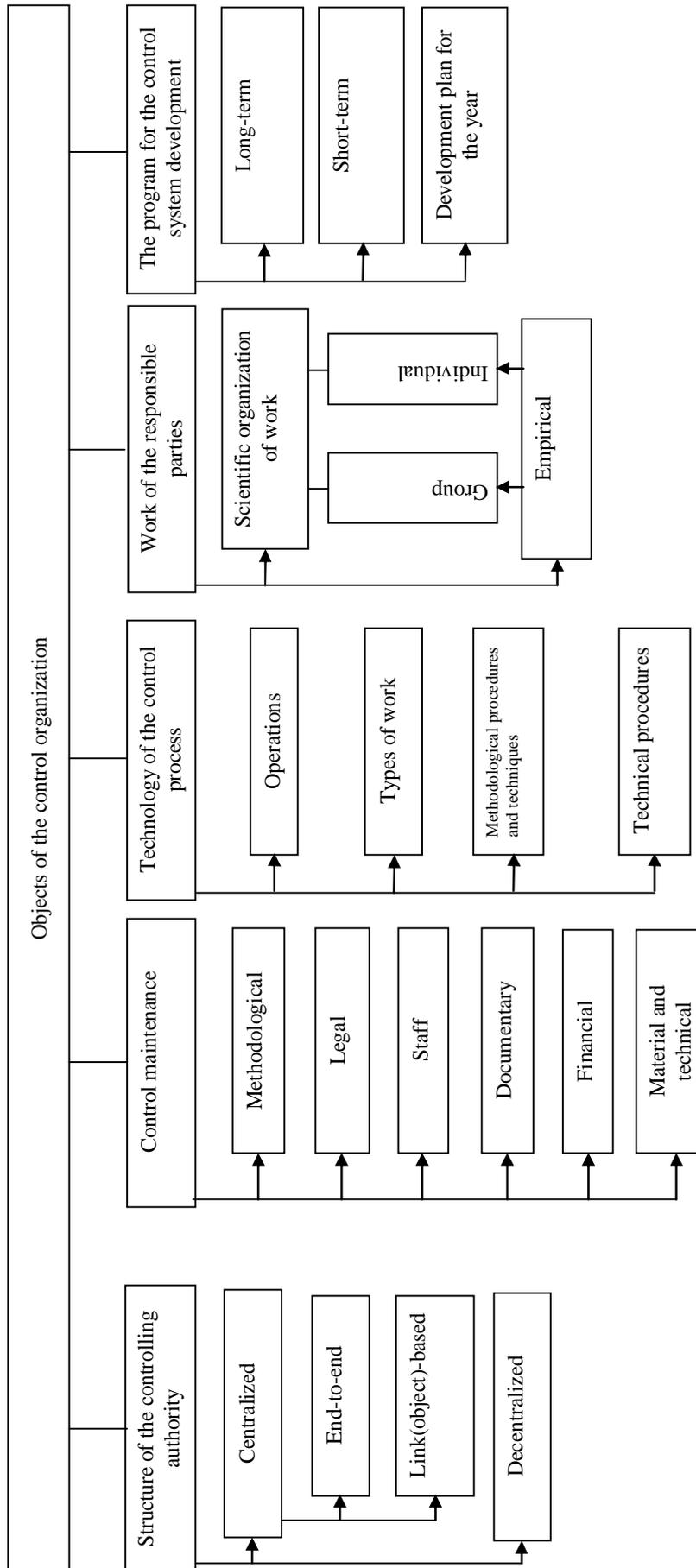


Fig. 1. Basic objects of control organization*

* The author systematized and structured according to sources: (6, p. 8–11; 7, p. 85–86).

Control maintenance is a system of measures to create conditions for the control of both the type of activity and the process for the implementation of control measures. The basis for this object of control organization are methodological, legal, documentary, financial, staff and material and technical maintenance.

“Methodology of economic control is a system of methods and rules, as instruments of control (the study of facts of economic life)” (8, p. 18).

Based on the definition of “methodology of economic control”, formulated by prof. Butynets T. A., methodological maintenance of control is seen as a set (in the system interconnection) of techniques and rules, as instruments of control.

Legal maintenance of control is the external organizational support that is established at the state level, i. e. the definition of general principles of external and internal control by consolidating the order of their implementation in legislative and normative acts of a regulatory nature (the first and second levels of regulation). Such regulations only outline the general features of control, without specifying the organizational principles of each of its separate stages.

The third level of legal maintenance is the internal normative and guidance documents, which (on the basis of documents of the first and second levels) are developed as business entities, whose activities are subject to control, as well as subjects of control.

“Staff maintenance – a complex of actions aimed at the search, evaluation and establishment of legal relations with employees, both in the institution, enterprise, organization for further career growth, and for the new hiring of employees on a temporary or permanent basis” (9, p. 43).

Staff maintenance of the control process as a set of specific procedures involves the calculation of the required number of employees of the controlling authority and the substantiation of its qualitative structure (position, education, the availability of additional competencies); the choice of the legal relationship between the employer and employee; recruiting and dismissing employees; management of staff documentation.

Documentary maintenance (the synonym is “record management” and “document support of management” (10) is a “sector of activity,

providing documentation and organization of official documents”. “There are two separate aspects of the record keeping process: document creation and organization of work with documents. The first part covers all work related to the preparation of documents, preparation and execution, the second – work with already created documents” (11, p. 216).

Financial maintenance involves the formation and use of financial resources by optimizing the ratio of all its forms and enables the creation of such volumes of financial resources of economic activity which allow the enterprise to function not only in a disadvantage but also to increase the efficiency of activity and strengthen the country's economy as a whole (12, p. 225–226). The initial form of financial maintenance for the subjects of control of the commercial sector is self-financing, which “is intended to cover costs at the minimum allowable level. Other resources are formed on the basis of borrowed capital” (13, p. 41). Financing of control subjects of the non-profit sector (state control authorities) is carried out at the expense of the state budget funds.

Material and technical maintenance is the process of providing the subject of control with the necessary means and objects of work and organization of workplaces.

The technology of the control process is formed by three main stages: preparatory (preliminary); executive or experimental, which involves the collection and processing of data; summary (summary of control results). The stages, in turn, consist of certain substages, and the substages consist of main operations.

The list of operations determines the type of work, as well as the methodical and technical methods that will be used at each stage of the control process. “The basis of such a division forms the content characteristic of the substage, which follows from its target function. There is no clear boundary among the substages of technological processes, they are closely intertwined” (7, p. 12).

The preparatory stage of the control process consists of the following operations: the choice of the object, the definition of the purpose of control and the formulation of its tasks; choice of information (data, indicators) and its

Basic Objects of Control Organization

systematization; drawing up a plan (program) of control measures; verification of output data and indicators (logical, arithmetic, technical, etc.); processing information on the object of control, data preparation and indicators to control.

Control data processing involves the selection of methodical and technical methods of control, coordination of indicators; construction of control and calculation tables, charts, diagrams; performance of methodical and technical methods (control calculations); systematization of calculations, their processing, determination of causes of deviations from the given parameters. The final stage of control is to summarize its results, which involves the following operations: the formation of conclusions and proposals, measures to correct deficiencies and violations, discuss the results, their design and implementation with the introduction of developed proposals and recommendations in practice.

To ensure the proper work organization of the controlling authority and working groups, this activity should be built in accordance with the principles of the scientific organization of work. We believe that the following elements of the scientific approach to the basic principles of the organization of work are relevant: “1) scientifically substantiated standardization of work; 2) specialization of work; 3) organization of workplaces; 4) establishment of a rational mode of work and rest; 5) improvement of methods of work, its skillful planning; 6) selection, training and professional development of staff; 7) improvement of methods for stimulating work” (14, p. 22).

The control organization of the responsible parties should be divided into three directions:

Representative of the profession;

Representative of the organization, institution, or business entity (audit firm);

Participant in the control process.

Particular attention should be paid to the managerial activity of the director, whose activity organization should be implemented in such a way that the senior manager has the opportunity to combine direct work on the implementation of control activities (participant in the control process) with the management activities.

As an applied area of activity, the organization of work is as follows:

– determination of the rights and official and functional responsibilities of participants in the control process;

– determination of the optimal terms of conducting control and supervision actions,

– clarifying the circle of persons participating in each separate control process (formation of a group or a brigade);

– development of a unified procedure for the implementation of control measures ensuring the coordination of both employees and individual controlling authorities authorized to control and organize the planning of the activities of all controlling authorities and internal control services;

– organizational, methodological and practical management of employees;

– determination of the order of interaction within various levels of control;

– elimination of duplication of control actions; development and introduction of a mechanism for controlling the scale and quality of control measures;

– analysis of working time and work achievements;

– forecasting the expected performance of controllers;

– organization of control over the execution of decisions.

The program for the control system development should outline the strategic direction of development for the long-term perspective and include a schedule for training(or retraining) employees, conducting internal seminars and training, rotation of staff for the short-term perspective and development of a plan for the year. This program should be brought to the attention of all employees who, in accordance with their responsibilities, perform control functions.

Conclusions and prospects for further research.

The research of topical organizational and theoretical control problems enables the generalized definition of the concept of “control organization” (which should be understood as the process of creation or improvement of the system, which involves organizing and coordinating the interaction of control subjects and the complex

application of their methods, techniques and means, norms and rules that ensure the effective functioning of control as a type of activity and process, and create the prerequisites for its further development as a field of scientific knowledge and practice) and formulation of the conceptual foundations of its organization through the identification and structuring of the basic objects of the control organization, which are: the structure (form, arrangement) of the controlling authority, work of the responsible parties, the control maintenance, the technology of the control process, program of the control system development.

The structure of the objects of the organization of the control process summarized by the results of the study can be used as a basis for external and internal control (as a type of activity and process) and regardless of the organizational and legal form of management of the control subjects, as well as for the organization of the accounting and analysis system.

Prospects for further research are the development of an organizational model of control.

References

1. Pikhotskyi, V. (2015). *Systema derzhavnogo finansovoho kontroliu v Ukraini : kontseptualni zasady teorii ta praktyky [The system of state financial control in Ukraine: conceptual foundations of theory and practice]* (Doctoral dissertation). Retrieved from: http://www.lnu.edu.ua/wp-content/uploads/2015/12/dis_pihotskyi.pdf. [in Ukrainian]
2. Boholib, T. (2013) **New approaches to the organization of state financial control in Ukraine**. *Ekonomichnyi visnyk DVNZ "Pereiaslav-Khmelnyskyi DPU imeni Hryhoriia Skovorody"*, (20/1), 134–138. [in Ukrainian]
3. Murenko, T. (2012). *Orhanizatsiia kontroliu finansovoi zvitnosti (na prykladi pidpriemstv zaliznychnoho transportu Ukrainy) [Organization of checking financial reports (on the example of Ukraine railway transport company)]* (Doctoral dissertation). Retrieved from: <http://dspace.oneu.edu.ua/jspui/bitstream/pdf>. [in Ukrainian]
4. Syniuhina, N. (2013) **The organization of internal control in a budgetary institution: scientific and methodological aspects**. *Ekonomika rozvytku*. 3 (67). 62–68. [in Ukrainian]
5. Yeremenko, D. (2011). *Organization of audit activity*. *Zbirnyk naukovykh prats Tavriiskoho ahrotekhnolohichnoho universytetu*, 1 (13), 177–183. [in Ukrainian]
6. Solovev, G. (1990, May). *Economic control: the theoretical aspect*, 5, 8–11. [in Russian].
7. Kuzminskyi, A. (1993). *Orhanizatsiia bukhhalterskoho obliku, kontroliu i analizu. [Organization of accounting, control and analysis]*. Kyiv, Vyscha shkola. [in Ukrainian]
8. Butynets, T. (2012) **Rozvytok nauky hospodarskoho kontroliu [Development of business control science: problems of theory, methodology, practice]** (Doctoral dissertation). <http://194.44.12.92:8080/jspui/bitstream/123456789/719/PDF>. [in Ukrainian]
9. Horzov, A. (2014, October). *Topical issues of staffing in the bodies of the prosecutor's office of Ukraine*. *Yevropeiski perspektyvy*, 10. [in Ukrainian]
10. DSTU 4163-2003 *Vymohy do oformliuvannya dokumentiv, Natsionalnyi standart Ukrainy [Requirements for maintenance of documentation, Natsionalnyi standart Ukrainy]* (2003) [in Ukrainian]
11. Tsymbaliuk O. (2006) *Documentary arrangements for managemen*. *Universytetski naukovi zapysky*, 1(17), 215–221. [in Ukrainian]
12. Kozii, I. (2008) *The role and importance of financial support in the structure of the financial mechanism*, *NLTU* 18.9, 223-229. [in Ukrainian]
13. Barskyi, Iu. (2011) *Financial support in social and economic regulation of regions*. *PolNTU*, 3 (30), 39–43. [in Ukrainian]
14. Sosipatov, Ye. (1974). *Organizatsiia raboty narodnogo suda. [Organization of the work of the people's court]*. (Abstract to the doctoral dissertation) [in Russian].
15. Anistratenko, Iu. (2008) *Problems of organization of control activity of the bodies of the state control and revision service of Ukraine*. *Pivdenoukrainskyi pravnychi chasopys*, 2, 50–52. [in Ukrainian]

O. Kuzmin

Doctor of Economics, Professor

I. Prokopenko

PhD student

Lviv Polytechnic National University

MODEL OF ECONOMIC EVALUATION OF INTELLECTUAL CAPITAL OF MACHINE-BUILDING ENTERPRISES AND POTENTIAL OF THEIR DEVELOPMENT

Abstract. The article presents the results of building a model of economic evaluation of intellectual capital (IC) of machine-building enterprises suitable for the IC current level, its individual components and their potential. A typology of factors influencing the choice of IC evaluation methods in the industry has been developed. Factors of internal and external environment are described to consider when choosing a basic evaluation method of IC in machine-building enterprises, the direction and the impact of these factors in the current economic conditions in Ukraine being determined. The basic matrix selection method of evaluation of IC of machine-building enterprise, grounded priorities and a combination of different evaluation methods by defining their weighted grades are constructed. The graphical model of economic evaluation of machine-building enterprises IC and its development potential is designed. According to this model, indicators of the level of development of IC and its components in their cost measurement are calculated.

Keywords: intellectual capital, human capital, consumer capital, institutional capital, economic evaluation, development potential.

Formulation of the problem. A comparative analysis of the existing IC evaluation methods showed the possibility of their use in the practice of machine-building enterprises. However, it highlighted the problem of choosing a particular method of evaluation, its individual instruments and selection of indicators that would be convenient for the further IC regulation. To create a fundamentally new method of assessment for the purposes of regulating IC in machine-building enterprises is impractical as each individual organization has different strategic goals, environmental effects, market niche and contractors, so a standard approach will not work. In this case it is necessary to form a flexible assessment model that can be easily adapted to the needs of a particular company

with the account of the changing external or internal IC parameters, which are to be formed.

Analysis of recent research and publications.

The problem of estimating IC and its components (human, organizational and consumer capital) arises from the difficulty of obtaining relevant information. Most of the elements of these components are difficult for description using cost or quantity indicators, and it is difficult to unambiguously implement the proposed quality measuring devices into the system of monetary estimations. One of the first typologies of methods of IC evaluation was offered by K.-E. Sveiby, 2011 [1], David H. Luthy, 2006 [2], L. Edvinsson, 2000 [3]. In their publications after 1993–2011 they justified division of the IC evaluation methods into four groups: 1) Direct Intellectual Capital (DIC) methods; 2) Market Capitalization Methods (MCM); 3) Return on Assets (ROA) methods; 4) Scorecard (SC) Methods. Not all modern methods can be simply attributed to the mentioned groups, some of methods are intentionally created as a synthesis of monetary and quality descriptions, however, at present, this typology remains the most authoritative, though not the only one. The issues of evaluating IC and its components are dealt with in the works of D. Andriessen [4], E. Flemholts [5], B. Cuzzo, J. Dumay, M. Palmaccio, R. Lombardi [6] and many others.

Domestic researchers also discuss the methodology for evaluation of IC and its components, but unlike their western colleagues, they pay more attention to monetary evaluation of commercialized IC. In the works of A. Bosak [7] S. Ilyashenko [8] O. Kendyukhov [9] O. Kuzmin [10], O. Melnyk [11], O. Mnykh [12] I. Moiseyenko [13], O. Shkurupiy [14] and others there are

described the proven methods of IC evaluation and some of their modifications that have narrower application in machine-building enterprises of Ukraine. Most experts are inclined to believe that in conditions of weak stock market development it is best to use several methods of evaluating IC simultaneously, if the budget of the enterprise and the time frame for regulating the processes of IC formation and development allow to do this.

