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## MODEL OF DEVELOPMENT AND STATE REGULATION OF ACTIVITY OF HIGHER EDUCATIONAL INSTITUTION (HEI): USING EXPERIENCE IN MANAGEMENT OF LEADING HEI OF EAST ASIA

**Abstract.** The article studies the positive experience of leading universities in East Asia. The article analyzed the management of the National University of Singapore, which belongs to the strongest higher education in several areas. The University is known as a leading research center in the world, experienced educational institution, which attracts the best students from around the world. Emphasized the high quality of educational services of the University, provided a number of effective factors combine to guarantee obtaining a student in-depth knowledge of the chosen professional direction. It is noted that in Singapore the world built on a British school and these factors that ensure success in education. Attention is focused on a favorable external environment, allowing you to open up internal reserves. The University operates as part of scientific and industrial park, allowing efficient use of funds and to coordinate efforts for the production of high technology products. It is noted that in law the companies participating in the research and development of industrial parks, offered benefits. As a result of the review of the experience of leading universities of East Asia highlighted a number of common features which combine to provide a successful business. The model of building an effective system of higher education in Ukraine is proposed

**Key words:** East Asia, management, the reform of the higher school, model of development of the higher school.

### Introduction

The twenty-first century can rightly be called as a period of rapid changes at global and regional levels. It almost applies to all spheres of public life, especially the economy, science, education. At the same time, such spheres as economic, scientific and educational in our era are inseparable. A technocratic society requires constant education. And the country, a community in which education and science is in a state of neglect, can also lay account with a similar place in the world economy in other words, the role of a serving appendage with limited capacity for functioning, and there is no point to speak about development.

This article is devoted to study of the positive experience of leading higher educational institutions (HEI) of East Asia, that in terms of its potential are entitled to rely on leadership on a global scale in the coming years. The East Asian region is among to number of largest in terms of area and population

not only in Asia, but throughout the world. The purpose of the study is to analyze the various factors, which in combination provide a breakthrough in higher education, science, which in turn drives the accelerated social change caused by technological progress. This article describes reasonably attractive aspects of management leading universities of East Asia, which together provide them high ranking positions

Reform of higher education in Ukraine during the years of its independence runs continuously. This is a number of reasons, but generally, it is required challenges. Convert relating to different parts: the ideological direction of higher education, school organization and content, financial support, management organization and so on. It is clear that a wide range of processing needs versatile, making a list of government officials, scientists, interested in the impact of the reforms is rather large. We stopped at the designated research topic in recent years, because during this period offers a new paradigm of higher education in Ukraine, changing stereotypes of high school, his place in society.

Priorities of the government in the field of Education outlined the Minister of Education and Science of Ukraine during a round table discussion dedicated isolation areas in the field of Education, which was included in the medium-term plan of priority actions of the Government by 2020 [1]. Academician of NAS of Ukraine M. Z. Zgurovsky [2] outlined topical issues of concern to the leaders of Ukrainian universities in today's conditions.. The system of autonomous research institutions of Ukraine, their place and role of security in terms of reforming higher education were investigated by the example of leading Ukrainian institutions [3]. Features resource support higher education institutions in the comparative example of leading domestic and foreign universities revealed in an article by prof. O. E. Kuzmin. Features of influence contingent of foreign students on the impact of universities and attractive highlights it in the next article [4].

The aim of the article is studies have themes higher education reform Ukraine prompted according to study similar processes in East Asia. By itself, the region becomes more attractive given the rapid pace of development, whereby not only in the economic sphere. The study of the system of management of high school motivated successful

promotion to leadership positions leading universities in China, South Korea, Japan, Singapore, Hong Kong. All are members of the fifty best universities in the world.

### **Experience in management of leading HEI of East Asia**

The reform of higher education in Ukraine belongs to the list of emergency. It is understood authorities, researchers and involved in research and educational activities, ordinary citizens, who themselves learn, or teach their children face such a choice. However the process is progressing rather slowly, faced with a number of difficulties and obstacles. It is clear that Ukraine is not the first faced with such issues to resolve. Those countries that have achieved the educational and scientific sphere important success also appointed solve issues facing the dilemma – which way to go to achieve success. In his article, we turn to the experience of the leading universities of the East Asian region. The reason for this serves their potential ability to convincingly encouraging the study of his rapid promotion to leading positions in the world.

By Asia includes different form of government of the country: the Socialist Republic of China and North Korea, or North Korea; Republic of Mongolia and the Republic of Korea (South Korea), constitutional monarchy Japan, colonies of Great Britain and Portugal – Hong Kong and Macau, and Taiwan[5]. We consider the experience of the development of higher education institutions that now hold high positions in rating.

The largest university city-state in the southwestern part of Asia is the National University of Singapore, established in 1980 through the merger of the University of Singapore and the University Nanyanhu. He stands originators educational rankings among the best universities in the world and it is considered as the best university in Asia. According Times Higher Education National University of Singapore in the 2016–2017 biennium. 24 took place[6]. University belongs to the strongest higher education in several areas: its three departments make up the top 10 in the world for their professional focus, ahead of such famous institutions as Yale University and King's College London.

The University is known as a leading research center in the world, experienced educational institution, which attracts the best students from around the world. A special place is the direction of engineering and innovative technologies. Against other schools significantly distinguished departments of chemical engineering, electrical engineering, architecture and civil engineering. In second distinguished faculty of social sciences, including social policy program, and statistics development. In third position supplying business-school of the University of Singapore, which is rightly considered the strongest in the world, through which graduates of different faculties flock here for management skills[7].

The undeniable fact is the scientific potential of the University of Singapore. Extremely high citation index and huge capital with its research in nanotechnology, bioengineering, chemistry and materials science. Quite effective are the Singapore University research in pharmacology and innovative solutions in the fight against incurable diseases. One of the most respected and considered current scientific publications and research staff of educational institutions in the field of environmental problems.

The National University of Singapore (NUS) trained 37.970 students in total population of 5.8 million. The authors aim to promote the studied educational institution, but rather a study of positive experience, thanks to which achieved good results. Singapore – a country in which people are given a good education, enjoy demand in the outside world. Graduates open new avenues for immigration, employment as domestic market is unable to accommodate all outstanding professionals. Nevertheless, a large number of Singapore companies seeking to attract young professionals, achieving this through grants. Strong potential to serve them received high-quality knowledge in immigration allow visitors to gain a foothold in a new place.

NUS diplomas and certificates are recognized internationally, indicating the high professional training. High quality of educational services provided by a number of effective factors combine to guarantee obtaining a student in-depth knowledge of the chosen professional direction. General

education in Singapore, built on a British school. Among a number of factors for success in education is worth following.

Firstly, when joining the NUS is rather high competitive selection. Applicant at the highest level should have knowledge of English. Confirmation of the presence serves as IELTS or TOEFL certificate with a score of 92–100 points, or 6.5–7.0, respectively, which are necessary when filing. To enter into separate faculties, such as law, medicine, architecture provides for delivery of entrance examinations. Training at NUS is in several languages, including English, considered basic.

Secondly, the NUS has tight control traffic classes. If the total student attendance is less than 90 %, or fixed within a week passes without a valid reason the session, he loses student card and sent home.

Thirdly, during the training the students are not permitted to work regardless of the type of work. At the slightest suspicion of engaging in economic activity on the part of immigration services for foreign students, this means graduation and expulsion from the country. Such constraints designed to focus solely towards student's development objective guidance. Fourth, logistics training process creates all conditions for comfortable training.

However, students living in Singapore stands virtually complete lack of dormitories. Usually, Singapore educational institutions contracting with outside organizations that provide public places in their campuses. Fee for a place in the room is an average of \$ 500 per month. NUS before it has three student residences with a total capacity of about 7000 people. Students are provided the individual cozy rooms. In addition, on campus are 6 separate halls with a few hundred individual and one bedroom apartments.

NUS is available in a range of sports facilities, soccer fields, swimming pools, tennis courts. At the disposal of students is a rich library, computer club, several cafes. Together these constraints and created favorable conditions for teaching and student accommodation offer adequate educational results.

Analyzing the achievements of Singapore in education and science appropriate to refer to the financial support. Success of NUS heavily linked with a favorable external environment, allowing you

to open up internal reserves. The University operates as part of scientific-industrial Park, which is created in the early 80. XX century for the effective use of financial resources and coordination of efforts on the issue of high technology products. The motivation of the creation of the park was the realization of the task of transforming the city-state into a regional center of information and knowledge-based industries. Special attention was paid to the development of biotechnology, electronics, artificial intelligence, laser technology, robotics technology in the field of informatics and communication. At the industrial park, an area of about 30 hectares, located 5 state research institutes, including NUS, and about 45 industrial corporations. It is the largest development center and leading industrial technology innovation center of the country [8].