The least developed part of the methodology of economic evaluation of IC and its components is the study of internal and external factors that influence the choice of the basic method of evaluation and study groups using evaluation methods and their modifications, depending on the purpose of evaluation, resource constraints and performers' competence. It is necessary to develop a link between the IC evaluation method and regulatory actions on formation, development and commercialization of IC and its components.

The purpose of the research is to create a model of economic evaluation of IC of machine-building enterprises, which will keep track of the current state of IC, discover its reaction to regulatory actions, and assess the growth potential.

Consequently, we have to perform four interrelated tasks: 1) to identify the factors influencing the process of selecting basic methods of IC evaluation; 2) to establish a procedure for selecting components of IC evaluation methods according to the needs of the specific machine-building enterprises or groups; 3) to form a graphical model of economic evaluation of IC of machine-building enterprises and their development potential; 4) to calculate the basic indicators of evaluation of IC and its components on the basis of specific machine-building enterprises.

Materials and results. We divided all factors that affect the choice of the basic method of IC evaluation by several features, the impact environment being the main of them (Fig. 1). Other features have relatively less weight, though establishing the values of the weights of groups of factors depends on the objectives of IC evaluation and the structure of environmental influences. The choice of the evaluation method depends on a combination of factors that affect the enterprise at the moment and will do so in the future with a rather sufficient degree of probability.

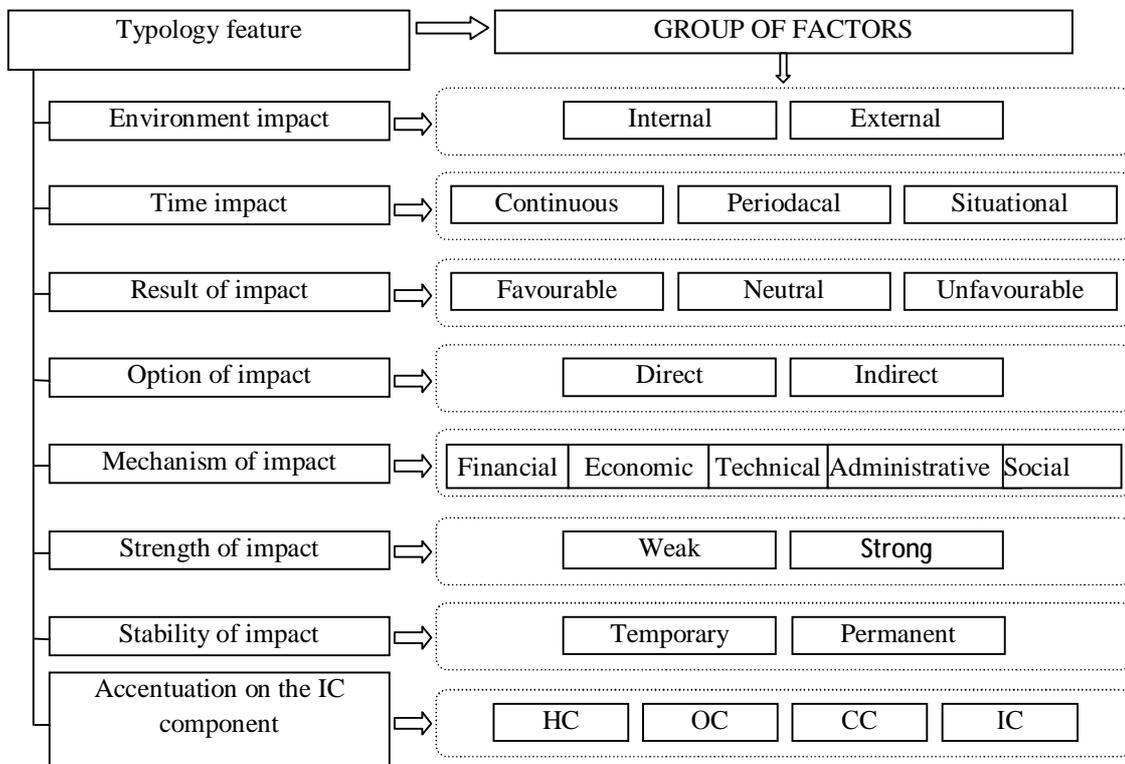


Fig. 1. A typology of factors influencing the choice of IC evaluation methods at machine-building enterprises

Note: developed by the author.

If most of the factors have a continuous effect, you should implement a monitoring system of intangible assets (NMA) based on one of the famous DIC methods. Although DIC methods have problems with interpreting measuring instruments, when similar data are transmitted continuously and in real time, they will be a good base for comparison and making relevant administrative decisions regarding regulation of IC. Periodic and situational factors of impact give advantage to methods of evaluation from groups MCM or ROA because they provide an objective market characteristics of NMA, regardless of the time of measurement, its repeatability or data sampling.

If market factors have mostly favourable impact on the enterprise, there is enough time for choosing the methods of IC evaluation and any of them can be selected. If such impact is unfavourable, then, as the practice of Western corporations shows, the most effective evaluation methods are those from groups MCM or ROA, because they give quick and unambiguous monetary evaluation of the NMA, though they do not reflect the development potential of the individual IC components. There is actually no pure neutral impact of the environment on business; visible "neutrality" is usually the point of transition between the positive and negative influences, and therefore it is important not to be misled by its interpretation and, consequently, not to choose the wrong method of IC evaluation. Managers, who are professionally dealing with the objects of intellectual property (OIP) and NMA consider that the best situation for the company is permanent light adverse effect of the environmental factors, which stimulates well the intellectual activity of the personnel, but is not dangerous to the company's competitive position in the market.

If the factors of the external and internal environment affect the choice of IC evaluation method directly, they also give a hint about the method to be used for measuring the NMA, i.e. a direct effect itself chooses the method of measuring IC, as it programs the basic indicators for IC further regulation. If the influence is coming from consumers, there are suitable methods of evaluation of client and infrastructure capital based on SC tools; if it is coming from suppliers, the SC methods of measuring infrastructure capital within consumer and organizational capital are effective etc. It is worse with the indirect influence of the factors, because at the moment of action it is felt weakly, though its consequences can be observed in

different subsystems of the enterprise regardless of the point of application of this action. This means that it will be necessary to use all the groups of evaluation methods to find indicators that characterize the change in IC and its components as the result of these influences. If there is not enough time or money, it is recommended to use the simplest MCM-methods for corporations or ROA-methods for non-corporate forms.

The mechanism of impact of environmental factors on the procedure of selection and application of IC evaluation method appears in changing financial, economic, administrative, technological and social conditions of the enterprise functioning and development of its NMA. If the impacts are mainly financial and economic, the priority is given to the methods of assessing the monetary value of IC and its components. Otherwise, it can't be done without methods of SC and DIC groups.

The strength and stability of the factors of impact on the process of selecting and using the method of IC evaluation are more declarative in nature and affect such conditions of decision-making as time, management competence and the resources available at the moment. Strong and persistent negative impacts suggest the existence of threatening trends and probable problems of strategic character. In this situation the issue of IC regulation recedes to the background, though it is not so in case the enterprise specializes in producing innovative products with large share of expenditures on R &D and patent support. The company may feel a strong periodic pressure of the external environment in the process of commercializing its OIP and using patents and copyright. In this case, the methods of assessing the return on ownership of the patent rights and the value added obtained in the process of their use prevail. The problem is the identification of fast-changing factors that may be mediated and alleged to be weakly influenced, but their consequence may be the complete blockage of a single patent or even the initiation of litigation by competitors. In so doing, the purpose of litigation in the field of OIP or patent law is not so much the direct benefit of transferring the rights to a particular product, invention or technology, as the deterioration of reputation, and hence the market value of an opponent.

Often for the purposes of regulation of IC and its components there is needed information, concentrated around certain IC elements. Accentuation on the elements of the human,

organizational or consumer capital limits the range of available methods of evaluation, as most of them give very approximate evaluation of the IC narrow segments. If you need an integrated IC evaluation, it is desirable to use two or three methods parallelly, and then output the weighted index of the IC development level. Unfortunately, in this case we lose the base for comparison with other enterprises, but sometimes it is of no importance.

As the environment is the initial feature of the typology of factors of impact that affect the choice of the IC evaluation method, it is the environment that also defines the criteria for selecting specific

techniques and tools. Internal and external factors of impact are not homogeneous, therefore it is worth to explore them in more detail (Table 1). The strength of the impact factor indicates whether this factor will have priority in the process of choosing an IC evaluation method; the direction of impact shows whether the influence of this factor helps to choose appropriate methods of evaluation or, on the contrary, increases the level of uncertainty of the choice. Characteristics of the described factors of internal and external environment are the basis for constructing a matrix of the choice of the basic method of IC evaluation for machine-building enterprises (Table 2).

Table 1

Factors of internal and external environment influencing the choice of the evaluation method of the IC and its components

Group of factors	Factors	The strength of influence	The direction of influence
Internal environment			
Goals	Inventory of IC, reports to the shareholders (owners)	+	0
	Reengineering of business processes, launching new activities	+	+
	Preparation for the release of new products or the introduction of a new technology	+	+
	Finding ways of cost reduction	-	0
	Preparation of proposals for investors	0	+
	Preparation of a business plan to get a bank loan	-	0
	Preparation for entering the international borrowing market	0	+
	Preparation for placement of securities on the stock market	0	+
Personnel	Reorganization, restructuring, sale of business or its part, merger	+	0
	Qualifying characteristics, the system of retraining and advanced training	0	+
	Age and gender structure, length of service, turnover, rotation	0	0
	Intellectual activity, creativity	+	+
	Satisfaction with payment and working conditions	0	0
Structure	Willingness to change, loyalty to the company, corporate culture	0	0
	Level of hierarchy, level of bureaucracy involved	0	-
	Adaptability of the organizational management structure, delegation of authority	+	0
	Level of development of communication system and document management	0	+
Resources	Level of elaboration of internal documents and regulations	0	+
	Provision of financial and material resources	+	+
	Availability of time for decision-making	+	-
External environment			
Micro-environment	Level of development of information support	+	+
	Existing customers, suppliers, competitors, investors	+	0
	Serving the banking, insurance, transport and other organizations	+	0
Macro-environment	Local authorities	0	0
	Development potential of domestic market, level of competition	0	+
	Consumer capability	-	-
Global environment	Government authorities	-	0
	System of patent law	0	+
	Level of development of technology	0	0
	International environment and international developments	0	-

+ means strong (positive) influence; - is a sign of weak (negative) influence; 0 signifies neutral influence.

Note: generated by the authors.

Table 2

The matrix of choosing the basic IC evaluation method at a machine-building enterprise

Key factors	Weight of factors	Priorities of groups of methods				Wiegthed valuation			
		MCM	ROA	DIC	SC	MCM	ROA	DIC	SC
1	2	3	4	5	6	7	8	9	10
Monetary valuation of IC overall level	0.12	3	2	1	0	0.36	0.24	0.12	0
Monetary valuation of IC components	0.03	0	0	3	1	0	0	0.36	0.12
Qualitative assessment of IC overall level	0.01	0	1	0	3	0	0.12	0	0.36
Qualitative assessment of IC components	0.1	0	0	1	3	0	0	0.12	0.36
Special requirements to the reliability of the input data	0.11	2	3	1	1	0.24	0.36	0.12	0.12
Special requirements for the ease of comparison	0.06	3	3	2	1	0.36	0.36	0.24	0.12
Possibility of use by non-enterprise customers	0.05	0	3	3	3	0	0.36	0.36	0.36
Necessity to consider market factors effects	0.08	2	1	1	1	0.24	0.12	0.12	0.12
Time limit	0.14	2	3	1	0	0.24	0.36	0.12	0
Limitations on financial resources	0.05	3	3	1	1	0.36	0.36	0.12	0.12
Probability of staff resistance	0.1	2	3	1	0	0.24	0.36	0.12	0
High level of red tape in the organization	0.08	3	3	2	1	0.36	0.36	0.24	0.12
Necessity of external presentation of the results	0.04	2	2	2	3	0.24	0.24	0.24	0.36
Need to maximize the market value	0,03	3	2	1	1	0.36	0.24	0.12	0.12
Total	1	25	29	20	19	3	3.48	2.4	2.28

Note: generated by the authors.

The weight of the particular factors chosen for each company depends on the objectives of the IC evaluation, the needs of contractors and conditions of the external and internal environment. Traditionally, the sum of the weights of the factors is equal to the unit, however, in some cases this can be neglected. A combination of factors can also vary, although it is recommended to program their expanded set, and in case there is no need to consider this or that factor, it should just be assigned a 0 value as a weight coefficient. Each group of methods is assigned priority from “0” to “3”, and the better the group satisfies a specified condition, the higher its digital value of priority is.

The obtained integrated evaluation results are the basis for situational choice of the basic methods of IC evaluation. If there is a need (or desire to external contractors) to use simultaneously several groups of evaluation methods, they choose them by the next value of an integrated assessment. Then, within the selected

groups, it is necessary to select a basic method of IC evaluation, and modify it to meet the needs of the enterprise by adding or removing individual indicators and/or procedures. The important stage of IC economic evaluation at a machine-building enterprise is the creation of the program and schedule of the IC internal audit, approved by the order of the company.

The model of IC economic evaluation at machine-building enterprises is built on the basis of the closed cycle of iterations of established criteria of sufficiency of the received information and the given accuracy of the evaluation results. Such a principle is convenient for further automation of work on calculations of the given indicators, presentation of results and their use in the process of IC regulation. The graphic interpretation of the model reflects the main stages of the IC economic evaluation and the procedures for its implementation in accordance with a combination of factors that affect the enterprise at a given stage of its life cycle (Fig. 2).

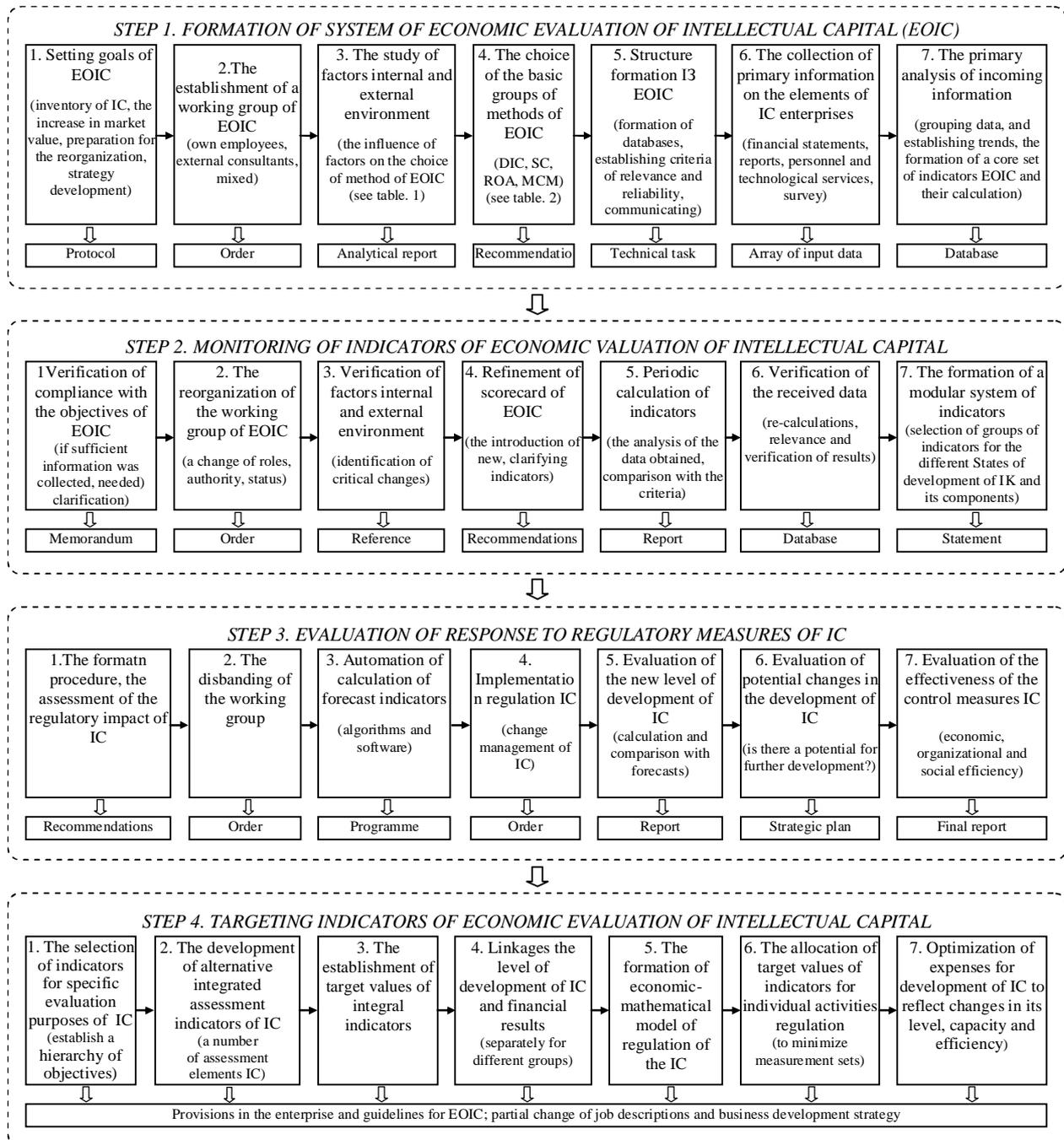


Fig. 2. Graphical model of economic evaluation of IR machine-building enterprises and capacity development

Note: generated by the authors.

The first stage of the model involves the formation of the concept of the system of IC economic evaluation at the enterprise, which depends primarily on the goals that the management has set itself. These goals are of two levels: tactical (IC inventory, increase of market value of the enterprise, preparation for organizational changes) and strategic (planning of

reorganization, system reengineering, designing a development plan). If the goal is one and it is clearly established, the formation of the EOIC system is relatively simple, it can often be limited to using one of the methods developed. However, in most cases, the management wants a universal and permanent EOIC system that would provide prompt answers to all questions that arise in

connection with the development of the IC and its components and points to the results of the regulation of the IC. It is theoretically possible to create such a universal system, but it will be very cumbersome – it will have to constantly calculate and track many surplus indicators, therefore, in terms of the efficiency of the EOIC system and optimization of the time and money costs, it is still appropriate to limit it to partial sets of indicators. It is unlikely that one and the same enterprise in the near future will reorganize its key business processes, will be subject to reorganization (merger, acquisition or sale), create and commercialize OIP, expand patent licensing activities etc.

Creation of a working group for formation of the EOIC system requires a detailed study of the organizational moments, because the functioning of this group can be quite long – up to full automation of monitoring and calculation of all necessary indicators and filling the corresponding database. The experience of big foreign industrial enterprises shows that mixed working groups, which will involve external consultants, and in some cases entire consulting group, working on a parity basis with the representatives of the major divisions of the company are most effective. The budget of such working groups is rather large, so in terms of domestic business the best format is as follows: one external consultant on a regular basis, several external experts of narrow profile and selected employees of the main production and functional units that collect and analyze primary information. It is clear that such a working group will be reorganized from time to time, and its main objective is to create an effective system of EOIC and implement it in the work of the enterprise. Western experience suggests that in the medium-sized enterprises, the processes of economic evaluation of IC and measures for its regulation can be completely automated, and control will be carried out by one of the functional units (mostly financial department). Large enterprises often have to allocate a sector in the functional services, or create a separate service, as they deal with all issues related to the development of the IC potential. There are many forms of organization: from the establishment of the position of the IC analyst to the allocation of several units dealing

with integrated research and development of the IC (ranging from R & D and personnel to the commercialization of OIPs and its patent and licensing support).

Investigation of the factors of internal and external environment is the first step of the working group, the results of which allow to uniquely identify the basic group of EOIC methods. Subsequently, the members of the working group, with the support of unit managers, form the structure of the EOIC information support and collect the initial information about the elements of the enterprise IC. As a result of these works, a technical task for the creation of a database, modification of the existing system of communications and document circulation should be formed and approved by the management. Sources of obtaining primary information for EOIC are general financial statements of the enterprise, reports of individual units and data obtained from surveys of managers and leading specialists who are tangent to the formation of IC.

At this stage in the formation of the EOIC system, there exists the greatest probability of the emergence of a resistance of management and personnel, which will be manifested in reluctance to provide some data and become the subject of research. The problem is exacerbated by the fact that members of the working group or external experts involved will have to conduct numerous interviews and questionnaires in order to determine the intellectual potential of individuals and entire units. Part of the personnel will feel threatened with their further status at the enterprise (and not without reason) and therefore deliberately or unknowingly sabotage the initiatives of members of the working group. It will not be possible to completely eliminate this resistance by administrative methods, so some adjustments will have to be made to minimize the impact of critically-minded individuals and to conduct repeated and cross-polls to obtain reliable information.

The final result of the first stage of implementing the EOIC model at machine-building enterprises is the initial analysis of the input information, which consists in grouping the collected data, establishing trends in their changes and forming on their basis a basic set of EOIC

indicators. These indicators are calculated over several available periods, and based on the results obtained, the database and the primary report are generated. This primary report will be limited to one period in terms of qualitative indicators, as they are obtained through direct communication with executives and leading specialists, and thus “retrospective” data can not be obtained. As for a full analysis it is necessary to have a comparative basis, only after passing through several subsequent periods (at least three one-quarterly polls) it can be argued that the data obtained are relevant and verified.

We should not forget that the very fact of the study of the level of development of IC and its individual components affects the managed subsystem as a regulatory measure. It is unlikely that someone will want to look less competent during the interview than they really are; there will be many attempts to “decorate” the reality or give the desired effect. A more sophisticated version of disinformation is possible: the respondents deliberately understate the current level of their competencies and development potential, in order to demonstrate “significant” growth next time.

The results of the survey of managers of machine-building enterprises indicate that most of

those who recognize the expediency of investment in the development of IC, want to have a universal instrument of its assessment. Realizing that this universality does not allow to deeply explore the individual aspects of the IC components, they agree on the least labor-intensive sets of EOIC indicators, which will become peculiar markers of the direction of changing the IC potential. And only after these indicators show a stable connection of investments in the IC development with the financial results of the enterprise, they consider it appropriate to modify the EOIC system in accordance with the objectives.

Based on the data obtained and the experience of Western industrial enterprises, we propose, at the first stage, to restrict the minimum number of IC evaluation indicators that are universal in relation to the purpose of evaluation. The calculation of the values of these indicators for a group of machine-building enterprises gives an idea of the general state of affairs in the field of IC development (Table 3). When identifying the objectives of the IC evaluation, these indicators can be supplemented by others that more accurately identify the causes and effects of changes in individual IC elements and components of the enterprise.

Table 3

The results of calculation of indicators of economic evaluation of IC and its components for the individual machine-building enterprise as of 1 January 2016

Indicators (coefficients or ths UAH)	Values as of 1 January 2016				
	“Mayak” PJSC, Vinnitsa	“Ukrelektro aparat” PJSC	“Iskra” PJSC	“Lvivskiy lokomotivorem ontnyi zavod” PJSC	“Zavod Elektron pobutprylad” LLC
1	2	3	4	5	6
TOTAL IC COST					
Net income	244270	501278	523538	284789	9587
Book value of assets	128906	254073	662615	268404	44689
Market value of liquid assets	142354	287658	801657	312840	73686
Turnover of liquid assets, %	171.6	174.3	65.3	91.0	13.0
Part of income, added by IC	23076	58526	90804	40452	3773
Average interest rate on equity, %	7	7	7	7	7
IC cost	329655	836083	1297202	577880	53896
IC excess over book value of assets	200749	582010	634587	309476	9207
Ratio of IC to book value of assets	2.56	3.29	1.96	2.15	1.21
COST OF HUMAN CAPITAL (HC)					
Number of employees	790	924	1901	1380	128
Average productivity	309.20	542.51	275.40	206.37	74.90

1	2	3	4	5	6
Average index of productivity growth	1.1	1.13	1.17	1.13	1.19
Part of the income added by HC	27141	74904	107230	42555	2249
HC cost	193865	535025	765930	303962	16063
COST OF CONSUMER CAPITAL (CC)					
Number of potential clients	36	41	92	14	21
Average amount of the order of the regular customer	216.5	311.3	168.7	845.9	29.3
Average order of a regular customer	18.3	23.4	6.3	23.7	3.5
Part of the income, added by CC	7135.2	11803.9	14940.8	11510.8	541.8
CC cost	50966	84314	106720	82220	3870
COST OF ORGANISATIONAL CAPITAL (OC)					
Residual value of OC	84825	216744	424552	191698	33963
STRUCTURE OF IC					
Share of HC, %	58.81	63.99	59.04	52.60	29.80
Share of CC, %	15.46	10.08	8.23	14.23	7.18
Share of OC, %	25.73	25.92	32.73	33.17	63.02

Note: the author collected the data groups of the indicators and calculated their values

The IC monetary evaluation is always subjective, because it is based on the value of assets that are not fixed in the form, and the potential for their transformation into the enterprise's revenue is probabilistic. In an advanced stock market, it is simpler to determine the value of an IC as the difference between the market value of its shares and the book value of assets. But in Ukraine the stock market is not developed, therefore, it is necessary to look for other ways of estimating the monetary value of IC. As guidelines, we can take into account the liquidation value of assets, the forecast of profits for a long period of operation of the enterprise, mortgage value of the property, market value of raw materials and materials, land plots, buildings etc.

Having studied the work of scientists and practitioners [1–15], we believe that in the first approximation, the cost of an IC can be determined by taking into account the income added by intellectual assets and the average interest rate on equity as a discount factor. We proceed from the fact that the cost of IC is formed over a long period of time, reversed to this ratio:

$$IC = \frac{D_{IC}}{\bar{C}_{AC}/100}, \quad (1)$$

where D_{IC} – part of the income added by IC; thousand UAH; \bar{C}_{AC} – the average share rate; %.

Since we cannot directly determine the value of the average interest rate on equity, as most domestic enterprises do not pay real dividends, we assume that $\bar{C}_{AC} = 0,5 * O_{NBU}$, where O_{NBU} is the NBU discount rate, which at the time of our calculations was 14 %.

Part of the income added by the IC is determined by the formula:

$$D_{IC} = D_I - B_{\Sigma} \times \frac{O_A^L}{100}, \quad (2)$$

where D_I – net income of the enterprise; thousand UAH; B_{Σ} – book value of assets; thousand UAH; O_A^L – the turnover of liquid assets, %.

In its turn, the turnover of liquid assets is calculated in the following way:

$$O_A^L = \frac{D_r}{\bar{A}_L}, \quad (3)$$

where D_r – income of the enterprise from sales; thousand UAH; \bar{A}_L – average annual cost of liquid assets; thousand UAH.

If an enterprise really works, then the growth rate of its income exceeds the growth rate of its tangible assets. However, in the structure of tangible assets there is a part of illiquid assets or those that do not participate in the production process. Using formulas (2–3), we separate that part of the enterprise's income, which is not explained by the use of tangible assets and we

consider it the equivalent of IC in cash. Since this capital is used for a long time and generates relevant revenues, we discount it at a rate or at the level of the average share of equity or at half the NBU discount rate.

The calculations made for five companies (see Table 3) show that the value of their IC exceeds the book value of assets by half on average. This is the expected result, since the market value of the assets of enterprises is predominantly higher than the non-indexed balance sheet and, moreover, contains a component brought in by intangible assets that participate in the production but not are reflected in the balance sheet. The higher the ratio of IC to the book value of assets, the higher the probability that the company has a high potential for development.

Conditional value of IC is the sum of the value of human, consumer and organizational capital of the enterprise. The conditionality of an algebraic sum consists in the fact that the cost of IC is formed over a long period of time, and its commercialization is prepared for years, although it may be realized (converted into money) at a moment, if the enterprise is sold. In addition, the object of sale is the whole enterprise, and the IC only increases its value. However, at the same time, we will definitely wonder what part of the value of the IC is formed at the expense of human resources and their potential, which at the expense of customers, and what part of value is formed at the expense of the system and technology of business management. New owners of the company will implement its partial reorganization and the answers to these questions determine the strategy of their behavior in the purchase and development of business, business process reengineering, integration with other business entities and much more. The simplest, but fairly accurate measure of the cost of human capital of an enterprise is the determination of part of its income, which is added by the intellectual potential of the staff:

$$D_{HC} = D_I * \left(1 + \sum_{i=1}^n (I_{PG} - 1)^i \right) - D_I, \quad (4)$$

where D_I – net income of the company; thousand UAH; I_{PG} – the index of productivity growth; n – the number of periods during which human capital is formed.

$$I_{PG} = \frac{PG_1}{PG_0}, \quad (5)$$

where PG_0, PG_1 – labour productivity in the base and fiscal periods, respectively; thousand UAH/person;

$$PG_{0(1)} = \frac{D_I}{N_A}, \quad (6)$$

where D_I – net income of the enterprise; thousand UAH; N_A – the average number of employees; persons

$$n = \frac{1}{r}, \quad (7)$$

where r – the discount factor (in our case corresponds to the discount rate of the NBU, it being 0.14).

Taking into account (5–7), the modified formula for calculating the income added by human capital will look like this:

$$D_{HC} = D_I * (I_{PG} + (I_{PG} - 1)^2 + \dots + (I_{PG} - 1)^7 - 1), \quad (8)$$

Then the value of human capital will be:

$$HC = \frac{D_{HC}}{r}, \quad (9)$$

where D_{HC} – income added by human capital; thousand UAH; r – discount rate (NBU discount rate, $r = 0.14$).

Similarly, we calculate the value of consumer capital of enterprises, but here the main indicator will be the number of regular customers and its average order volume, since these are the customers that generate long-term revenue growth. The share of income created by client capital is calculated as follows:

$$D_{CC} = (\overline{Z_{fix}} - \overline{Z}_i) \times N_{fix}, \quad (10)$$

where $\overline{Z_{fix}}$, \overline{Z}_i – average size of purchases by regular and ordinary consumers; thousand UAH; N_{fix} – the number of regular consumers; persons.

The average size of the purchase of a regular customer is:

$$\overline{Z_{fix}} = \frac{\sum_{i=1}^{N_{fix}} Z_{fix_i}}{N_{fix}}, \quad (11)$$

where Z_{fix_i} – the volume of purchases of the i -th regular customer; thousand UAH; N_{fix} – the number of regular customers.

Then the volume of consumer capital will be:

$$CC = \frac{D_{CC}}{r}, \quad (12)$$

where D_{CC} – income added by human capital; thousand UAH; r – the discount rate (NBU discount rate, $r = 0.14$).

The cost of organisational capital is hard to calculate, so we will proceed from the assumption that:

$$IC = HC + CC + OC, \quad (13)$$

where HC, CC, OC – the cost of human, consumer and organizational capital of the enterprise, respectively, at a fixed time; thousand UAH.

The results of the calculation of these indicators for five enterprises (see Table 3) indicate that the basis of IC is human capital (an average of 52.85 %), while the smallest share (on average 11.04 %) is generated by consumer capital. This is typical for machine building industry, because the main buyers are allied companies that have collaborated for a long time; the market is not dynamic, so work with customers is not very important. More important is the production technology and technical characteristics of the finished product, which, together with the management system, form the organizational capital.

Conclusions. The developed model of economic evaluation of IC of machine-building enterprises and their development potential is based on the identification of factors of influence on the process of choosing the basic methods of estimating IC and the formation of a procedure for selecting components of methods for estimating IC in accordance with the needs of specific machine-building enterprises or their groups. Accordingly, a typology of factors of influence on the choice of methods for evaluating IC of machine-building enterprises and a matrix of choice of the basic method for evaluating IC have been developed, integrated estimates for the situational choice of the base group of methods for evaluating IC are derived. The graphic model of the economic evaluation of the IC of machine-building enterprises and the potential for its development consists of four parts: the formation of the system of economic evaluation of the IC (EOIC), the monitoring of the EOIC indicators, the evaluation of the response to the measures of regulation of the

IC, the targeting of EOIC indicators. The first two parts reflect the concept of EOIC, the selection of relevant indicators, their monitoring and appropriate organizational support. The last two parts are designed to form a mechanism for regulating the IC, based on the constant tracking of changes in key parameters of the IC and its components and the elimination of deviations.

The developed system of indicators EOIC covers the quantitative and qualitative indicators of IC as a whole and its components: human, organizational and consumer capital. For five machine-building enterprises, monetary indicators were calculated on the basis of the proposed methodology for determining the proportion of income derived from the use of human and consumer capital. The cash equivalent of organizational capital is proposed to be determined as a residual value, and the total level of IC – as the value added by intangible assets and discounted at the average rate of the equity capital or its substitute.

The proposed method for calculating the monetary equivalent of IC and its components can be used for any machine-building enterprise, but then for each enterprise it is necessary to form their own system of indicators by choosing from the array of proposed indicators for calculation. The criteria for choosing the indicators for assessing the IC should be: the optimal combination of formalization of calculation and adaptability to application in the practice of the enterprise; symmetric mapping of various components of the IC and their individual elements; a combination of quantitative (physical and monetary) and qualitative indicators and the possibility of bringing them to a common basis; minimizing the number of duplicate indicators and eliminating the impact of sharp one-time changes in input data; suitability for repeated calculation in short and long periods of time within the limits of IC regulation. Actually, the development of an economic and mathematical model for optimizing the indicators of evaluation and minimizing their deviations from the planned values as a result of regulation of the IC is a further direction of our study.