Since fiscal year 2010 the Ministry of Finance of Singapore introduced a development program, with a budget priority was the development of the educational sector. The legislation to companies involved in research and development of industrial parks, offered benefits. In particular, half reduced income tax rate of investments in research and development; introduced a preferential tax for the construction and operation of industrial buildings in the industrial park area. That is the state of his versatile side supports not only the development of science and education, and strongly initiate their merging with the production, which involves production of high technology products.

Singapore Guide invested millions of dollars to create a powerful educational network in Southeast Asia in order to transform the country into a global education center. The average education in the country accounted for 2.7 % of GDP. Education Policy of Singapore has a number of features, among which I would like to highlight the following.

1. Preparation of workers carried out a predesigned and coordinated country-level plan to ensure industrial growth and avoid the disabled training office workers.

2. The state allocates to education and vocational training large subsidies.

3. The country allocation provided for talented graduates with regard to their ability. Thus 25 % of graduates entering the university, and the rest – in vocational schools.

4. Educational activities focus on the training of scientific, engineering and technical personnel, specialists in finance and minimally focused on general subjects[9].

As the Analytical Review, the success of a single NUS – a synthesis of powerful external and internal factors, a combination which achieves the desired success. This opinion confirms the successful experience of other universities in the region, in particular following the popularity and performance rating – Peking University.

Peking University has been and remains one of the most prestigious universities and China and is considered a platform for implementing innovative ideas in the field of training. Peking University is the largest Chinese research university located in Beijing and a member of the C9 League. C9 League is an association of nine elite universities in China, AAC and similar Ivy League in the United States, Canada U15, Russell Group in the UK and Australia Go8. In the late 20th century, the Chinese government put Peking University on the top of his agenda for the development of higher education to create an excellent university in the 21st century.

The current level of Chinese education system meets the highest international standards, as China's growing economy needs highly qualified specialists. It should be noted that despite the large number of Chinese population, which now exceeds 1 billion. 384 million. Residents[10], its central university does not belong to the category of the largest in the world by number of students. Faculty Beijing University has 5.513 teachers, including 52 members of the Chinese Academy of Sciences, 7 members of the Chinese Academy of Engineering, 1 488 professors, associate professors 1889. Total number of students according to 2012 amounted to 32.777.

Chinese education in recent decades has made a huge leap forward, so that today it is almost no way inferior to European standards, with the exception of cultural and national characteristics. Studying at university is mainly in Chinese, which is why foreign students for admission must demonstrate a good knowledge of Chinese language, although students have a choice – to learn English or Chinese. However, studies on English programs costing twice as much. Chinese software engineering, business

administration, medicine, economics and finance are highly valued and recognized around the world. Each year the Beijing University invited more foreign professors to collaborate on projects.

The university introduced academic qualifications are recognized by universities in almost all countries. For lectures students are invited world-renowned professors and be able to teach successful business. Most of the world famous companies have their representative offices in Beijing, Shanghai, Hong Kong, given that there is a need for specialists who know a high-level Chinese language and have experience of living in the country.

China's current education system is focused on European standards, teachers use modern teaching methods and learning materials. The bulk of the training programs developed by Chinese experts, focused on the realities of the Chinese market, which generally has its own characteristics and different from the situation in Europe or the US. However, economic growth in China confirm the justification made steps. Thanks to the quality of educational programs, significantly increasing the number of foreigners who come to China to study programs MBA.

Similarly, popularity in China and to international ratings are Tsinghua University (THU). The University is leading in the "Engineering and Technology", taking in this direction 11 position in the world. At Tsinghua University educated over 34 thousand students, of which about one in 9 students is a foreigner [11]. The teaching staff of educational institutions has more than 5.000 teachers, among them foreign specialists.

It should be noted that the Chinese high school was built on the model of the former Soviet. Nevertheless, today's leading Chinese universities are among the top 30 in the world, and the best Ukrainian – not overcome and 300 positions. In this respect, not particularly distinguished and Russian universities.

We will try to analyze the situation in the historical aspects of the implementation of reforms. Of course, the success of the Chinese higher education institutions could reach not once, but in stages. Reform of China's higher education began with the 1980s, which led to a gradual improvement in the industry. Structural reforms consisted of five parts, including reforming the delivery of higher education of higher

education, financing higher education. The most difficult reform turned recruitment, employment and internal management institutions. These reforms were designed to provide higher education institutions greater autonomy and the ability to meet the needs of students, despite the fact that the state solely focused on planning at the macro level.

The rapid development of China's higher education began in the late 1990s. In 1999, China took a course on the expansion of higher education over the next decade. The annual rate of increase in the number of students by 2 % led to an increase in enrollment of applicants in 2012 compared to baseline by 30 %. According to official statistics, the Chinese higher education system consisted of more than 2442 ordinary (academically oriented) colleges and universities and 348 adult higher education and 823 are not academically oriented private agencies. Among the conventional higher education institutions, most, namely 1.623 were linked to provincial or local authorities, 113 were related to national ministries and had more funding and prestige, and 706 were from private financing and management. Structural universities in China, according to 2012 are presented in the tab. 1.

*Table 1*  
**Higher education institutions in China in 2012**

The list of universities on the basis of systematization	Quantity
Conventional Universities	2442
By the period of studying	
4-year studying	1145
From 2- to 3-year study	1297
For membership	
Subordinate to the central ministries	113
Ministry of education	73
Other central ministries	40
Subordinate Provinces	1623
Private	706
Adult Universities	348
Private agencies	823

*Source: The National Bureau of Statistics of China (2012), <http://data.stats.gov.cn/workspace/index;jsessionid=C781D208E25C79B326BD B5A26F52CE16?M=hgnd>*

In 2012, China had a total enrollment of more than 31 million people, including 25.6 million in the usual higher education sector and nearly six million adults in the higher education sector. 1.7 m. (5.5 %) were registered at postgraduate, 16.7 million. (53.2 %) studied a bachelor program and the remaining 13 million (41.3 %) were registered in two or three-year programs. China surpassed the United States the number of students in universities and has the largest higher education system in the world. It is worth mentioning that the system of higher education in China is under constant development. In spite of the fact that the higher education in China is mainly public (state-owned), a private sector is developing very quickly. In this regard its organizational structure has been changing as well. According to the official data in 2014 there were 727 private institutes having right to issue the diploma and certificates, including 5 higher education establishments having right to train

postgraduate students, 315 educational establishments offering a four-year program for the Bachelors training and 307 establishments offering a three-year training program with the further issue of the certificates. Within the last ten years, the number of private higher education establishments in China has increased by 413 educational establishments.

The information about the higher education establishments in China according to the data of the year 2014 has been integrated into tab. 2.

In general, according to the data of the year 2014, the institutes training students according to the short-cycle programs are designated for further training with the right to issue the certificates. Starting with the year 2001 there were more educational establishments having the right to confer the Bachelor's degree. They made 52,47 % of the general amount of the higher education establishments.

Data on admissions China in 2012 are given in the tab. 3.

Table 2

**Chinese Higher Education Institutions according to the data of the year 2014**

	Total	Under Central Government			Under Provincial or Local Govs.			Local enterprise subordinate	Private Institutions
		Subtotal	MOE- affiliated	Other Ministries affiliated	Sub- total	Educational department affiliated	Non Educational department affiliated		
Graduate schools & INSTs	788	284	73	211	499	433	65	1	5
Universities	571	107	73	34	459	432	27		5
Research INSTs	217	177		177	40	1	38	1	
Regular HEIs	2,529	113	73	40	1,689	1,053	592	44	727
bachelor degree awarding INSTs	1,202	110	73	37	672	604	68		420
Tertiary certificate awarding INSTs	1,327	3		3	1,017	449	524	44	307
Vocational & technical colleges	1,186								
Adult HEIs	295	13	1	12	281	94	146	41	1
Other private INSTs	799								799

Source: <http://data.stats.gov.cn/easyquery.htm?cn=C01>

Table 3

**Admission to Universities of China in 2012**

List of universities and admission programs	The contingent of students
Ordinary Universities	25.632.973
Of them:	
the Master's program:	1.719.818
- doctoral level	283.810
- Master's level	1.436.008
for undergraduate programs	23.913.155
- 4-year university	14.270.888
- 2 – and 3-year-old university	9.642.267
Adult Universities	5.831.123
- 4-year university	2.475.495
- 2 – and 3-year-old university	3.355.628
Total contingent	31.464.096

Source: The National Bureau of Statistics of China (2012), <http://data.stats.gov.cn/workspace/index.jsessionid=C781D208E25C79B326BD B5A26F52CE16?>

Between 2012 and 2017, the number of institutions of higher education, as well as the number of students, increased significantly. Structural universities in China and total enrollment in higher education institution, according to 2017 are presented in the tab. 4.