References

1. Sveiby, K.-E. (accessed 11 November 2011). *Methods for Measuring Intangibles Assets.*

- Retrieved from <http://www.sveiby.com/articles/IntangibleMethods.htm>
2. Luthy, D. (2006). *Intellectual capital and its measurement*. Logan, Utah. College of Business Utah State University, 18.
 3. Edvinsson, L. (2000). *Some perspectives on intangibles and intellectual capital*. *Journal of Intellectual Capital*, 1, (1), 12–16.
 4. Andriessen, D. (2007). *IC valuation and measurement: Classifying the state of the art*. *Journal of Intellectual Capital*, 5, (2), 230–242.
 5. Flamholtz, E. (2012). *Human Resource Accounting: Advances in Concepts, Methods and Applications*. Springer Science & Business Media, 390.
 6. Cuzzo, B., Dumay J., Palmaccio, M. & Lombardi, R. (2017). *Intellectual capital disclosure: a structured literature review*. *Journal of Intellectual Capital*, 18, (1), 9–28.
 7. Bosak, A. O. & Trevogo, O. I. (2015). *Economic evaluation and the development of communications in the management system of intellectual capital of the enterprise*. Lviv: ST “City Information System”, 326.
 8. Illiashenko, S. M. (2009). *The methodical approach to the valuation of intellectual capital region. Mechanism of Economic Regulation*, 1, 138–141.
 9. Kendiukhov, O. V. (2008). *Effective management of intellectual capital*. NAS, Ukraine, Economy and Industry Institute, Donetsk: DonUEP, 363.
 10. Kuzmin, O. Yev. & Georgiadi, N. G. (2006). *The formation and use of the information system management of economic development of the enterprises*. Lviv: Publishing House of the National University “Lviv Polytechnik”, 368.
 11. Melnyk, O. G. (2010). *Diagnostics of activity of engineering enterprises : polchatelya concept and tools: polchatelya concept and tools*. Lviv: Publishing House of the National University “Lviv Polytechnik”, 344.
 12. Mnykh, O. V. *Marketing in the Formation of the market value of the machine-building enterprise: theory and practice*. Lviv: Publishing House of the National University “Lviv Polytechnik”, 428.
 13. Moiseenko, I. P. (2007). *Managing intellectual potential*. L.: Avers, 303.
 14. Shkurupiyi, O. V. (2009). *Intellectual capital in social reproduction*. K.: KNEU, 33.

T. Nakonechna

PhD in Economics, Associate Professor

N. Hryniv

PhD in Economics, Associate Professor
Lviv Polytechnic National University

STRATEGIC SEGMENTATION OF CUSTOMERS IN THE MARKET OF PRIMARY REAL ESTATE

Abstract. The authors emphasize the special significance of customer service on the primary market of residential real estate. There is carried out segmentation of the primary real estate market with the account of such a criterion as a residential housing class. There are singled out the following segments of this market: premium-segment, business-segment, comfort-segment, and economy-segment. The features of each market segment are described. An analysis of the cost of housing on the primary real estate market is carried out, depending on the readiness of the facility, namely: “foundation pit”, “foundation”, “readiness of floors”, “the gray key readiness” and the supply of housing in the primary real estate market. A detailed elaboration of strategies for cooperation with clients in the primary real estate market and strategies for establishing cooperation “client-enterprise” for certain segments of the primary real estate market are proposed. The strategy of servicing the clients of the primary real estate market according to the specifics of the product and services programmes is offered.

Key words: segmentation, service, client, strategy, market, competitiveness.

Formulation of the problem. The dominance of the customer on the real estate market determines the need of offering unique products and exclusive services. It means that there is an aggregate orientation on the needs of the client and the tendency towards the aggregate product offer complemented by the service is becoming visible. Today, customers often consider the price, technical characteristics of the product and their quality

performance as permanent elements; therefore, in the process of making a decision to purchase a product, they assess the complex of services provided as well as the quality of the service. [12]. Determining factors of competitiveness in the market of primary real estate are the individual approach to each customer, the high level of service and an effectively developed service system according to international standards.

In conditions of today`s market, the main tasks for an enterprise are to work out the strategy of customer service and to set standards and level of customer service. The spectrum of services provided to the customers must take into account all their demands: from the stage of the first contact to the stage of monitoring their satisfaction level.

Analysis of recent research and publications. The basic principles of customer service are considered in works of such foreign scholars as S. Kerdel [4], F. Kotler [5], D. M. Lambert [18], A. Mat [9], L. B. Mirotn [11], I. Petecki [16], Jorge. R. Stoke [18], I. Z. Tashbaev [11], as well as such domestic scientists in the field of marketing and logistics as M. Y. Hryhorak [3], V. V. Kuzyakov [8], V. Krychevskyi [19], T. V. Nakonechna [12], M. A. Oklander [14], O. S. Teletov [20], L. M. Shulgina [24], T. V. Charchuk [23], N. I. Chuhrai [19, 21] etc.

The above authors in their scientific works consider the range of problems of a customer service through the prism of affiliate marketing as one of the factors of increasing competitiveness of the enterprise. At the same time, despite the many differences in views and approaches regarding the meaning of customer service it is possible to note insufficient number of theoretical developments that reveal the essence and importance of customer service exactly in the primary real estate market. The range of customer services should take into account all of the customers' requirements: from the initial contact stage with the customer to monitoring of the customer satisfaction level. Enterprises (developers) have to elaborate a strategy of customer service, to set the standards and the level of customer service.

The purpose of the research is to study basic tendencies of the primary real estate market, to single out the basic segments of the primary real estate market and to substantiate theoretical positions and practical recommendations in relation to the customer service of primary real estate market.

Materials and results. The companies should make more effort and look for new ways to achieve advantages over competitors, because of increased competition. An important direction of obtaining competitive advantages is the high level and high quality of customer service [16]. After all, a set of proposed customer service elements and their quality play an important role in ensuring customers' expectations and in forming their perceptions about the company. The orientation of the company's activity to a high level of service in practice ensures maximum consideration of the needs of the clients and gives them the maximum value. Consequently, it leads to the achievement of high customer loyalty, the creation of high entry barriers for new players and the formation of stable competitive advantages over competitors in the market [12].

Of particular importance is customer service in the primary real estate market, the feature of

which is both small-scale and individualization at the same time; this being caused by the specificity of the product itself (housing), as housing in the primary real estate market can be of the same type, on the one hand, and quite individual, on the other hand. In turn, this explains the selection of various segments of the primary real estate market, the specifics of which companies - developers should take into account, developing and differentiating customer service programmes. The formation of the segments of the primary real estate market is possible through taking into consideration classes of accommodation: the premium-segment, the business-segment, the comfort-segment; the economy-segment.

The above described segments of the primary real estate market (the city of Lviv) require a detailed study that will outline the necessary set of services, depending on price and technical characteristics of the housing.

We will analyze the class level and cost of housing with the aim of developing strategies for the customer service market. The economy segment remains most attractive, if we take into consideration the statistics of the real estate companies-developers. The evidence of it is new buildings that have been commissioned since the beginning of 2016, where the concentration of budget apartments is 64.7 % [1]. Recently, on the market of primary real estate there is a tendency to increase housing of the comfort-segment by 8.7 % due to a decrease of demand for housing of economy-segment by 7.5 % and the reduction in supply in the premium-segment and the business-segment by 0.6 %. As the analysis shows (Fig. 1), there is almost no demand for the housing of business-segment, especially the premium-segment. According to our research, two segments – the economy and comfort are interesting for investment, because the total volume of these apartments (both demand and supply) in the total volume of primary market of real estate is 95.4 %. At the same time, with the growth of 8.7 % in the volume of construction of housing of comfort segment, the price of 1m² of housing in this segment decreased by an average of 4.3 %.

Special features of housing segments of the primary real estate market*

No	The name of the segment	The characteristics of housing
1	The premium-segment	It is characterized by the increased comfortability and exclusivity, in particular, special control over construction and quality of materials, individual planning, large area, small number of apartments in a house, location in the central part of the city, well-developed own infrastructure, which includes a supermarket, a kindergarten, a pharmacy, a laundry, underground parking, there is also available the recreation area and no tall buildings in the nearby area. There are also private security services and the maintenance of buildings and territories, the remoteness from industrial zones and businesses, and so on.
2	The business-segment	It is characterized by high comfort, large area, construction is done on an individual project, taking into account the architectural appearance; houses are erected in the central part of the city with good transport interchange and infrastructure. A characteristic feature is also the usage of high quality engineering equipment, the presence of internal infrastructure, aesthetic improvement of the local area, the presence of underground or above-ground parking, security area, own maintenance service and independent boiler.
3	The comfort-segment	It is characterized by a high comfort level, special requirements for construction materials during the construction process; there are used high-tech methods, good planning, large housing area, the presence of internal infrastructure; there is also foreseen the availability of entrance halls with security.
4	The economy-segment.	It is characterized by such criteria: built on the outskirts of the city, the sectional (accumulative) technology is used in the construction, a small area, the same type of housing planning, absence of a local territory.

*based on [7]

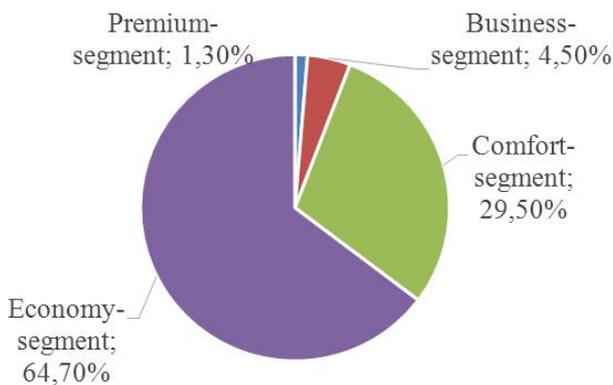


Fig. 1. The ratio of different segments of housing in the primary real estate market in Lviv

Note: created on the base of [10]

The research of the housing costs in the primary real estate market of Lviv. The price of housing on the primary real estate market depends on the class of the accommodation, location and

credibility to the building company. In 2015, the cost of housing in dollars USA decreased by an average of 8.21 % comparing to 2014.

The reduction in construction costs was caused by fluctuations in the currency market, since the growth rate of the U.S. dollar occurred in the range from 90 % to 157 %. Some prices on construction materials in the UAH equivalent increased from 69 % to 98 %, and the cost of construction works also increased, from 29 % to 61 %. Such a disproportionate rise in prices for building materials and the U.S. dollar allows the developer, at this stage, to reduce some of the cost of new housing [10].

In the housing segment of economy and comfort classes the price will also depend on the technology of construction: frame-block; monolithic and panel technology. For the housing of economy-segment the real estate developers use, as a rule, the monolithic and panel technology. The lowest

housing price is on prefabricated houses, as this is the cheapest and fastest way of construction [13]. The price of housing including using prefabricated construction technology will range within 400 USD/m² – 500 USD/m². The monolithic-frame construction technology is the most appropriate technology for building housing in the comfort-segment (partly for economy-segment). Housing, which built using this technology of construction, is spacious and characterized with improved sound insulation and heat conservation. Cast-frame construction technology makes possible the redevelopment of housing at the customer request [6]. The price of housing with using cast-frame technology of construction will fluctuate within 700 USD/m² – 900 USD/m².

In recent years in the comfort-segment the most often used technology for construction of housing is the frame-block technology. The advantage of such buildings is high reliability, the ability for dwellers to plan their own housing, since the carrier element is a frame, inside which there are mounted blocks and bricks [13]. The main disadvantage of frame-block houses is its high price of 800 USD/m² to 1,000 USD/m². We also need to say that in premium- and business-segment real estate developers use only two technologies: monolithic-frame and frame-block [13].

The analysis of the housing prices on the primary real estate market shows that it depends on the readiness of the object, namely, “Foundation ditch”, “Foundation”, “Floors readiness”, “Under a grey key”. Let’s give some explanations of the presented classification. The stage “Foundation ditch” implies investing at the stage of excavation. The phase “Foundation” implies investment at the stage of construction and installation works for the construction of the foundation. The stage of “Floors readiness” envisages investing in housing during the frame construction of the house, and the amount of investment will depend on the readiness of the frame of house. The last stage of the investment is called “Under the grey key”, which means that the developer performs 100 % of the external works, also partially internal works, such as: walls are plastered (without painting and facing work); floor – cement screed (without clean floors); entrance doors – fireproof, open outside; without internal doors; windows – metal-plastic; water supply and sewerage – installation of risers; gas supply – installation of pipes and gas meters; electricity – installation of a wiring and meters of electric power; heating – individual (a boiler of foreign manufacture, radiators). Dynamics of the apartments’ prices changes in the primary housing market, depending on the readiness of the object is shown in Figure 2 (data for 2013–2014).

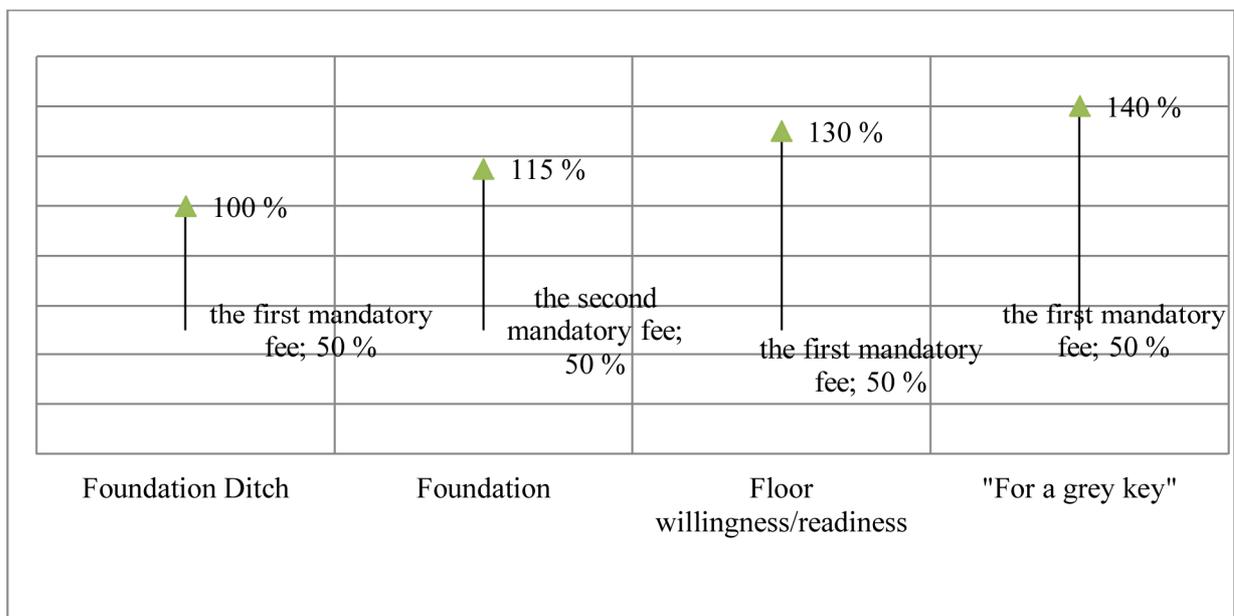


Fig. 2. The apartments’ price changes in the primary real estate market depending on the readiness of the object

Note: compiled by the author

Strategic Segmentation of Customers in the Market of Primary Real Estate

The growth of housing prices depends on the degree of the object readiness, and can vary from 10 % to 40 % at the first stage of construction (foundation ditch). Typically, the developer offers the first mandatory installment, it being 50 %, the investor may pay 100 % of the price at the stage of “Foundation ditch”, it being the initial price. In the second stage (“Foundation”) the value of the apartment increases typically by 10–15 %; the third stage, which depends on the readiness of floors, envisages an increase in the price of the apartment by 15–30 % of the original price, and therefore, the highest price is the 30–40 % of the original price in the fourth stage, especially, at the moment of commissioning a building “Under a grey key”. However, if the developer is trusted by the investors, at the stage of commissioning “Under a

grey key” the maximum price of the object of housing construction will be 110–115 % of the initial price. Today, in the primary real estate market the highest demand for apartments in new buildings is at the stage of “Under a grey key”, and therefore to find suitable housing at this stage of construction is quite difficult. The market displays a small number of such apartments as the majority of them have been bought at the initial stages of construction (Fig. 3).

Considering the whole segmented row, the average price of 1m² of supply of newly built buildings in Lviv is 697.5 USD/m², the highest bid price is 1,500 USD/m² (in the premium-segment), and the minimum price among those that were considered is 530 USD/m² (in the economy segment) [2].

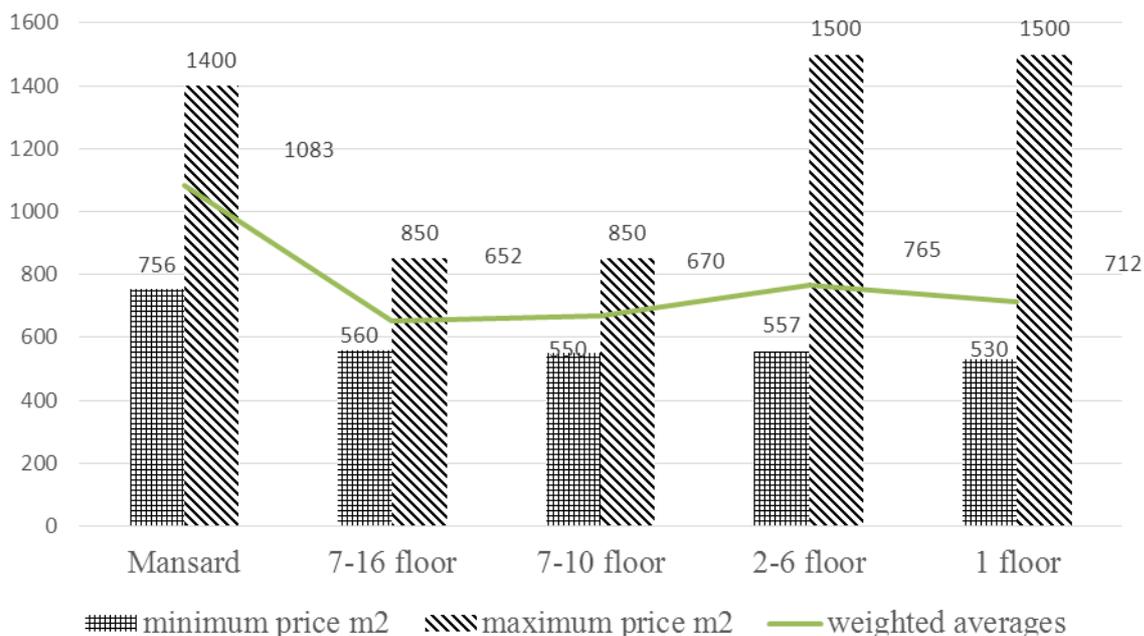


Fig. 3. The graphical interpretation of housing supply in the new buildings, given the floor of the house, at the “Foundation” construction phase

Note: compiled by the author

The analysis of housing supply in the primary real estate market showed that in the premium-segment and the business-segment the highest demand is for: three-bedroom apartments with the total area of 104 m² up to 160 m² (39 % of the total number of apartments), two-bedroom apartments with the total area of 86 m² to 104 m²

(28 % of the total number of apartments), four-bedroom apartments with the total area of 124 m² to 192 m² (20 % of the total number of apartments), the lowest demand in this segment is for Studio apartments (one-bedroom) with the total area from 48 m² to 73 m² (13 % of the total number of apartments). In economy- and

comfort-segment, the situation is slightly different, the highest demand is for: two-bedroom apartments with the total area of 59 m² to 88 m² (48–54 % of the total number of apartments), three-bedroom apartment with the total area of 86 m² to 92 m² (19–21 % of the total number of apartments), also one-bedroom with the total area from 42 m² to 55 m² (18–20 % of the total number of apartments), the lowest demand in this segment is for four-bedroom apartments with the total area from 88 m² to 123 m² (9–11 % of the total number of apartments) (Fig. 4).

In the context of high inflation, the demand for housing in the primary real estate market in Lviv in 2015, according to the research, began to decline.

The increasing quantity of flats in new buildings, which are on sale at the stage “Under a grey key”, shows the reducing demand in the primary housing market. In 2013–2014, at the stage of “Under a grey key” there were sold 87–92 % of housing on the primary real estate market in Lviv, since the fourth quarter of 2014 and in 2015, accordingly, 69 % and 81 % [2].

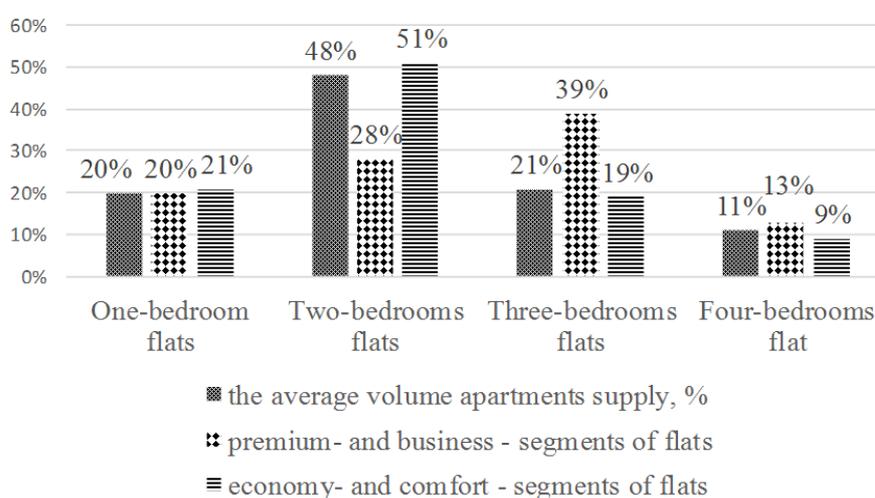


Fig. 4. The graphical interpretation of the supply of housing on the primary real estate market of the city depending on the number of rooms.

Note: compiled by the authors

There is a decrease in demand for housing in the primary real estate market, in 2016 in Ukraine and in Lviv in particular, in connection with reduction of the majority of citizens incomes, with a relatively high cost per square meter, with the large size of the first installment, that sometimes is 50 % of the cost of housing, with high rate of housing loans [22]. With the account of these factors, and in conditions of changes in the environment of the enterprises-developers and customers, which are manifested in the allocation of new segments of the primary real estate market, the increasing varieties of property offered, market saturation, in the emergence of new technological

opportunities, as well as the constant dynamics of the needs of the customers, there emerges the necessity of introducing service strategies and developing relations with customers [12]. The development and selection of service strategies for each individual segment are possible, when the enterprise-builder will determine the prospects of cooperation with the customer (Fig. 5).

The detalization of cooperation strategies with customers should occur in such directions [21]:

- Formation and application of individual standards and customer service levels for each segment of the primary real estate market.

Strategic Segmentation of Customers in the Market of Primary Real Estate

- Formation and application of the programmes of increasing clients' loyalty to the building company.
- Formation and implementation of effective programmes to attract potential customers to cooperate with the construction company.

- Implementation of the system of total quality management in the company-developer, development of customer service standards for each segment of the market, with taking into account the level of profitability and the potential for the developer.

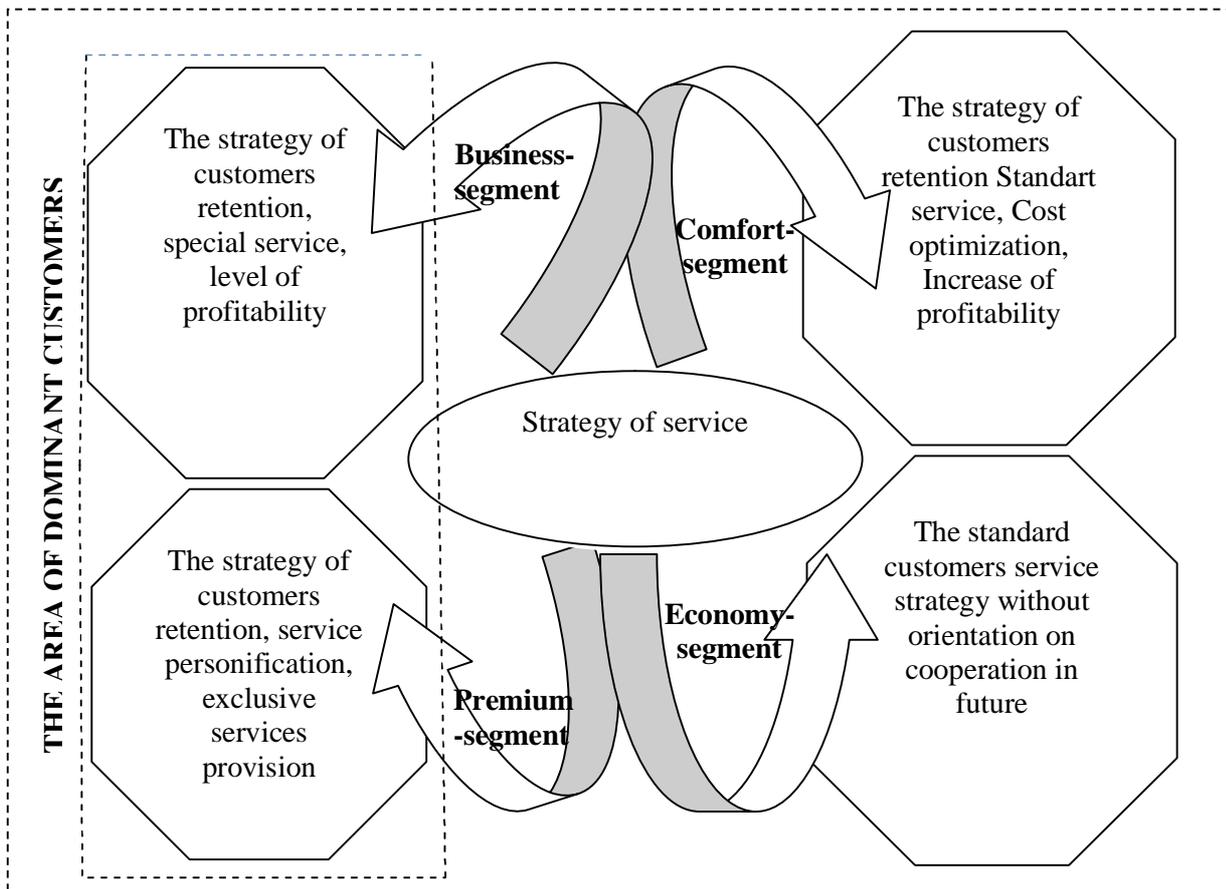


Fig. 5. The strategy of cooperation of the developer with a client in the market of primary real estate

Note: compiled by the author

Customer service on the primary market of real estate consists in providing a wide range of services that allow the developer not only to satisfy the needs of their customers, but also to receive a number of strategic advantages. First of all, “integrated services” are increasingly becoming a direct source of profit and their use can significantly increase the revenue and profitability of the developer company [15]. Another benefit is that it helps to form a stable housing market, reach new segments, markets or increase market shares. Service strategies, which are customer-oriented, provide the solution of customers' problems through providing them

with greater reliability, lower operating costs, faster response to their requests, facilitation of procurement and quality assurance of goods and services [8]. Since the specificity of the primary real estate market consists in the developer's offers to the customer of both a commodity (housing) and services [12], the directions of their development can be defined in two-dimensional space, which, in turn, separate system strategies of customer service: strategy of customization of orders, strategy of core competencies in the service, strategy of expensive leadership and strategy of high added value (Fig. 6).

		Housing	
		Standard	Individual
Customers service	Standard programme	THE STRATEGY OF EXPENSIVE LEADERSHIP	THE STRATEGY OF CUSTOMIZATION OF ORDERS
	Individual (special) programme	THE STRATEGY OF CORE COMPETENCIES IN THE SERVICE	THE STRATEGY OF ADDED VALUE

Fig. 6. Strategies of customer service in the primary market of real estate

Note: based on [12]

The retaining of the competitive advantages by the company-developer on the primary real estate market, achieved through cost leadership or excellent competence, is a continuous process which reinforces itself, if it was well planned and proceeds successfully. Achieving the benefits should bring results in the form of customer loyalty, their satisfaction, and profitability, which in turn will make it possible to increase investment in key competencies and tools, and it strengthens the competitive position of the building enterprise [8].

Conclusions. The proposed strategies of cooperation of the developer with customers in various market segments of the primary real estate market and service strategies will increase the number of customers in each of the segments and will strengthen the competitive position on the market of primary real estate in connection with the use by enterprises-developers of customer-oriented service strategy in their activities. According to the importance of the customer service market, further research of potential directions of optimizing the level of customer service and assessment of its economic efficiency is relevant.

References

1. *Analitychnyj zvit za I kvartal 2012 roku.* [Analytical report for the first quarter of 2012]. Retrieved from <http://www.re-finance.com.ua/files/ForPartners/MarketAnalysis1kv2012.pdf>. [in Ukrainian].
2. *Vartist' kvartyr u Lvovi u sichni.* [The cost of apartments in Ukraine in January]. Retrieved from <http://domik.ua/novosti/vartist-kvartir-u-lvovi-u-sichni-n243854.html>. [in Ukrainian].
3. *Hryhorak, M.J. (2005). Rol' provaideryv posluh tehnichnoho obsluhovuvannya v lohistychnyh lantsuhah aviatsiinoho kompleksu.* [The role of service providers in the maintenance of logistic chains aviation complex]. Retrieved from http://www.nbu.gov.ua/old_jrn/soc_gum/APE/2011_8/APE-8-2011/171-183.pdf. [in Ukrainian].
4. *Kardel, S. (2005). Strategicheskoe sotrudnychestvo: Kreatyvnyi byznes-kurs.* [Strategic cooperation: Creative business course], (K. Tkachenko, Trans. from English). Moscow: FAYR-PRESS.
5. *Kotler, Ph. (2006). Kljuchevui voprosov markeynga: otvechaet Fylypp Kotler.* [Key marketing issues: meets Philip Kotler]. (Trans. from English). Moscow: ZAO "Olymp-Biznes".
6. *Kvartal na Holubovyha.* [Quarter Holubovych]. Retrieved from <http://golubovyha.com.ua>. [in Ukrainian].
7. *Klasyfikaciya zhytla: vid "ekonom" do "Biznes".* [The classification of housing from "economy" to "Business"]. Retrieved from <http://l-kvartal.com.ua/ua/news/klassifikatsiya-zhilya-ot-ekonom-do-biznes.html>. [in Ukrainian].
8. *Kuziak, V. V. Strategija obslugovuvannja klijentiv u stvorenni konkurentnyh perevag pidpryjemstva.* [Customer service strategy to create competitive advantage]. Retrieved from http://nltu.edu.ua/nv/Archive/2014/24_6/37.pdf. [in Ukrainian].