Table 4

**Higher education institutions in China in 2017**

The list of universities on the basis of systematization	Quantity
All together Higher Education Institutions (HEIs)	2631
Universities	1243
- independent colleges	265
Higher vocational colleges	1388
Higher education institutions for adults	282
Total enrollment of undergraduate (persons)	
- in the regular HEIs	27 535 869
- of adult higher education institutions	5 441 429
Total enrollment of postgraduate (persons)	
in the regular HEIs	2 639 561

Source: <https://chinaeducenter.com/en/cedu/hedu.php>

With the purpose of assessment, there is calculated in China the gross enrolment ratio, which is determined as a part received after the division of the general amount of students studying at the higher education establishments to the general amount of population belonging to the corresponding age group. According to the state plan of secondary and long-term education development and the education reforming for the period of 2010–2020, the general enrolment ratio to 2015 equaled to 36 % and in 2020 – 40 %. However, at the end of 2014, the actual rated value reached the goal ahead of schedule, making 37,5 %. No doubt, the year 2015 was marked as an achievement of the epoch because there was reached 40 % goal, which exceeded the average indices of the countries with the average income standard.

In 2014 a number of students studying according to the standard Bachelor's level made 25,48 mln., those studying at graduate courses – 1,85 mln. and at the Doctoral program - 310,000. Only during the analyzed year, a number of students increased by 7,21 mln. of those newly enrolled. To the private higher education establishments in 2014, there were enrolled 5,87 million students, including 3,75 million of Bachelors and 2,12 mln. – to the educational establishments having the right to issue the certificates of higher education. The increasing amount of enrolled students in the private sector equaled to 930 000. But on June 2019, there were

10.31 million students taking the National Higher Education Entrance Examination (Gao Kao) in China. Such statistics clearly demonstrates the practical implementation of the course of higher education massive involvement held in China.

It should be noted that in recent years China has significantly increased the contingent of foreign students. China agreed to gradually open its market to the world of education after joining the WTO in 2001. Under current law, foreign investors can manage educational institutions (senior schools, universities, colleges) in the form of joint Sino-foreign enterprises in which foreigners can be major shareholders. Compulsory education (primary and secondary) and specific education (Military, Police, religious) is not included here.

Thus, according to statistics in 2012 in Chinese universities enrolled 157.845 foreign students, 18 259 of whom received academic degrees. In 2013, China became the most popular foreign students for countries in Asia and ranks third overall among all countries. On April 2019, Ministry of Education of the People's Republic of China announced a total of 492,185 international students were studying in China in 2018. International students have enrolled in over 1004 higher education institutions in China [12].

The Government has developed a recovery plan for education in the twenty-first century, which provides a course on mass higher education. Thus, the Chinese government pursued the goal of converting large system of high school in a strong higher education.

In 2010, a plan was developed national education reform and development in the medium and long term for the period 2010-2020. The document presented comprehensive measures to reform the educational sector, whose purpose is to improve the overall quality of higher education, promoting innovation, increasing internationalization. Particular attention is paid to the identification and selection of talented youth for training professionals improve the quality and consistency of scientific research. The document provides for the optimization of the overall structure of higher education and the development of its organizational uniqueness that addresses the needs of society under conditions of sustained economic development.

Chinese higher education is becoming more open in terms of international exchange and

cooperation. Each year more than 300.000 Chinese students going abroad on student exchange programs with the purpose of education. China welcomes foreign students for higher education in China. International cooperation in higher education includes academic exchanges, cooperation in science and international exchange infrastructure. Some universities in China collaborating with leading universities of program creation and dissemination of new knowledge, exchange programs with scientists from other countries in major international scientific and technical cooperation, as well as in promoting cultural exchanges.

China to focus on increasing its international competitiveness of higher education, primarily in the form of Project 211 and Project 985.

Project 211, which is a planning document, intended to reform higher education to its development by taking concrete and strengthening of 100 higher education institutions in key disciplinary areas. As of 2013, the three phases of the project were implemented, covering 112 universities. The project took place under conditions of adequate financial support from the state. Only during the 1995-2005 biennium. Government allocated for the support of 211 organizations 36.8 billion. Yuan, accounting for 5.34 billion. US dollars. In 2019 investment in education accounts for about 4 % of total GDP in China.

Project 985 was launched by the Chinese government to create world-class universities in the XXI century. It was approved and officially launched in 1999. Peking University and Tsinghua University were selected for the first implementation of Phase I of the project 985. At present, 39 universities included in Project 985, all of which are taken from those included in Project 211.

The project aims to replenish Chinese universities and world-class Universities ranks to the middle of this century, some of which are expected to be in the future global advanced research centers, which will be a prerequisite for achieving the goals of transforming China into an advanced developed countries. Financial support for the project from the state 985 was even greater.

Realizing the problem of mass higher education, China has paid special attention to creating a system of quality assurance. In 2003, the Ministry of Education has proposed an action plan

for 2003–2007, which provides for activation of higher education every five years. In 2004, was created with the purpose of evaluating higher education Educational Assessment Center of Higher Education, Ministry of Education. Its creation marked the transition of China to a standardized, scientific, systematic and professional orientation educational work.

Currently, Chinese higher education is at a critical point of transformation. After the rapid growth of Chinese higher education is currently in a phase of sustainable development, with an emphasis on quality, fairness and restoring the balance between the number of graduates and the demand for them from the labor market.

### **Model of building an effective system of higher education in Ukraine**

The development and state regulation of higher education in Ukraine is an area of innovation aimed at its quality rebirth. Improving the efficiency of the educational process in higher education is done in different ways. The result can be achieved by optimum choice of teaching methods, improvement of communicative relations between the teacher and the student, adherence to the students hygiene of mental work, proper organization of independent work of students, application of interactive and cooperative forms of organization of educational process, application of technical means and technologies of e-learning, etc.

During the period of independence, the Ukrainian high school has undergone many changes and transformations, but their polyvectority has led to the need for the next stage of reform - a radical restructuring. At the reform stage, it is very important to define the concept of transformation.

The harmonious development of universities is specific to each social group because it includes the active components inherent in the society in which their activity is carried out. Having done analysis of practical experience of leading national and foreign systems of education, one can proceed to the problem of construction of a model of development and state regulation of the HEI activity. To ensure high level of scientific and technological progress of Ukraine, the state has to take care of adequate financial support of those universities in the first turn that train experts in prestigious and promising majors.

Let us compose a mathematical model, on the base of which it is possible to determine how many specialists of the prestigious majors of each university has to graduate in order to guarantee general maximal efficiency of the specialists preparation. To do this, first it is necessary to determine the rating of each university for the training of specialists in prestigious majors.

We will determine rating of a university not by number of professors and associate professors involved in the academic process, but on the base of their quality. That is, we need to account for the certain period of time (e.g. for last five years) the following:

- 1) A number of publications in professional scientific journals;
- 2) A number of publications in foreign journals and the journals listed in scientometric bases;
- 3) A number of defended dissertations both the PhD and doctoral;
- 4) A number of published textbooks and manuals etc.

Let

$n$  – the number of universities capable of training specialists from a certain number of available set;

$m$  – the number of prestigious specialties included in the existing set;

$r_{ij}$  – rating of preparation of the specialist of the  $j$ -th specialty in the  $i$ -th university ( $r_{ij}=0$ , if the  $i$ -th university does not prepare specialists in the  $j$ -th specialty);

$c_{ij}$  – the cost of training the specialist of the  $j$ -th specialty in the  $i$ -th university;

$V_i$  – the amount of funds allocated for the training of specialists of the  $i$ -th university;

$p_j$  – the need for specialists in the  $j$ -th specialty;

$x_{ij}$  – the number of specialists of the  $j$ -th specialty, which is planned to be prepared in the  $i$ -th university (required values).

The task is to plan the training of specialists in prestigious specialties so that the overall rating of training specialists is the highest. To compose a mathematical model of the problem, denote the prestigious specialties by natural numbers from 1 to  $m$ , and by  $M_i$  we denote the ascending order of the

subset of these numbers, which correspond to the specialties for which the specialists of the  $i$ -th university can prepare.

Then the mathematical model of the problem will look like:

$$L = \sum_{i=1}^n \sum_{j \in M_i} r_{ij} x_{ij} \rightarrow \max$$

under conditions

$$\sum_{i=1}^n x_{ij} = p_j, j = 1, 2, \dots, m;$$

$$\sum_{j \in M_i} c_{ij} x_{ij} \leq V_i, i = 1, 2, \dots, n;$$

$$x_{ij} \geq 0, i = 1, 2, \dots, n, j \in M_i.$$

We show that this model can be reduced to a model of a transport problem.

Suppose that

$$c_{ij} = a_i b_j,$$

where  $a_i$  - depends on the university,  $b_j$  depends on the specialty. Then the condition

$$\sum_{j \in M_i} a_i b_j x_{ij} \leq V_i, i = 1, 2, \dots, n$$

can be rewritten as

$$\sum_{j \in M_i} b_j x_{ij} \leq \frac{V_i}{a_i}, i = 1, 2, \dots, n.$$

Let us denote  $b_j x_{ij} = y_{ij}$ . Then

$$\sum_{j \in M_i} y_{ij} \leq \frac{V_i}{a_i}, i = 1, 2, \dots, n.$$

Because  $x_{ij} = \frac{y_{ij}}{b_j}$ , then the condition

$$\sum_{i=1}^n x_{ij} = p_j, j = 1, 2, \dots, m$$

can be rewritten as

$$\sum_{i=1}^n y_{ij} = p_j b_j, j = 1, 2, \dots, m.$$

The target function will take the form

$$L = \sum_{i=1}^n \sum_{j \in M_i} r_{ij} \frac{y_{ij}}{b_j} \rightarrow \max.$$

So we got a mathematical model of the transport problem

$$L = \sum_{i=1}^n \sum_{j \in M_i} r_{ij} \frac{y_{ij}}{b_j} \rightarrow \max$$

under the conditions

$$\sum_{i=1}^n y_{ij} = p_j b_j, j = 1, 2, \dots, m;$$

$$\sum_{j \in M_i} y_{ij} \leq \frac{V_i}{a_i}, i = 1, 2, \dots, n;$$

$$y_{ij} \geq 0, i = 1, 2, \dots, n, j \in M_i.$$

The resulting transport problem can be solved using the potential method if the parameters of the problem are known. Using the above model, you can provide the training of professionals who are needed now or in the near future, based on the trends and prospects of national economy.

## Conclusions

As a result of the review of the experience of the leading universities of East Asia may be noted that between the formations of the leading educational institutions in different countries there are a number of common characteristics.

1. A sign of the formation of advanced developed system of higher education in the countries of the East Asian region is the government support the reform process industry.

2. Financial support allocated under the development program perspective, developed at the state level.

3. The main emphasis made on the quality characteristics of the educational process.

4. Long-term development of higher education involves the synthesis of higher education, science and industry, which resulted in the creation of technoparks.

Noteworthy is another aspect of the process of reforming higher education in China – external factors and the environment. China's success in education is one of the consequences of the reforms of Deng Xiaoping, through which universities gain real autonomy; the most powerful research universities received government investment. Universities were allowed to establish joint ventures. Appeared opportunity to open private universities. In the process of reform was adopted as a basis the US education system. For training and accommodation of students created the proper conditions. In the process of modernization and development of higher education based on international experience was taken.

Overall development of higher education of the East Asian region deserves further study in view of the existing potential and success and effectiveness of development. For Ukraine, this study is very

relevant, because in some issues, particularly in terms of premises, there are similarities, identical origins, and thus performance is quite likely. This is not a direct copy because success involves taking into account national and regional characteristics, mentality, and ideological orientation. However, taking into account these factors, combined with the best practices of world leaders in a designated area can be the key to its own success.

### References

1. *Vystup L. Hrynevych Kruhlyy stil «Priorityetni napryamy diyal'nosti u haluzi osvity i nauky».* [Speech by L. Grinevich Roundtable “Priority Areas of Activities in the Field of Education and Science”] Retrieved from: <https://www.youtube.com/watch?v=mc94F611YfE> [in Ukrainian].
2. *Dopovid' rektora NTUU “KPI im. Ihorya Sikors'koho” akademika NAN Ukrayiny M.Z. Zhurovs'koho na sesiyi naukovo-pedahohichnykh pratsivnykiv 30 serpnya 2016 roku.* [Report of the rector of KPI them. Igor Sikorsky academician of NAS of Ukraine M. S. Zgurovsky at a session of research and teaching staff on August 30, 2016] Retrieved from: <http://kpi.ua/report-2016#sthash.g91TNYnA.dpuf> [in Ukrainian].
3. *Yastrubskyy, M. YA. (2016) Finansove zabezpechennya avtonomnykh doslidnyts'kykh VNZ Ukrayiny v umovakh reformuvannya* [Financial support for autonomous research universities in Ukraine in the context of reform]. *Lohistyka – Logistics*, 846, 191–196 [in Ukrainian].
4. *Kuz'min, O.Ye., & Yastrubskyy, M.Ya. (2017). Priorityetni napryamky finansuvannya VNZ: osoblyvosti vplyvu kontynhentu inozemnykh studentiv na rezul'tatyvnist' diyal'nosti* [Priority Areas for Financing Universities: Features of the Impact of Foreign Students Contingent on Performance] *Menedzhment ta pidpryyemnytstvo v Ukrayini: etapy stanovlennya i problemy rozvytku: zbirnyk naukovykh prats'.* – *Management and entrepreneurship in Ukraine: stages of development and development problems*, 862, 139–144. [in Ukrainian].
5. *Zayachuk, M.D. & Chubrey, O.S. (2009). Ekonomichna ta sotsial'na heohrafiya svitu: navch. posibnyk* [Economic and social geography of the world] *Chernivtsi: Chernivets'kyy nats. un-t.* [in Ukrainian].
6. *Reyting universitetov mira 2016* [ranking of universities in the world 2016]. Retrieved from <http://total-rating.ru/1609-reyting-universitetov-mira-2016.html> [in Russian].
7. *Nacional'nyi universitet Singapura.* [National University of Singapore] Retrieved from [https://www.unipage.net/ru/national\\_university\\_of\\_singapore](https://www.unipage.net/ru/national_university_of_singapore) [in Russian].
8. *Investitsionnaya sistema Singapura* [Singapore Investment System] Retrieved from <http://globuss24.ru/doc/investicionnye-sistema-singapura> [in Russian].
9. *Public Finance Case Study Singapore.* Retrieved from [https://docviewer.yandex.ua/view/331206433/?\\*](https://docviewer.yandex.ua/view/331206433/?*).
10. *Naselenie Zemli. Schetchik naseleniya Kitaya.* [Earth population. China population meter.] Retrieved from <http://countrymeters.info/ru/World> [in Russian].
11. *Universitet Tsinghua* [Tsinghua University]. Retrieved from <http://www.new-asian.ru/education/china/102/> [in Russian].
12. *National Bureau of Statistics of China.* Retrieved from <http://data.stats.gov.cn/workspace/index;jsessionid=C781D208E25C79B326BD B5A26F52CE16?m=hgnd>

**UDC 681.5:519.24**

**JEL Classification Code F 23, G32, L2**

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## **FINANCIAL MANAGEMENT OF THE ENTERPRISE ECONOMIC POTENTIAL**

**Abstract.** Drawbacks of the basic principles of management of financial and economic potential in the national platform are defined. The mechanism of approximation of modern concepts of financial management of the economic potential is specified and proved. The analysis of principles and tools in the systems of financial management of the intangible potential (intangible assets, brand, customer equity, inner generated goodwill) is carried out and possibilities of their implementation in Ukrainian enterprises are assessed. Author's opinion regarding the key objects of the financial management of business reputation, intangible assets, and market constituent of the aggregate capital of the enterprises of the national economy is presented, algorithms to measure the intangible constituent of the enterprise value for administrative purposes have been formulated.

**Key words:** financial management, economic potential, value estimation, intangible capital, financial tools, foreign experience, adaptation methods.

### **Introduction**

The state of the modern Ukrainian economy and pre-conditions of its development are complex,

underspecified, and have a number of peculiarities in comparison to the economies of the developed countries. Transition of national economic entities to the market relations is of complex (unconventional) nature predefined, first of all, by the absence of the relevant management system and actually insufficient training of managers that lacked qualification to provide efficient management of the financial and economic potential. Consequently, enterprises experienced a production decline, that resulted in the economic downfall and extremely low level of investment attractiveness.

Enterprise management, based on the cost specifications of its economic resources, accrual of their cost (capitalization), is made actual by modern dynamic processes of global economy growth, capital mobility, and informational requirements of the institutional investors.

Regarding the investment attractiveness (costs), relevance and problematic nature of capitalization of domestic enterprises of machine-building complex is decisive, as disposition of

interconnection of their capitalization with creation of conditions of their ability to functioning possibilities in general is obvious enough.