Strategic Segmentation of Customers in the Market of Primary Real Estate

9. Mate, E. M. (1993). *Posleprodazhnoe obsluzhyvanye*. [After-sales service]. (Trans. from French). Moscow: "Progres", "Unyvers".
10. Modeliuvannia tendencii rynku neruhomosti [Simulation of the real estate market trends]. Retrieved from <http://oaji.net/articles/2016/898-1469273916.pdf> [in Ukrainian].
11. Myrotyn, L. B., Tashbaev I. E., Kasenov A. G. (2002). *Logistyka: obsluzhyvanye potrebytelej*. [Logistics: customer service]. Moscow: YNFRA. [in Ukrainian].
12. Nakonechna, T. V. (2012). *Obslughovuvannja spozhyvachiv produkciï promyslovyh pidpryjemstv dribnoseriynogo vyrobnyctva*. [Maintenance consumer products industry small-scale production. Extended abstract of candidate's thesis]. Lviv: Nac. un-t "L'vivs'ka politehnika". [in Ukrainian].
13. Neruhomist', L'vivshhyny: kupivlia, prodazh, orenda! [Lviv Real Estate: buying, selling, renting!] Retrieved from <http://naitidom.lviv.ua/2014/11/osoblyvosti-osnovnyh-vydiv-novobudov/>. [in Ukrainian].
14. Oklander, M. A. (2000). *Kontur ekonomicheskoi logistiki*. [Contours of economic logistics]. Moscow: Nauk. Dumka.
15. *Organizacija obslughovuvannja turystiv*. [Organization of tourist services]. Retrieved from http://ua-referat.com/Organizacija_obs_lughovuvannja_turysti_v. [in Ukrainian].
16. Petec'kyj, Ignaci (2010). *Organizacija vyrobnyctva v umovah lancjuga postavok tovariv indyvidual'nogo zamovlennja*. [The organization of production in the supply chain of goods for individual orders]. Lviv: Vydavnyctvo Nacional'nogo universytetu "L'vivs'ka politehnika". [in Ukrainian].
17. *Systema upravlinnja jakistju gotel'nyh poslug: metodologichni aspekty*. [The quality management system of hotel services: methodological aspects]. Retrieved from http://tourlib.net/statti_ukr/dubodjelova.htm. [in Ukrainian].
18. Stok, Dzh. R. & Lambert, D. M. (2005). *Strategycheskoe upravlenye logystrykoj*. [Strategic management of logistics]. Moscow: YNFRA-M. [in Ukrainian].
19. Chuhraj, N. I. (2007). *Transformacija vartosti u formuvanni vidnosyn "pidpryjemstvo-klijent"*. [The transformation of value in forming relationships "Enterprise – Client"]. Lviv: Vydavnyctvo Nacion. un-tu "L'vivs'ka politehnika". [in Ukrainian].
20. Tjeljetov, O. C. (2008). *Konceptual'ni zasady zastosuvannja partners'kogo marketyngu na promyslovomu pidpryjemstvi*. Conceptual bases of use of affiliate marketing in an industrial plant. Sumy: "Visnyk SumDU. Serija Ekonomika". [in Ukrainian].
21. Chuhraj, N. I. & Kryvoruchko, J. J. (2008). *Ocinjuvannja i rozvytok vidnosyn mizh biznes-partneramy*. [Evaluation and development of relations between business partners]. Lviv: "Rastr-7". [in Ukrainian].
22. *Chy kupujut' zhytlo pid chas vijny*. [Are customers buying houses during the war?]. Retrieved from http://lb.ua/economics/2014/12/05/288231_chi_ku_puyut_zhitlo_pid_chas_viyni.htm. [in Ukrainian].
23. Sharchuk, T.V. (2008) *Informacijne ta audytors'ke zabezpechennja realizacii strategii logistychnogo obslughovuvannja klijentiv*. [Information and Audit Strategy to the logistics customer service]. Lviv: Visnyk Nacional'nogo universytetu "L'vivs'ka politehnika" "Logistyka" No. 623. [in Ukrainian].
24. Shul'gina, L. M. & Mel'nychuk, V. M. (2011). *Evoljucija naukovykh pogljadiv ponjattja "spozhyvcha cinnist' tovaru"*. [The evolution of scientific views the concept of "value consumer goods"]. Lviv. [in Ukrainian].

I. Yaremko

PhD in Economics, Associate Professor

V. Karkovska

PhD in Economics, Associate Professor

Lviv Polytechnic National University

ASSESSMENT OF GOVERNMENTAL BODIES OFFICIALS ACTIVITY RESULTS BASED ON FACTOR MODEL DEVELOPMENT

Lead. The article demonstrates a factor model of due performance of all norms and rules by officials in a governmental body. It singularizes the following basic indices of the factor model: index of official's adherence to rules and norms and performance of them; index of adherence to rules and norms and performance of them during inspection in a governmental body by an employee of an organization, performing the inspection; index of safety of governmental bodies, covering the whole of statistic reporting regarding violations of this governmental body. It substantiates the opportunity of using the factor model for assessment of governmental officials' activity results.

Keywords. Governmental bodies, assessment of officials' activity results, factor model, official's adherence to rules and norms and performance of them, level of knowledge, level of violations.

Previous research. The issues of assessing governmental officials' activity were considered in the works of S. D. Dubenko [2], V. Ya. Malynovskiy [4], N. R. Nyzhnyk, O. V. Sliusarenko [9] and other prominent academicians. However, the issues of improving the governmental officials' activity results assessment system remained unexplored. Improvement and ordination of governmental service requires assessment of efficiency and effectiveness of a governmental official's professional activity.

Research objective and tasks. While improving personnel security in the governmental sphere, we should realize that to achieve the best effect it is necessary not only to detect a problem and find its solution, but also to systematize and reflect the principle of processes change. The

objective is to singularize factors for assessing governmental officials' activity results and developing the factor model. This will allow detecting periodically recurrent threats. In this case, there is a chance to develop a threat fighting program.

Basic research materials. The society is interested in provision of quality governmental services, expects professional and efficient activity of governmental officials, irrespective of political influences or beliefs. Therefore, governmental officials assessment must be an important tool for assuring objective control over the results of authorities' actions, raising demands regarding assurance of clear connection between planned activity of the government, authorities and governmental officials.

The most efficient method that allows future assessing change in a resulting exponent while assuring personnel security of governmental bodies is development of factor model. Creation of this model will allow governmental bodies conducting deeper analysis and monitoring in the sphere of personnel security. The process of personnel security assurance in the governmental sphere is influenced by quite a many factors [2, 7, 8]. And every process must be improved over time.

An important factor in every improvement process is its persistence. The process of change in activity, depending on several factors, will always have a graph of parabolic curve for most objects and subjects. This is explained by human nature (for instance, a wish to get higher returns

with lower investments, peculiar to human beings) [1, 6].

The governmental bodies search for ways of improving supervision and monitoring process, and the officials – on the contrary – search for more refined ways to escape responsibility for illegal actions (at this, funds for eliminating real problem are always unavailable) [3, 5, 6].

The modeling is beneficial through the chance of constant analysis of change in both resulting exponent of personnel security and internal factors in depends on. Owing to the correctly developed model, there arises a chance of not only finding a reason why the problem occurred, but also, with account of factors interconnection, detecting a way of problem solution.

In should be mentioned that the built model will reflect the most important processes, and be a basis for assessing potential threats. To create a model that will further assist to its efficient performance, certain conditions should be met:

- adherence to rules and norms by the employees of corresponding governmental bodies;
- high level of knowledge of governmental employees and high quality of work, performed by them;
- consideration of all important impact factors.

Thus, the factor model may be shown in a following way:

$$Y_{kb} = X_1 \times X_2 \times X_3, \quad (1)$$

where Y_{kb} is an index of due adherence to all norms and rules in a governmental body. The higher is the index, the lower is the level of violations in a governmental body; X_1 – index of an official's adherence to rules and norms and performance of them; X_2 – index of adherence to rules and norms and performance of them during inspection in a governmental body by an employee of an organization, performing the inspection; X_3 – index of safety of governmental bodies, covering the whole of statistic reporting regarding violations of this governmental body.

The considered factor model belongs to a multiplicative models type. Further research

requires description of a process and degree of each factor's impact on a resulting exponent.

The first factor is the index of official's adherence to rules and norms of a certain division and performance of them. This index is estimated as a ratio of the level of knowledge (P_3) of the given employee to the level of violations (P_n), committed by this employee:

$$X_1 = P_3 / P_n. \quad (2)$$

The level of knowledge will be expressed in percent and is estimated on the basis of results of annual testing of all employees that must be conducted in governmental bodies. The highest score is 100 %. The lowest allowed limit for employee's admittance to work – 50 %. This will define the limits for the first index.

Level of violations is a ratio of the amount of norms and rules, violated by the official (according to regulatory documents) to the total amount of norms and rules the official is to adhere to on his/her position. Therefore, the described exponent will look as follows:

$$P_n = \begin{cases} \frac{\alpha}{\sum_{n=1}^i n} \times 100\%, & \text{with } \alpha < \sum_{n=1}^i n, \quad \alpha \neq \sum_{n=1}^i n. \\ 100\%, & \text{with } \alpha \rightarrow \sum_{n=1}^i n, \end{cases} \quad (3)$$

where a is an amount of rules and norms, violated by the official of governmental division; $\sum_{n=1}^i n$ is a general amount of norms and rules, fixed in documents, the official is obliged to perform; P_n is a level of violations, committed by one employee.

It should be mentioned that, with account of this formula, a range of conditions must be met:

– $a < \sum_{n=1}^i n$ – this condition cannot be violated due to a fact that an official cannot violate more rules than the amount included to regulatory documents;

– $a \neq \sum_{n=1}^i n$ – violation of this condition will lead to absolute non-performance of all norms and rules by one official;

– $a \rightarrow \sum_{n=1}^i n$ – the situation is unfavorable

due to systematic official's non-adherence to the prescribed norms and rules;

– $P_n \rightarrow 100\%$ – in case of official's non-performance of the rules. The lower is the exponent's value, the higher are the consciousness and level of responsibility of a separate official.

Now, when we know how the level of violations and level of knowledge are changed, we may draw a function graph for the index of adherence to norms and rules. It should be mentioned that while building a graph, we are governed by the following principle. Irrespective of dependence between the level of knowledge and the level of violations, there is no direct proportionate dependence between the values. Therefore, for the graphic interpretation an important condition is consideration of allowances.

Another important thing is that the graph will be represented as an equiangular hyperbole

with $y = a / x$ asymptotes. However, with account of reference axes characteristics (all exponents are shown in percent measurement), it is impossible to use a part of graph below the reference axis.

We should mention that the function graph, provided on Fig. 1, is a perfect model – that is, the graph provides directly proportionate dependence between the level of education and the level of violations by the employee of governmental division. However, in practice there are situations when this dependence is broken. Therefore, it is reasonable to singularize five basic situations for analysis of the activity of division's employee that confirm this.

For the interpretation purposes, it is reasonable to use a regular coordinate grid, where reference axes will be identical to axes on Fig. 1.

The next step is graphic presentation of basic situations during the analysis of activity of the division's employee, shown on Fig. 2.

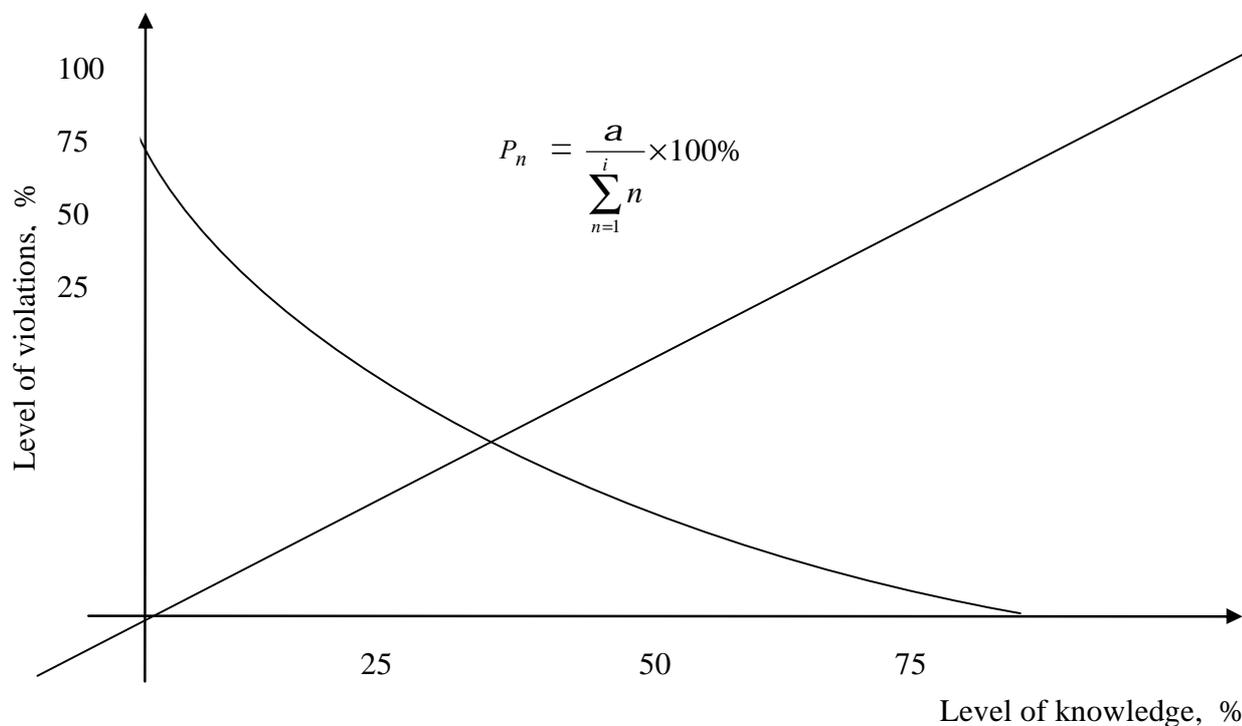


Fig. 1. Graphic presentation of function for the index of official's adherence to rules and norms and performance of them

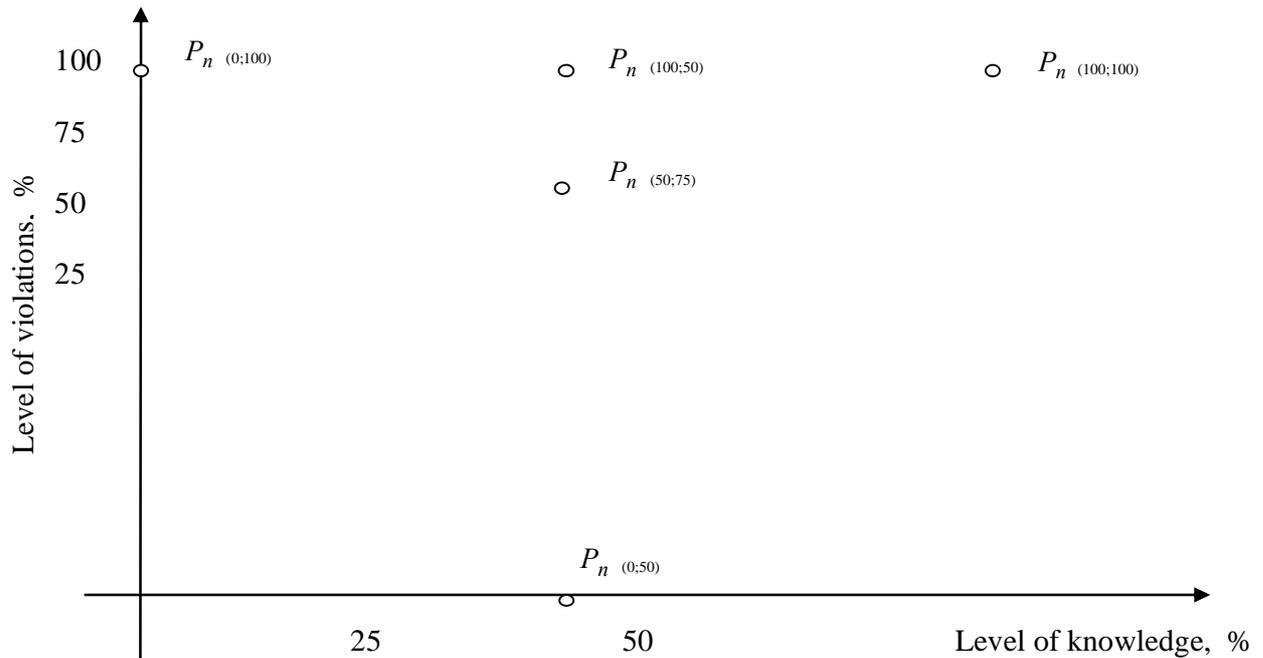


Fig. 2. Graphic presentation of basic situations during analysis of activity of the division's employee

1. Point $P_n(0;100)$ characterizes a situation of maximum knowledge, by the employee of the governmental body, of the norms, rules and processes, at which the level of violations is close to zero. The considered situation is actually a component of an ideal model, i.e. the higher is the level of development, the lower is the percent of violations.

2. Point $P_n(100;100)$ reflects a situation when employee, having obtained a maximum score in testing, makes absolutely all violations on his/her position. Such situation is theoretically possible in the following cases: there were technical mistakes during the testing process; or the control event was performed by a non-qualified employee. In practice, the chance that this situation will emerge is close to zero.

3. Point $P_n(50;75)$ characterizes medium percent of the level of knowledge and certain amount of violations. Such situation is peculiar to everyday practice, is graphically presented on fig. 1, and is a part of function.

4. Point $P_n(0;50)$ is characterized by absence of mistakes in service of an official with minimum level of knowledge. This situation looks absurd as it makes the very process of

education and training questionable. However, a probability of occurrence of such situations in practice will state on mistakes in the assessment system, i.e. failures during the testing process or inadequate assessment by an expert.

5. Point $P_n(100;50)$ interprets a situation when an employee with a minimum level of knowledge will make maximum amount of violations in his/her service.

Another factor, influencing the index of due adherence to norms and rules, is an index of adherence to rules and norms and performance of them during inspection in a governmental body by an employee of an organization, performing the inspection.

This index is highly important. This is so, because the level of an inspector's education and his/her ability to conduct certain activity stipulate the level, to which certain divisions of governmental bodies would allow themselves not to adhere to rules and norms, defined in regulatory documents. Besides, equally important is adherence to certain level of security in conduction of this activity type.