Principles of corporate management of the Ukrainian enterprises and determination of efficiency of their functioning must be based on the implementation of generally accepted concepts of the market system that meet the requirements of investment companies, funds, and financial institutions. Taking into account the distorted cost of the Ukrainian commercialized economic entities made up due to the application of the excessively simplified methodology of cost determination of the integral property complexes at their formation during the processes of denationalization and privatization. Thus, it is essential to solve the problem of finding relevant financially-analytical and evaluation instruments for the information supply management by the criterion of economic added value creation used in the international business.

The growth of capitalization of companies with a high intellectual component («new economy») stipulated numerous researches of evaluation of capital cost and its constituents. Basically new conceptual principles of aggregating of showings and indicators are the results of these consequent researches to provide the financial management system with the capital cost. Alongside the traditional assets, non-financial indicators were obligatory introduced into the management systems of the capital cost to diagnose the influence of intellectual component on the alteration of the capital cost, that is why “development of theoretical and methodological principles of cost estimation is considered one of the foremost tasks in the theory of finances today” [1, p. 18].

Additionally, it is possible to give an example of the German Code of Corporate Governance, that indicates that “the aim of a company management is a continuous increase of its value” [2]. By means of the capitalization index Thomson Financial Data Base distinguished 800 biggest corporations, which share is 33 % in the world GDP.

Structural changes in the global economy, a change of the criterion regarding the components value of the financial and economic potential (assets and capital) of an enterprise, a new market outlook at the business value of modern economic units and

their investment attractiveness require the revision of the old developed stereotypes of the administrative thinking in the national theory and practice and transition to the new forms and methods of the financial management system, all these determine the relevance of the researches of this subject.

#### **Analysis of recent researches and publications, problem statement**

Different aspects of improvement of the existent concepts of cost management of the joined economic resources of an enterprise and insurance of efficiency of economic unit operation by the criteria of the created value are found in the works of foreign scientists and worked out by the companies of the developed economies. Development of the reliable set of tools for insuring effective financial capital management and application of financial instruments in these processes is the subject of the scientific programs and researches of scientific and academic establishments and specific organizations (firms).

Significant contribution to the methodology of the financial management systems design with a set of proper tools in the development of cost paradigm of the enterprise management was made by foreign scientists, R. Braley and S. Myers stated that: “Value is usually the criterion of success. The secret of successful financial management lies in the value growth” [3, p. 3]; P. Doyle mentioned: “In recent years the task of shareholder value increase is considered to be the foremost by the managers of the increasing number of large companies” [4, p. 16]; M. Scott wrote: “In recent years the primary managers’ objective is to increase the value of ones’ own (or shareholder) firm capital” [5, p. 25]; T. Kouplend, T. Koller, D. Murin pointed out that: “Cost maximization for shareholders is or must be the primary objective of all enterprises” [6, p. 25].

Regarding the dynamic change of key influence factors on the enterprise cost and taking into account the specific features of the business branch and peculiarities of the national economy, the defined process did not acquire the final scientific generalization, agreed scientific and theoretical construction in the systems of cost evaluation of the economic resources for the cost management of a machine-building enterprise.

Considerable economic transformations of the modern global economic environment require clarification of the developed principal approaches to the cost evaluation of the enterprise capital and their use in the management process.

Important approaches to solve this issue were offered by Dyson, Farr and Hollis having designed the system with two components – “Consumer Value Model” and “Brand Dynamics Pyramid”. It is worthwhile to note the model BV&A – brand valuation & analysis. This methodology of the Russian company V-Ratio, on the basis of evaluations and analysis, is aimed to define the cost factors created by the brand by means of additional sales. These particular sales are further used to calculate the brand value that makes this methodology similar to the concept of Brand Equity, i.e. brand capital (brand assets).

A competent specialist in the field of administrative technologies, including the management of the processes of value enhancement of companies and business, A. Damodaran proves that «basic rules and concepts of cost management are identical in any case regardless the company that is evaluated and the market it operates on» [7].

Financial analysts and consultants of McKinsey Co. have the similar view, who specify that although “many examples are taken from the American reality, fundamental principles of value estimation and described methods of this estimation are acceptable in any country” [6, p. 18]. Notwithstanding this fact, the possibilities to use the designed foreign systems of financial management directed towards the management of the processes of the assets value enhancement with certain adjustments to the peculiarities of the national economy are not as unambiguous as it is mainly presented in national publications.

Despite the generalized grounds of expediency to rely on the methods generally accepted in the international practice, many researchers point out the complexity to use the set of financial instruments traditional for the developed economies, as well as that “under the conditions in Ukraine the traditional methods of the cost estimation underestimate the potential of Ukrainian business” [8, p. 229].

#### **Purpose and tasks of the research.**

The purpose of the research is theoretical generalization and practical analysis of the world

experience as to organization of financial management of resources of modern market economy units with the aim of enhancement of their value.

It is necessary to find ways and approaches to improve already existing in the Ukrainian theory and practice theoretical and methodological aspects of the financial management system on the basis of customization of foreign experience, in particular the development of scientifically-theoretical principles of the enterprise management on the basis of value criteria giving reasons for the conceptual basis of the economic evaluation system of the cost parameters of an economic unit, corresponding to the terms of the national economy.

The purpose of the research and reaching its goals determine to set and solve the following tasks:

- to disclose the economic content, fundamental and conceptual principles of financial management of economic resources value in the general system of the enterprise corporate management in the modern economy;
- to generalize the content essence and operating practice of cost values application as a criterion to determine the functioning efficiency of an enterprise and a corporate management system;
- to summarize the international practice and to find out main contradictions of the developed principles of the financial management of the components of intellectual resources and intangible capital of modern enterprises and approaches to assess synergy potential of the economic systems;
- to develop the conceptual principles and methodical provisions for estimation of informative-intellectual resources and intangible assets as inner goodwill of the company for financial management purposes.

Only certain aspects of financial management of well-known international corporations are under consideration in modern Ukrainian economic literature. The issue of financial management, aimed at assets and capital value enhancement, remains understudied, as it was not fully and systematically summarized, including the possibilities to customize foreign experience to Ukrainian practice. Scientific and practical researches mainly concern general administrative aspects regarding the customization of the national business to the conditions of informational intellectual economy, modern markets of capital, goods, and investment.

However, certain issues concerning the reformation of financial management aimed at creation of flexible and reasonable systems of financial management of the existing potential for native practice were left out of consideration. They would allow Ukrainian business enterprises to obtain certain position on the international markets.

General scientific methods are used to carry out the research such as methods of theoretical analysis and estimation of the real capitalization of the national companies together with the methods of comparable criteria analysis used in the world practice for market enterprises.

### **Research of the model of the value estimation of the economic potential management of the company**

Current economic processes and value relations between different entities and concerned parties put forward a number of additional problematic issues, related both to the processes of evaluation of the structured economic resources of modern enterprises, created added cost during their operation and to the set of tools to support management decisions for their value creation. This issue is particularly current for the enterprises of the national economy that adapt to the developed principles and provisions of business organization within the global market system: "Sustainability of corporation is provided by the timely adjustment (customization) of the development goals, change of functions of an organization to new market conditions" [9, p. 55].

Development of the value aimed for the management system occurs on the basis of creation of new methodological instruments or adaptation of the main provisions of the fundamental theories (paradigms) of these managerial systems or models. The "Welfare of the Firm Theory" provides the construction of integral models of the economic activity, where any managerial decision is considered within its influence on the market value of a firm [10, p. 135].

The requirement of objective and at the same time transparent model of the value estimation, changes of the amount of the private property of the economic entity is marked by the approaches of the international network of corporate management to the principles of the Organization of Economic

Cooperation and Development (Statement on Global Corporate Governance Principles), which underline that "the aim is to facilitate the international dialogue concerning the ways of strengthening of companies accountability to their owners in order to increase the equity value" [11].

Global share voting principles confirm the credibility of conceptual principles of the value corporate management, according to which "maximization of the market value of an enterprise and business organization provides the growth of the shareholders' benefits and equity value".

Taking into account the complexity of the diversified factors and aspects that influence the market value of the enterprise capital, modern systems of economic evaluation and management of the processes of value formation of the economic entity are based on the vast conglomerate of interdisciplinary basis - management concepts, conceptual and methodological principles of evaluation, principles of investment indexes formation on the basis of aggregating the standardized indexes of the financial statements and cash flow discounting models, capital and profit theories, evaluation methods of fixed and investment assets, that are taken into consideration in methodological basis of systems of different formats and models of the value estimation.

The company management concept based on the criteria of the value growth of the business is the integrated concept based on the fundamental results of the theory of corporate finances and methods of strategic management [12, p. 135].

It is believed that, according to the fundamental principles and developed principles of the value paradigm, a corporate management must generate decisions aimed at the key objects and factors that lead to the increase of the shareholder value. This theoretical ground of corporate mission aimed at maximization of the shareholder equity, as the primary goal of any company, is unquestionably balanced enough with principles of the social oriented market economy and socially responsible business. However, the needs of company's capital allocation do not always coincide with the shareholders' requirements for many reasons, that is why, in many cases, it is considered that "corporations are not run to maximize the shareholders' welfare, - actually, the shareholder

value of many companies keeps falling year after year” [13, p. 4].

Risk management is a hidden form of the equity value decrease or factors that put pressure on its value profile that balances on the verge of the dynamic accumulation of problem assets - formation of “problematic”, “bad”, “toxic” company’s assets (accumulation of expenses of future periods that were not deducted on time); using of the capital for excessive expenditures “to gain business reputation” or for representative expenses (market factors of capital value growth) that in many cases cannot be sufficiently proved, etc. However, information about such economic activity is regarded to stimulate the growth of market value of the company (shares rate).

In practice, the administrative body of an enterprise, balancing on a very thin verge, must solve a formidable task – to generate profit and capitalization of an enterprise at the same time: “Precisely because of impossibility to make a single estimation of the company operation efficiency as in a strategic aspect so in an operative management, the BSC concept cannot be regarded as the universal one” [14, p. 67].

Fundamentalism of the theory of efficiency is usually regarded through the formation of the integral (synthetic) index of the enterprise operation efficiency that, from one side, estimates objectively the results of its completed activity, and from the other - characterizes the created potential of an enterprise.

One of the related dissertation researches [15, p. 112] presents the generalized structure, offered by native and foreign scientists, of including value components of the financial state – 19,64 %, business risk-taking – 14,29 %, the business scale – 12,50 %, brand value – 12,50 %, organizational and administrative components – 8,93 %, market conditions – 7,14 %, competitiveness – 7,14 %, scientific and technical potential – 7,14 %, macroenvironment – 5,36 %, microenvironments – 5,36 %”.

Working out of a summarizing (synthetic) efficiency index, in our opinion, the system of indexes that reflect the level of reserves and the fixed capital insurance must also be taken into

account, that it is especially important under the conditions of unsteady environment. For sure, these indicative components will hold the main position in the methodological basis of the economic evaluation systems of the value of the economic entities in the “post-crisis model of business”. Application of the reserve indicator in the evaluation models is not common.

In the modern market economy, characterized by a number of uncertainty factors, the problem of establishing objective capital value to provide the management with the processes of its raising, allocation, application and capitalization of assets is a cute one. For the management purposes, it is suggested to concentrate on the objects shown in the Fig. 1 (financial potential, innovative potential, productive potential, potential of the fixed and circulating funds, etc.).

The capital value, besides being the measure that characterizes the market value of an enterprise in a current period, is specified, due to its dynamics, to possess the characteristics of the investment resource, a purchase-sale object, property and accumulated value, production factor and an object of management, risk carrier, and other properties.

Methodological basis of the value characteristic systems of the intangible component of the capital of the operating enterprise in the existent systems is based on the indexes of the “excess income”, “excess profits” or additional money flows. These approaches are unacceptable because it is impossible to use any of the offered indexes as constant ones to calculate the value of intangible economic resources of the national machine-building enterprises.

A number of objective reasons makes it impossible to assess value of the intangible potential of a machine-building enterprise applying the method of differences between the market value of the business in general and the identified assets.

Thus, we assume, that any enterprise capable to operate in the modern economy owns certain “goodwill”. Number of factors makes it impossible to use profitable concepts to assess the intangible component of the capital of the national enterprises, because of their value incredibility to the financial indexes.

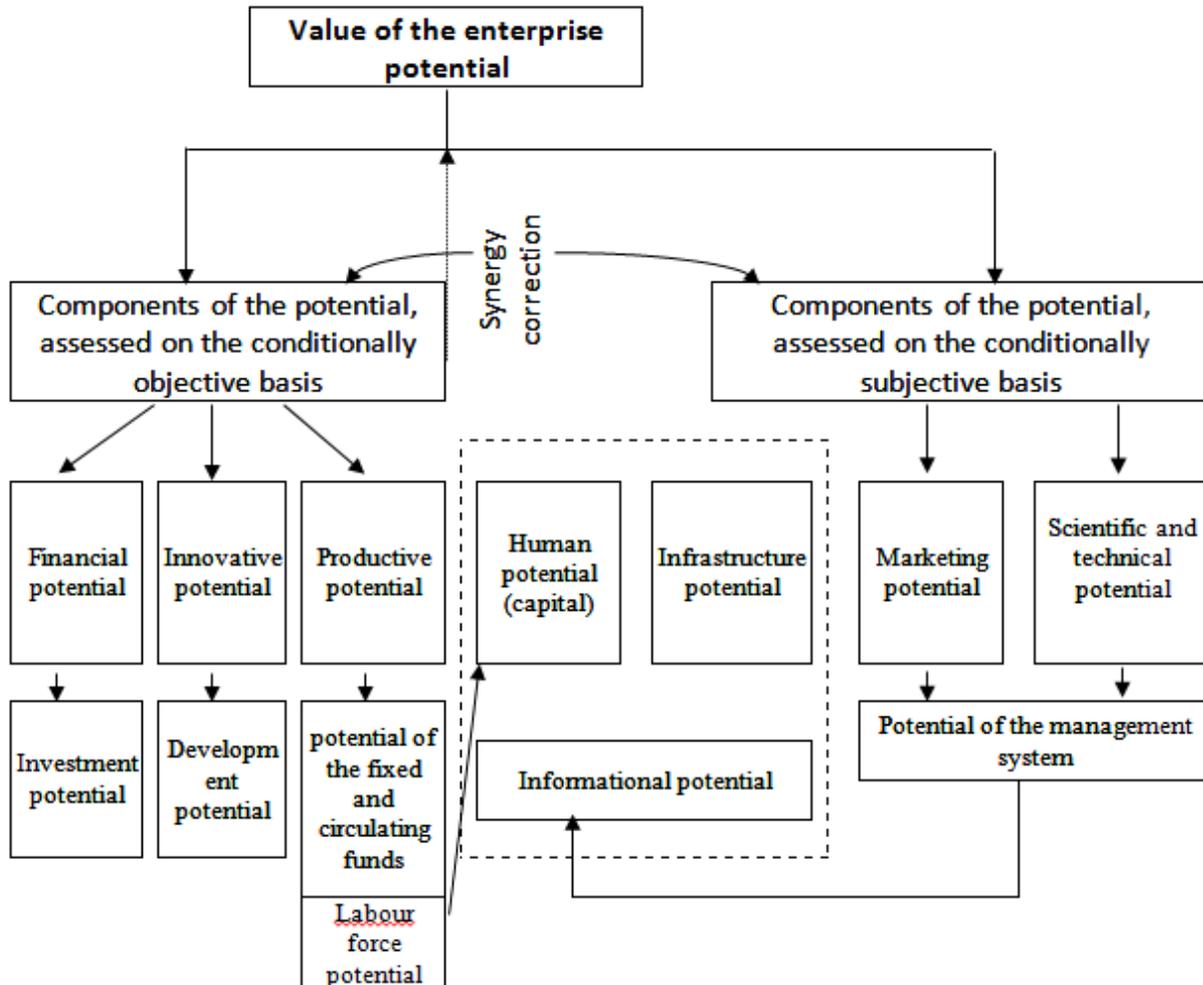


Fig. 1. Objects in the financial management system of the enterprise potential

**Working out of the methodology of evaluation and management of the intangible capital value of the machine-building enterprises**

A certain type of an intangible economic resource has different value significance in the capital of different enterprises, depending on many factors of their functioning. That is why, the approach that evaluates intangible resources in connection with the tangible ones in a more objective way is chosen. Productive combination of indexes, that characterizes the value of the actually functioning infrastructural, intellectual, human and other intangible components, determines the amount of their productive energy (cost effectiveness) in the operating capital, and together with the tangible and financial capital - additional synergy force and productive efficiency of the enterprise potential (“ideal capital”).

It is suggested to apply general principles of evaluation of the intangible capital value and management of the intangible component value of the machine-building enterprise, to conduct monitoring and diagnostics of the value of the structural components of intangible factors using the designed approach shown in Fig. 2.

By the worked out methodology, the value of the “traditional” (verified) intangible assets (K1) is determined by their paid (residual) cost. The value of the innovative component of the intangible potential is defined by the inventory taking data grounded on the formulated methodological provisions that are based on concept of the not-shown assets with the use of the elements of aggregate, norm-calculation and analogue approaches with application of the correcting procedures of “the method of assets utility reduction”.