To estimate the index of adherence to rules and norms and performance of them

during the inspection in governmental body by the employee of the organization, performing this inspection, is possible on the basis of correlation of the level of knowledge (P_3) of the employee of the organization, performing the inspection, and level of detection of crimes (P_{p3}), allowed by the division of governmental body:

$$K_{\partial a} = \frac{P_3}{P_{p3}}. \quad (2)$$

The level of knowledge of employees of the organization, performing inspection, is shown in percent measurement and estimated depending on the results of monthly testing for all officials, conducted in the organization, performing the assessment). It should be mentioned that periodicity of testing of governmental officials is lower, as for this testing the necessary condition is separation from major activity for at least one day. The maximum limit value during the testing is 100 %, and minimum limit value for an employee to be admitted to work, is 50 %.

The level of detection is a ratio of the amount of norms and rules, not adhered to by the official of governmental division, according to regulatory documents, to the total amount of norms and rules the officials must adhere to in the governmental division. In mathematical terms, this exponent will look as follows:

$$P_{p3} = \begin{cases} \frac{\beta}{\sum_{n=1}^i HII_n} \times 100\%, & \text{with } \beta \leq \sum_{n=1}^i HII_n, \beta \neq \sum_{n=1}^i HII_n \\ 100\%, & \beta \equiv \sum_{n=1}^i HII_n. \end{cases} \quad (3)$$

where b is the amount of norms and rules, non-performed by official of governmental division; $\sum_{n=1}^i HII_n$ is the total amount of norms and rules ($n=1\dots i$), fixed in documents, the official of governmental division is obliged to perform.

The realization of equation system provides for the following conditions:

$$- b \leq \sum_{n=1}^i HII_n - \text{provides for impossibility}$$

for the violations amount to exceed the amount in regulatory documents. Therefore, the opportunity of violations repetition is rejected.

$$- b \neq \sum_{n=1}^i HII_n - \text{violation of this condition}$$

will prove absolute governmental official's non-performance of all norms and rules;

$$- b \rightarrow \sum_{n=1}^i HII_n - \text{states on increase in}$$

violation of norms and rules by the official of governmental division;

In case of non-adherence to norms and rules in the governmental division, $P_{p3} \rightarrow 100\%$. Thus, the lower is the value of explored index, the better are the adherence to current legislation in the governmental division and the higher is the level of division's personnel security.

Similarly to the first case, the next stage is graphic presentation of exponent's function and coordinate grid for the index of adherence to norms and rules and performance of them during inspection in the governmental body by the employee of the organization, performing the inspection.

The function graph (Fig. 3) states that irrespective of direct dependence between the level of knowledge of the employee, performing the inspection, and the level of fixed violations, the dependence cannot be called proportionate.

$$- P_{p3(0;50)}, P_{p3(50;75)}, \text{ та } P_{p3(100;100)}$$

is a obvious interpretation of direct dependence of the explored index;

$$- P_{p3(100;50)} \text{ та } P_{p3(0;100)}$$

point to atypical situations of research, and namely a low level of knowledge and excellent work during the inspection and extremely high level of knowledge with absence of detected crimes.

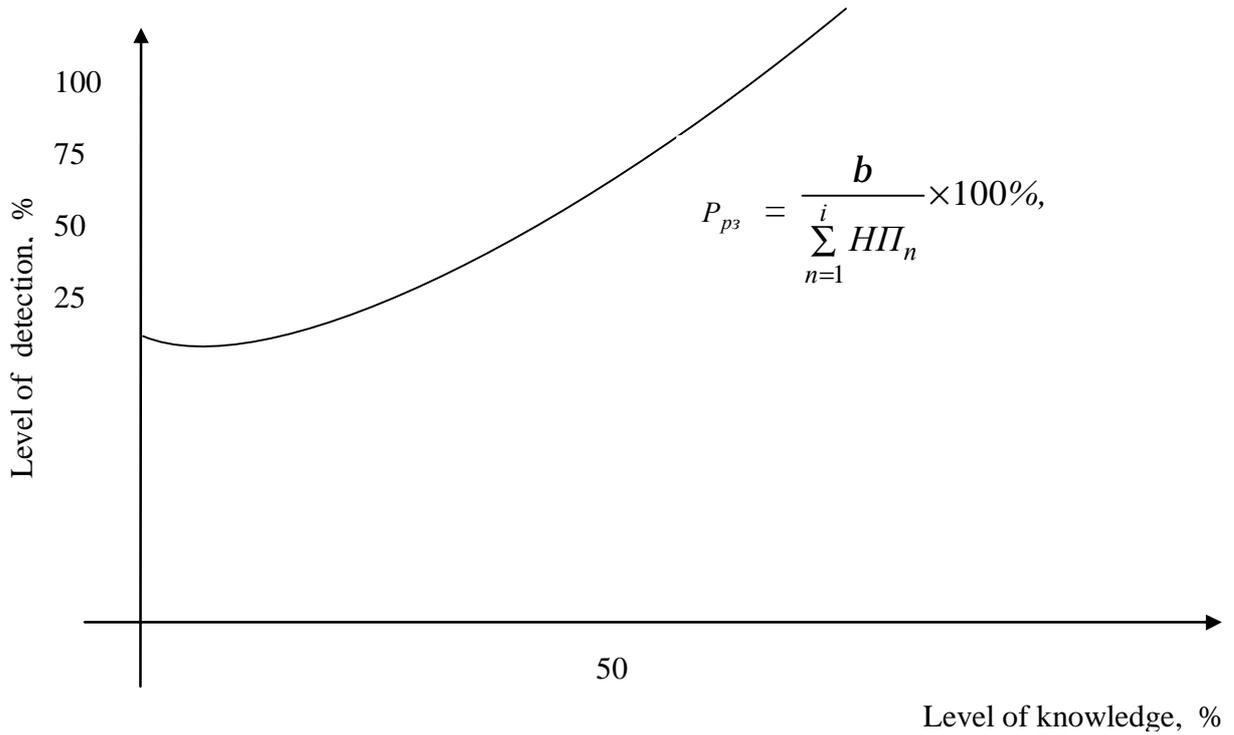


Fig. 3. Graphic presentation of function of the index of adherence to rules and norms and performance of them during the inspection in the governmental body, by the employee of the organization, performing the inspection

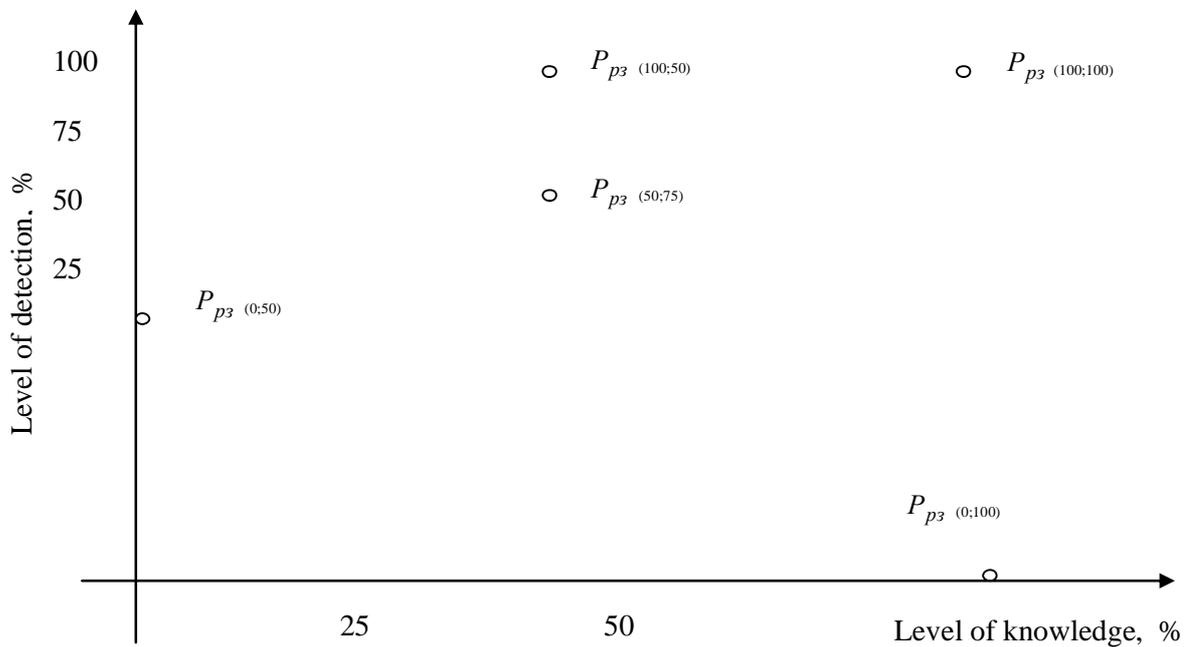


Fig. 4. Graphic presentation of basic situations of adherence to rules and norms and performance of them during the inspection in the governmental body, by the employee of the organization, performing the inspection

In analogy to the previous exponent, the following points should be singularized:

The third explored factor during the model development is an index of safety of governmental

bodies covering the whole of statistic reporting regarding violations of this governmental body.

As of today, this exponent cannot be estimated due to lack of real and generally

available statistical data regarding violations of governmental bodies. However, it is possible to create the corresponding database.

From the theoretical point of view, this value will include a range of the following exponents:

– amount of violations in the course of all inspections for the calendar year (K_{np});

– amount of inspections of specific division of governmental body for the calendar year (Π_{κ});

– average percent of conducted testing of specific division of a governmental body for the calendar year (\bar{m}).

Therefore, in mathematical terms the index of safety of governmental bodies covering the whole of statistic reporting regarding violations of this governmental body (K_{σ}) will look as follows:

$$K_{\sigma} = \bar{m} \times \left(\frac{\Pi_{\kappa}}{K_{np}} \right). \quad (4)$$

Due to lack of specialized subdivision on systematization of statistical information on violations in governmental bodies, the researched model may be applied in practice without consideration of the third exponent.

Conclusions. Application of the considered factor model will allow performing efficient monitoring to every division of governmental bodies and organizations that will perform inspection of their activity. Presence of the explored factors inside the model points to the fact that the process of control is quite multisided and numerous objects and subjects are its participants. Further research regarding the index of safety is extremely important as it will be helpful not only for deeper analysis, but also favorable for increasing efficiency of work of governmental divisions. It should also be mentioned that the explored factor model will allow making detailed analysis during emergence of problems, related to personnel security of governmental bodies.

References

1. Vynnychenko, N. V. (2015) *Public audit as an element of the budget control system Elektronne naukove fakhove vydannia "Derzhavne upravlinnia: udoskonalennia ta rozvytok" [Electronic scientific special edition "Public Administration: Improvement and Development"]*. Retrieved from: <http://www.dy.nayka.com.ua/?op=1&z=854>. [in Ukrainian].
2. Dubenko, S. D. (2006) *Issues of human resources and personnel management: a methodological manual*. Kyiv: Znannia. [in Ukrainian].
3. Malynovskyi, V. Ya. (2003) *Derzhavna sluzhba: teoriia i praktyka: [navchalnyi posibnyk]. [Civil service: theory and practice]*. Kyiv : Atika. [in Ukrainian].
4. Mohylnyi, S. A., Mohylnyi, S. A., Foit, A. M. Savvon, I. V. (2005) *Metodyka provedennia vnutrishnikh audytiv yakosti upravlinnia [Methodology of conducting internal audits of management quality]*. Berdiansk: AUIT ARIU. [in Ukrainian].
5. Obolenskyi, O. Yu., Obushna, N. I. (2015) *Public audit: goals and economic content. [Derzhavne rehuliuвання protsesiv ekonomichnoho i sotsialnoho rozvytku. Teoriia ta praktyka derzhavnogo upravlinnia]. State regulation of processes of economic and social development. Theory and practice of public administration, 1 (48), 84 – 92.* [in Ukrainian].
6. Obushna, N.I. (2015) *Public audit as a modernization mechanism of public administration in Ukraine. Derzhavne upravlinnia: teoriia ta praktyka. [Public administration: theory and practice]* Retrieved from: http://www.e-patp.academy.gov.ua/2015_1/8.pdf. [in Ukrainian].
7. Serohin, S. (2003) *Derzhavnyi sluzhbovets u vidnosynakh mizh vladoiu i suspilstvom : monohrafiia [Civil servant in relations between government and society]*. Dnipropetrovsk: DRIDU NADU. [in Ukrainian].
8. Sliusarenko, O. (2006) *The problem of a fair assessment of the competence of civil servants to ensure their professional and career development. Visnyk NADU [Herald NADU],3.* [in Ukrainian].

O. Kuzmin

Doctor of Economics, Professor
Lviv Polytechnic National University

N. Tsisar

PhD in Linguistics, Associate Professor
Ivan Franko National University of Lviv

M. Yastrubskyy

PhD in Economics, Associate Professor
Lviv Polytechnic National University

UNIVERSITY POLICY AS AN OBJECT OF HARMONIOUS DEVELOPMENT AND STATE REGULATION

Abstract. The article proposes the concept of harmonious development and state regulation of the activities of higher education institutions with the aim of its adaptation in the system of higher education in Ukraine. The preconditions that lead to the development and introduction of a qualitatively new way of development of higher education are outlined. The main characteristics of the harmonious path of development are presented. As an example, the harmonious functioning of the Shanghai International Studies University is considered. The combination of the American approach to the organization of higher education with the traditions of the East is described. Emphasis is placed on the factor of mentality when organizing the university education system. The work focuses on the expansion of student international horizons, the priority of international development of the university. The influence of the university on the formation of general public opinion in China is indicated, and the university's role in the adoption of diplomatic decisions is noted. The role of research institutes and university centers united in one academic space with the help of powerful multilingual programmes and interdisciplinary resources is emphasized. The importance of internship visits within China and abroad to exchange scientific and academic achievements and experience in higher education has been emphasized. The accent is made on the close connection of the University with the state administration, which is manifested at the level of discipline selection, the regulation of the system of faculties or specialties corresponding to the needs of the region or the country as a whole. On the basis of the survey, a scheme for the harmonization of the development of a higher educational institution was

developed. There is offered the method of implementing harmonious development and state regulation of Ukrainian higher education institutions as a result of attracting effective factors, which will allow to succeed in the project realization.

Key words: harmonious development, higher education institution, state regulation, concept, foreign experience.

Analysis of recent research and publications.

The issue of state regulation and development of higher education has always been relevant and discussed in various formats and levels. However, in the period of radical transformations, attention is drawn to research and publications that correspond exactly to these changes. O. Ye. Kuzmin, V. Ye. Krevs, M. Ya. Yastrubskyy researched the experience of management of the leading universities of East Asia [1]. Prof. O. Kuzmin also thoroughly disclosed the issue of financial provision of modern higher education institutions [2]. Among the government officials, the most cited in reforming the Ukrainian higher school are L. Grynevych [3], O. Sharov, A. Shevtsov, V. Kovtunets [4]. However, the magnitude and relevance of the issue requires a systematic approach and a comprehensive study. There is a need to develop a concept that will ensure the sustainable development of the industry.

The purpose of the research is to substantiate the feasibility of introducing the concept of harmonious development of universities, built on the

use of positive experience of existing educational systems, which are successfully functioning and enjoying popularity on a global scale.

Materials and results. The development and state regulation of higher education in Ukraine is not only the subject of discussions, but also the area of introducing innovations oriented towards its qualitative rebirth. The changes touch upon different directions of activities of higher education institutions, from the moment of accession, including the process of educational and scientific activities, as well as the development of a strategy for the development of higher education in Ukraine oriented towards European integration.

For this purpose, decisive steps are being taken at the highest institutional level. So, starting from 2019, admission to Master's courses will be possible on the basis of the results of the standardized external testing in a specialist subject and a foreign language. Another innovation concerns the financial provision of the educational process. As announced by Director of the Department of Higher Education of the Ministry of Education and Science of Ukraine O. Sharov, at present, all state-owned education institutions operate a system of dumping of contractual students with regard to budget-subsidized students. According to official calculations, by the year 2017, the training of one budget student costs UAH 26,000 per year, excluding scholarships. If those who study at a state-owned university on a commercial basis pay less, this means that on average, an educational institution spends less on training one student than it is required by normative calculations. Based on the arguments above, next year there will be introduced another payment system foreseeing that tuition fees for self-funded students will equal those paid by the government for budget-subsidized students [5].

These and a number of other innovations place Ukrainian higher education in front of new challenges, the consequences of which should be predicted and envisaged by the program of long-term development of the industry. Such a program should be based on the concept of the functioning and development of the higher education system, declared at the level of at least the Ministry of Education and Science of Ukraine. There is a need

to develop such a model of higher education that would be in line with national interests, be effective in terms of functioning and ensure the possibility of a steady development of the industry.

Strong competition in the educational sphere has a significant influence on the activities and development of a modern higher education institution. An updated content of teaching, its humanization, humanitarization and internationalization, as well as the introduction of modern technology in the educational process, have become the main attributes of today's higher education institutions. At the same time, the system of higher education because of its importance is still under the care or control of the state, which regulates its functioning, proceeding from the goals and objectives of long-term development.

During the period of independence, Ukrainian higher education has undergone many changes and transformations, but their multi-vector nature has led to the need for the next stage of reform – a fundamental restructuring. To succeed by direct copying the organization of the system of higher education in the leading countries of Western Europe and the United States will not succeed in view of the effect of multi-factorial interconnections, which are specific for each country. The fact is indisputable both at the higher state level and at the level of management of higher education institutions. At the stage of reforming it is very important to define the concept of transformation. To say “We want to resemble, for example, the Harvard or Oxford universities, or to reach the level of leading universities of the world” is not a concept. Some Ukrainian higher education institutions try to choose a long-term development path, the essence of which is the upbringing of a harmonious person [6]. However, our own research will be devoted to the activities of higher education institutions as an object of harmonious development and state regulation.

The common sense of the term “harmony” comes from ancient Greek “harmos”, which means “something that is easy to unite together, unity” [7], and now stands for “adaptation of parts to each other, any system or combination of things designed to form a whole ... “[7]. Contrary to harmony is the notion of disharmony. “Disharmony of the individual is a partial or complete violation

of the principle of harmony in the development of personality. Partial disharmony of the person is often observed, for example, during the period of rapid informatization and technocratisation of society, human intellectualization, and the deficit of emotion that arises on this basis. Full disharmonization can occur as a result of nervous and mental illness” [8].

Let's return to the object of our study to explain first of all the essence of the proposed direction of harmonious development of the national higher school, and therefore to define with the components that together form the concept of such development. In considering this problem it is appropriate to turn to the experience of organization of the existing educational systems. When it comes to harmony in the organization, we turn our attention unwittingly to the East, the Asian continent, where the harmony focuses on both the macro level – the state as a whole, and the micro level – a separate family. The object of our contemplation will be one of the leading Chinese universities – Shanghai International Studies University (SISU), which is one of the best multi-profile universities in the People's Republic of China planning to go global. As it is stated on the SISU official cite: SISU is “committed to preparing innovative professionals and future global leaders for a wide range of international expertise to address the critical challenges of our times” [9], that is, the University's training and development programme is generally oriented on innovation and international life.

SISU successfully combines an American approach to organizing higher education system with Oriental traditions. It is not surprising that they chose the American approach, because everyone knows that most of the world's best universities are in the United States. Under conditions of different mentalities at the economic level, the highest percentage of China's cooperation falls on the United States. Taking as its basis the American model, the University assimilated it to its own culture and traditions.

China, with more than five thousand years of existence, is characterized by rich traditions and customs and the involvement of its citizens into national culture. Therefore, the ancient Confucian system based on authoritarianism, hierarchy as well

as memorization of quotations from the works of ancient philosophers and scholars is fundamental for Chinese system of education. As a result, discipline, diligence, and respect towards tradition are dominant.

The University logo and motto reflect Chinese traditions. The SISU logo is composed of three lines of lettering surrounded by two olive branches and an open book which signify, respectively, the longing for peace and friendship and the quest for knowledge and truth. The lettering reads, from top to bottom, 上外, which is the abbreviation for the University's Chinese name, SISU, and 1949, the year of its foundation. The logo is designed to represent SISU's commitment to promoting China's international exchange, with its graduates leaving their footprints all over the world. The SISU Chinese logotype is made of Lu Xun's calligraphy taken from the published manuscript of Lu Xun's Diary [9].

The motto of the University is ‘格高志远,

学贯中外’ (*ge gao zhi yuan, xue guan zhong wai*).

In Chinese the motto consists of two phrases of four characters each. The first phrase “格高志远” originates from the Book of Rites, a core text of the Confucian canon in which the Master says, “Those who talk honestly and act with integrity will live with vision and die with a clean reputation.” Another source is found in Wen Xuan, or Selections of Refined Literature, edited by Xiao Tong of Southern Liang Dynasty (502-557): “With integrity and vision, one seems invincible.”

The second phrase is ‘学贯中外’, meaning that one should achieve academic excellence that brings together China and the rest of the world [9]. The motto defines briefly the SISU's commitment to discovering the diversity of cultures and its mission to introduce the world to China as well as present China globally.

According to Lin Yi, collectivism is more intrinsic for Chinese than importance of individuality. Chinese have a very well developed sense of collective responsibility, hence, close relationships between family members, colleagues, social group representatives, as well as appreciation of collective cooperation and personal

modesty [10]. Particularly the sense of collective responsibility strengthened and consolidated in Chinese tradition after the Cultural Revolution of the 20th century. The accents are shifted toward collective success, not individual, and therefore priority is given to the achievements of the university, the same as of the country.

The priorities in SISU international development are as follows: to go globally and work actively on broadening students' international horizons, which are partly focused on immersion in the international environment. Thus, the University has established cooperation with 278 universities and institutes from 54 countries, and it maintains close relations with international organizations such as UNO and EU. On the other hand, SISU is working actively on promoting Chinese culture all over the world. The University maintains cooperation with educational institutions and international organizations from the countries and regions whose languages are represented at its faculties. SISU has organized 7 Confucius Institutes with teaching the Chinese language in different countries to promote cultural exchange between China and the world [9]. Just in Ukraine there are two Confucius Institutes, one in Kyiv Polytechnic University, and the other one in V. Karazin Kharkiv National University.

Due to the well-developed multilingual programmes and multidisciplinary resources, SISU operates, according to national and regional programmes, over 50 research institutes and centers that provide assistance in language policy, diplomatic strategies, as well as formation of public opinion in China.

Intercultural experience and professionalism allow SISU teachers and students participate as volunteers and provide services at international conferences, sport games, and other different multilingual events. Their responsibility is also to improve foreign education of Chinese.

Following the slogan to introduce the world to China and present China to the world the University became one of the key and leading research institutions in the area of linguistics, cultural studies, as well as international politics. Recently the University has developed the system of regional and national studies. Thanks to financial support from Ministry of Education, the

University research centers such as Center of EU Studies, Center of Russian Studies, and Center of British Studies play an important role in making state diplomatic decisions.

SISU manages a number of research institutes and centers creating one academic space that meets national and regional demands. Every year students, irrespective of their specialty, take the national examination in English and in the language they study. Thus knowing English you can easily enter the context of world science and become an active member of cosmopolitan society.

The University also contributes in many ways to inter-university visits within and outside China to share research and academic achievements and experience in higher education. Lately, many faculty members have received grants from the Chinese Scholarship Council and the Fulbright Program. As a result, employees have the opportunity to practice as scholars at the best universities in the world.

International exchange programmes have been established in the target countries and corresponding regions with commonly recognized credit systems for SISU students in key discipline programmes, foreign language programmes, and interdisciplinary programmes. Meanwhile, each year many graduate students receive financial awards from the Chinese Scholarship Council and other funds for conducting research abroad and further expansion of scientific knowledge and internationalization.

Moreover, since the second half of the 1970's, SISU has been admitting international students. Students from all over the world come to study at SISU every year, thus deepening their knowledge and understanding of Chinese culture, developing their language skills in Chinese and expanding the boundaries of international cooperation with SISU. More than 30,000 international students from 90 countries have been studying at the university, creating the largest group of international students in China [9].

Each year SISU hosts a number of international and bilateral scientific conferences where participants from all around the world have an opportunity to share their thoughts regarding the most important issues in various fields of their studies supporting the international cooperation of

the university in the academic sphere. The University's presence on the international scene is supported by the visits of the heads of states, officials from embassies and consulates of different countries in China, international organization representatives as well as globally known scholars and celebrities.

The university has a close relationship with government, as reflected in the choice of disciplines: there are compulsory state-level subjects and leading subjects at the city level (for example, Shanghai). This is due to the pragmatic approach to the organization of education in general: the most demanded professions require the creation of new specialties, courses etc. Each year, the state and universities monitor the percentage of students' employment and regulate the system of faculties or specialties in accordance with the results. Economic inquiries regulate the education system.

The leadership of the University consists of not just president and vice president, but it also includes the Chair of the University Council who takes responsibility for the strategic ideology of the

University policy, and holds a high position in the hierarchy of the Communist Party.

All of the above counts in the strategy and tactics of development and the country's perspective tasks. In the times of globalization, China is aiming to take an important place in global governance; therefore, it tries to cooperate with the best international organizations. At the micro level, the same thing happens at the University: large government and SISU investments, in particular, in foreign intelligence, or the so-called "foreign experts"; frequent meetings with presidents, ambassadors and diplomats from different countries of different continents; joint international projects of global importance – conferences, symposiums, seminars, the examples being the Conference on Languages with UNESCO, the International Forum on Cross-Cultural Communication etc.

The development of one the leading higher education institutions of China can be presented in a diagram demonstrating the system of components providing the University harmonious development (Fig. 1).

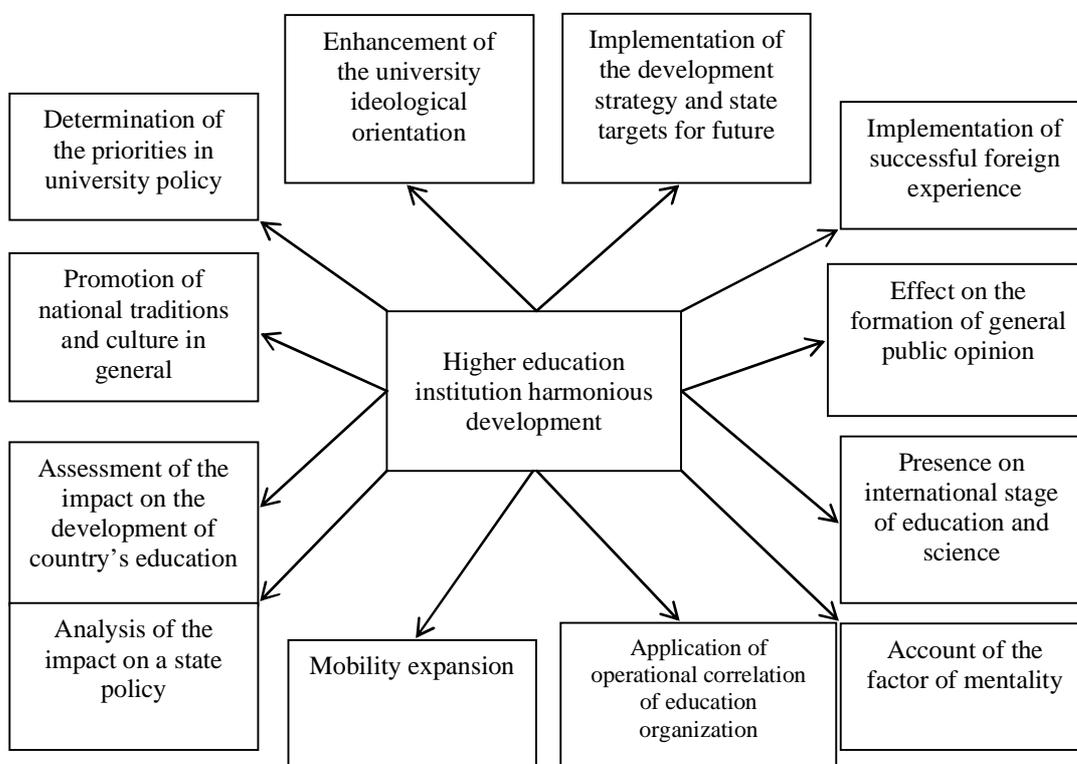


Fig.1. Components of the University Development Harmonization

Source: elaborated by the authors

The harmonious development of a higher education institution is specific to each social group, since it includes the active components inherent in the society in which their activities are carried out. Thus, the example of organizing the harmonious development of SISU is considered by us through the discipline inherent in China, and a high level of orderliness. Suffice it to recall the nation-wide approach to training in the Chinese university, which includes compulsory two-month military training for all freshmen with stationary settlements in dormitories, regardless of the profile of the institution and its specialization. That way they are pushing all members of the society to adjust to high level of responsibility, discipline, as well as diligent attitude to learning courses offered by the university programme. It should be noted that Chinese higher education institutions do not practice the system of free selection of courses: students have to study courses defined and proposed by university programme approved at the level of Ministry of Education. However, what is approved at the highest level is regularly monitored, promptly adjusted, goes through continuous improvement.

Implementation of this type of university policy into Ukrainian higher education system simply may not work; therefore it will not give expected results. The argument cannot be denied due to the fact of having different culture, different mentality, different system of state regulation. Nevertheless, the proposed path of university harmonious development and state regulation seems to be the only appropriate and promising in case of complex approach and involvement of the effective factors ensuring the implementation of the project. These factors include:

– ensuring the real autonomy of a higher education institution, which would make significant adjustments to existing system of organizing higher education;

– training specialists needed now or in the near future according to tendencies, trends and prospects of the national economic development;

– designing educational programmes in accordance with economic requests. State regulation in the mentioned process takes a prominent place. The effectiveness of the proposed concept will manifest itself first of all

at the macro level in the strategy of economic development as well as optimization of financial costs; and it is not about their reduction, but the modeling of distribution for the purpose of their effective use.

Conclusions. Recent research regarding different approaches to the development of higher education institutions and state regulation gives ground to state that it is essentially necessary to implement harmonious development higher education institutions in Ukraine. It should be noted that such a direction is fully in line with the European integration of the national higher education, but additional factors need to be taken into account in order to ensure harmonization of such development. The introduction of the concept of harmonious development will make it possible to reach the level of leading educational systems on an overall scale, but this will not be a quantum achievement, but a stable functioning worth of following and serving as an example for educational systems that seek development. The issue of harmonious development requires a comprehensive study in order to avoid the unpredictable side effects during its implementation. To this end, it is justified to carry out pilot project involving individual higher schools, creating the necessary conditions for this, fixed at the highest legislative and departmental level.

References

1. Kuzmin, O. Ye., Krevs, V. Ye., Yastrubskyy, M. Ya. (2017). *Use of management experience of leading universities and colleges of East Asia in the process of reforming the high school of Ukraine. Economics: time realities. Scientific Journal*, 2 (30), 48–55. Retrieved from: <http://economics.opu.ua/files/archive/2017/n2.html>
2. Kuzmin, O., Yastrubskyy, M. (2016). *Peculiarities of higher educational establishments funding accounting: national and foreign experience. Economics, Entrepreneurship, Management. Lviv Polytechnic National University*, 3 (2), 1–6.
3. Hrynevych, L. (2017). *Priority Areas in the Field of Education and Science. Kruhlyi stil. [Speech by L. Grinevich Round Table]. Retrieved from: <https://www.youtube.com/watch?v=mc94F611YfE>. [in Ukrainian].*
4. Sharov, O. *2017-ho systemu vyshchoyi osvity ochikuiut chotyry kliuchovi zminy [The 2017*

University Policy as an Object of Harmonious Development and State Regulation

- Higher Education System Expects Four Key Changes*]. Retrieved from: <http://mon.gov.ua/usi-novivni/novini/2017/01/16/%C2%AB2017>. [in Ukrainian].
5. Martyn, I. (2017). *Vstup. Abiturientiv ochikuiut novi vprovadzhenia. Audytoria. Osvitnii studentskyi tyzhnevnyk* [Introduction. Applicants are expected to introduce new ones. Educational Student Weekly], 20 (2980), 4. [in Ukrainian].
 6. Pomytkina, L. V. (2007). *Harmoniinyi rozvytok osobystosti yak peredumova formuvannia molodi novoho pokolinnia*. [Harmonious development of the individual as a prerequisite for the formation of young people of the new generation]. Retrieved from: <http://er.nau.edu.ua/.../38%20%D0%93%D0...BD%D1%8F%20.doc>. [in Ukrainian].
 7. *The New Webster Encyclopedic Dictionary of the English Language including a Dictionary of Synonyms and Twelve Supplementary Reference Sections (1970)*. Chicago. Consolidated Book Publishers.
 8. Nichkalo, N. G. (2000). *Profesiina osvita: Navchalnii posibnyk* [Professional education: A manual]. Kyiv, High school. [in Ukrainian].
 9. *Shanghai International Studies University – SISU*. Retrieved from: <http://en.shisu.edu.cn/about/introducing-sisu/>.
 10. Yi Lin. (2012) *Chinese International Student's Intercultural Communication Competence and Intercultural Communication Apprehension in the USA*. East Tennessee State University. Electronic Thesis and Dissertation. Retrieved from: <http://ds.etsu.edu/etd/1516>.