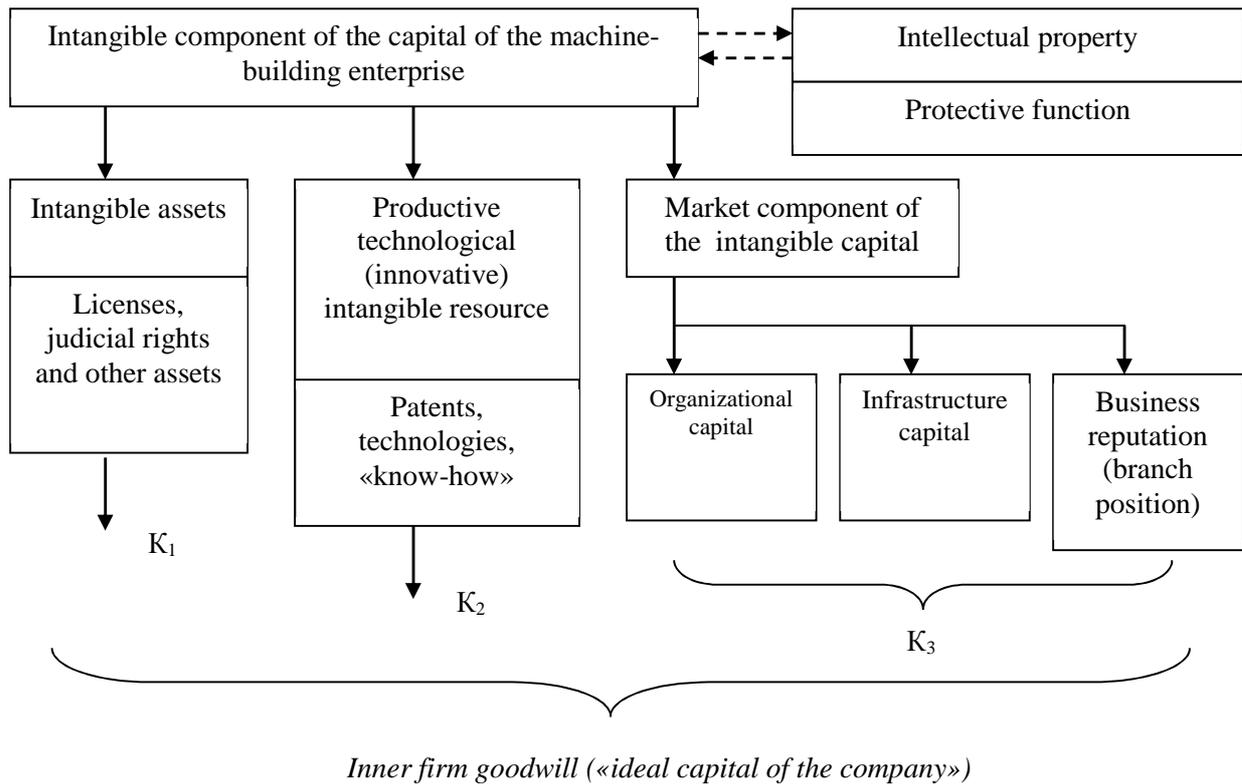


Fig. 2. General scheme of evaluation and management of the intangible capital value of the machine-building enterprise

The results of scientific and technical production evaluation as objects of intellectual property are supported by the elements of Borda’s procedures (ranked alternatives), Yang (successive comparisons), and also Kemeny median (group judgement).

Evaluation of the market constituent of the intangible capital of the Ukrainian enterprises is more reasonable to conduct with the observance of maximum limit (norms) of their cost to the total value of actual economic resources, set by the regulators of capital markets by the branches of the economy.

The value of traditional intangible assets (K1) is determined by their residual value. The scope of the innovative constituent of intangible asset (K2) is found on the basis of the adapted algorithms, adhering to the methodological provisions, for example, provided in the letter of the Ministry of Finance of Ukraine “Regarding the initial cost of an object of the intellectual property as an intangible asset”, International and national standards. Value estimation is conducted on the basis of expert concordances and inventory taking with the further application of the correcting procedures by the

“method of the assets utility reduction”. Taking into account little competitiveness of the Ukrainian enterprises, small amounts of cash allocated for the researches and developments, evaluation of their market constituent requires maximum limit off the total cost of the actual economic resources by the branches of the economy, worked out by the regulators of the capital markets. For basic machine-building enterprises we offer index 0,2. Formula of the total value evaluation of intangible resources (intangible capital) for machine-building enterprises is the following:

$$K_H = K_1(Ha) + K_2 + K_3 (\overset{\circ}{a} K_3 \in 0,2 \text{ Всча}), \quad (1)$$

where  $K_H$  – is the total value of the intangible constituent of the enterprise capital;  $K_1(Ha)$  – intangible assets – paid (residual) cost of their purchase;  $K_2$  – assessed research and engineering works, projects, perspective developments, engineering samples, administrative processes as an intellectual resource;  $K_3$  – is a market constituent of the intangible capital of an enterprise;  $\text{Всча}$  – is a value (fair value) of the corrected net assets of an enterprise.

By the results of the research we put forward the categorical statement, that until the financial statement (balance) will not include the index of intellectual-informative capital available on the enterprise, aggregated on the formalized methodological basis, we cannot speak of any standardized (acceptable) procedure of their representation, - neither through different evaluation systems nor through their representation by the reports on intellectual capital.

The analysis of market capitalization of the leading hi-tech companies proved that factors of intangible nature form their value on 70–90 %, which are not recorded in the system of accounting and financial statements.

Some economists suggest to solve this issue through traditional financial statements and reports on intellectual capital, meaning to get “certain synergy” out of this. Some superficial grounds are theoretically put forward, that such generalizations give an opportunity to explain discrepancies between a balance value and market capitalization of the companies.

Practice testifies, opposite to these theoretical suggestions, that external users (and the managerial office itself), without the specified methodology on the verified intellectual capital, get only the general characteristics about the whole intellectual capital. It should be noted, that investors’ feedback on the reports on intellectual capital is not as unambiguous as it is described in the literature, especially because of the excessive overstatement of the expectation effect from the intangible capital by the companies.

Structural capital includes all company’s infrastructure - informational technologies, working processes, communication systems, informative resources, etc. Innovative part of the structural capital comprises intellectual property (patents, license agreements), as well as the resource, that is difficult to define precisely, that will determine the value of a company to a greater extent in future (scientific and technical researches and developments, know-how, ideas, inventing activity).

A client (“brand”) equity is a value that reflects the relations with customers, such as brand name, advantages of customers, lists of clients, well-known trademarks, etc. However, this “value as an economic category, unlike the cost, cannot be

shown in absolute indexes directly. Thus, the methodology of estimation of the company’s value must be based on the application of the comparative approach” [14, p. 71].

General estimation of the company’s value and management of the key factors value also include the estimation of such hypothetical notion as the brand value. The issue of evaluation of the brand value attracted more attention in the 80<sup>th</sup> of the XX c., when theorists and practitioners of marketing began to develop the evaluation systems of brand value to create competitive advantages, using traditional ideas about intangible assets as the basis maximizing their value in different ways (for example, providing data about their availability in a statement of Value Reporting).

From the financial point of view, the brand value must be expressed by a certain figure (e.g., the result of the professional estimation). The value of this type of the resource potential is required at mergers and takeovers, the brand itself can become the object of purchase or sale, etc.

The initial price, control, stimuli (moral hazard), and the final price are the contract drivers of price setting [16, p. 17].

In investment projects the brand value can be included into the initial capital of the launched company and used as a mortgage. Marketing specialists apply the brand “value” as an instrument of investment management in marketing. Mainly indexes, that characterize brand market positions, forecast sales, etc., are used as output data for calculations, that forms its value estimation. However, the “brand value cannot be measured, but can be evaluated. As a result, opportunities for brand management appear”.

The latest management concepts appear at the borderline of financial and productive management, logistic and marketing, examining of operations and mathematical statistics [17, p. 37].

Weighted average cost of capital is calculated by the formulas:

$$WACC = k_u - k_b \times \frac{\frac{\partial B}{\partial B} + \frac{\partial S}{\partial S}}{\frac{\partial B}{\partial B} + \frac{\partial S}{\partial S}} \times T, \quad (2)$$

where  $k_u$  – is the expenses on the owner’s equity;  $k_b$  – expenses on the loan capital;  $T$  – marginal tax rate on the interest expenses;  $B$  – market value of the loan;  $S$  – market value of the owner’s equity.

In the most general view, expenses on capital are calculated by the formula:

$$WACC = k_b \times (1 - T) \times \frac{B}{B + S} + k_s \times \frac{S}{B + S}, \quad (3)$$

where  $k_b$  – expenses on the loan capital, that correspond to the long-term interest rate;  $k_s$  – expenses on the owner's equity without tax burden;  $T$  – marginal tax rate;  $B$  – market value of the loan;  $S$  – market value of the owner's equity.

Regarding the mentioned above notions, Weighted Average Cost of Capital – WACC is calculated by the formula with the defined component of the cost of the raised capital:

$$WACC = \left(\frac{E}{V}\right) \times r_e + \left(\frac{D}{V}\right) \times (1 - t_x) \times r_d, \quad (4)$$

where  $\frac{E}{V}$  – is the share of the market value of the shareholder capital of the total capital;  $\frac{D}{V}$  – a share of the raised capital in the market value of the total capital;  $r_e$  – the cost of the shareholder capital;  $t_x$  – tax rate;  $r_d$  – the cost of the raised capital.

An instrument suitable to estimate the advantage of capital investment in securities is the traditional fundamental analysis that studies the information of potential investing object. The algorithm to estimate future dividend flows, that are the foremost investors' interest, is offered for such purposes. Payment and sum of dividends of ordinary shares are not fixed, and during the calculation their increase is possible with  $g$  rate per year. In this case, the investment value of a share is:

$$P_0 = \sum_{t=1}^N \frac{D_0(1+g)^t}{(1+RRR)^t}, \quad (5)$$

where  $P_0$  – investment value of an ordinary share;  $N$  – number of periods the investment is made for;  $D_0$  – amount of dividends for the last period before the investment;  $RRR$  – required rate of return.

#### **Discussion of the research results in the context of improvement of the concept of the non-shown assets and the method of the assets utility reduction**

For the national economy enterprises, it is the most important task to work out relevant principles and methodological bases for evaluation of intangible assets and intellectual constituent of

capital (inner brand goodwill (“ideal capital of a company”), that are based on the improved concept of the non-shown assets and on the method of the assets utility reduction using the elements of aggregate, norm calculation, and analogue methods.

The offered approach assumes inventory expert estimation of the innovative-technological assets available in the company and verification of business reputation on a branch market segment, calculated in relation to the value of the net corrected assets (economic potential) of an enterprise that allows the formalized indexes to represent the value of the enterprise business in an extended way.

#### **Conclusions**

1. Significant and understudied issue of evaluation of available economic resources and indexes of additional cost for introduction and further efficient use of the value-oriented paradigm of management, the necessity of its solving, taking into account the peculiarity of the economy of Ukraine, using fundamental and conceptual principles and developed approaches to the cost management in the world practice, prove relevance and importance of scientific researches of this subject matter.

There is a necessity to formulate acceptable content of the methodological principles and methodology of the objective evaluation of the economic potential of economic units and to define additional (lost) cost of the employed capital of the enterprise in the national economy science. For management purposes, it is suggested to focus on financial potential, innovative potential, productive potential, and potential of the fixed and circulating funds.

2. Appropriateness of application of the methodology of intangible assets in relation with tangible ones is proved. Productive combination of indexes, that characterize the value of the actually operating infrastructural, intellectual, human, and other intangible constituents, determines the scope of their productive energy (effectiveness) in operating capital, and together with tangible and financial capital - additional synergy power and efficiency of the enterprise potential (“ideal capital”).

3. It is offered to conduct evaluation of the intangible capital value and management of the intangible constituent cost of the machine-building enterprise, monitoring and diagnostics of the structural

components value of the intangible factors on the basis of the modelled approach according to which the value of “traditional” (verified) intangible assets (K1) is determined by their paid (residual) cost.

4. It is offered to include the index of intellectual-informative capital aggregated on the formalized methodological basis into the financial statements.

### References

1. Yevtukh, O. (2005). *Teoriya vartosti cherez pryzmu finansiv [Value theory through the lens of finance]. Finansy Ukrayiny – Finance of Ukraine, 11, 7-20 [in Ukrainian].*
2. Pyatnitskiy, D. (2006). *Ocenka stoimosti korporaciy Germanii [German corporate valuation]. Mirovaya ekonomika i mezhdunarodnye otnosheniya - World Economy and International Relations, 10, 43-47 [in Russian].*
3. Braley, R. & Myers, S. (1977). *Principy korporativnykh finansov [Corporate finance principles]. Moscow: Olimp – Business [in Russian].*
4. Doyle, P. (2001). *Marketing, oriyentirovanny na stoimost: Marketingovyye strategii dlya obespecheniya rosta kompanii i uvelicheniya yeye aktsionernoy stoimosti [Value-based marketing: marketing strategies to ensure company growth and increase its shareholder value]. Sankt-Peterburg: Piter [in Russian].*
5. Skott, M. (2000). *Factory stoimosti: Rukovodstvo dlya menedzherov po vyyavleniyu rykhagov sozdaniya stoimosti [Cost Factors: A guide for managers to identify value leverage]. Moscow: “Olimp – Business” [in Russian].*
6. Kouplend, T., Koller, T. & Murin, D. (2002). *Stoimost kompaniy: ochenka i upravleniye [Company value: valuation and management]. Moscow: “Olimp – Business” [in Russian].*
7. Damodaran, A. *Value Creation and Enhancement: Back to the Future.. Los Angeles: Stern School of Business, 1999.*
8. Momot, T. (2006). *Vartisno-oriyentovanyy orhanizatsiyno- ekonomichnyy mekhanizm korporativnoho upravlinnya aktsionernykh tovarystvamy: teoriya, metodolohiya i praktyka [Value-oriented organizational and economic mechanism of corporate governance of joint stock companies: theory, methodology and practice]. Doctor’s thesis. Kharkiv: Kharkiv National Academy of Urban Economics [in Ukrainian].*
9. Danko, M. (2005). *Formuvannya korporativnykh struktur v Ukrayini [Formation of corporate structures in Ukraine]. Ekonomika i prohnozuvannya - Economics and forecasting, 4, 50-65 [in Ukrainian].*
10. Yaremko, I., Plekan, M., Kantsir, I. & Andrejkiv, T. (2018). *Informational and financial instruments for evaluation and management of the company's value. Journal of Eastern European and Central Asian Research. 5 (2), 131–139. Retrieved from: http://ieeca.org/journal/index.php/JEECAR/issue/view/15. DOI: http://dx.doi.org/10.15549/jeeecar.v5i2.246*
11. *Mizhnarodni ta natsional'ni standarty korporativnoho upravlinnya: Zbirnyk kodeksiv ta pryntsyypiv [International and national corporate governance standards: Codex and Principles Collection]. International Finn. corporation; Project "Corporate Development of Ukraine". Kyiv [in Ukrainian].*
12. Rappoport, A. *Creating Shareholder Value: The New Standart for Business Performance. New York: The Free Press [in English].*
13. Martin, Dzh., & Petti, V. (2006). *VBM – upravlinnya, shcho bazuyet'sya na vartosti: Korporativna vidpovid revolyutsiyi aktsioneriv [VBM – value based management: the corporate response of the shareholder revolution]. Dnipropetrovsk: Balance Business Bus [in Ukrainian].*
14. Chumachenko, M. & Pankov, V. (2004). *Upravlinnya vartistyru kompaniyi na osnovi tsinnisnoho pidkhodu [Value management of a company based on a value approach]. Naukovo–teoretychnyy ta informatsiyno–praktychnyy zhurnal Ministerstva finansiv Ukrayiny – Scientific-theoretical and informational and practical journal of the Ministry of Finance of Ukraine, 2, 66-79 [in Ukrainian].*
15. Kurochkina, I. (2007). *Otsinka vartosti biznesu sub"yektiv hospodaryuvannya (na prykladi metalurhiynykh ta koksokhimichnykh pidpryyemstv) [Estimation of business entities' business value (on the example of metallurgical and coke-chemical enterprises)]. Candidate’s thesis. Kharkiv: Kharkiv National Academy of Urban Economics [in Ukrainian].*
16. Bugrov, O., & Bugrova, O. (2009). *An algorithm of selecting the pricing model for a construction contract. Eastern-European Journal of Enterprise Technologies, 1(3), 13–21. DOI: https://doi.org/10.15587/1729-4061.2019.155779.*
17. Savchenko, L. & Grygorak, M. (2009). *Determination of parameters of the stochastic inventory management system in the conditions of economically-based shortage. Eastern-European Journal of Enterprise Technologies, 1(3), 37-46. DOI: https://doi.org/10.15587/1729-4061.2019.156475.*

**UDC 005.9**

**JEL Classification Code L31**

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## **SOCIAL ENTERPRISES AS PLACE OF WORK FOR PEOPLE WITH DISABILITIES – EVIDENCE FROM POLAND**

**Abstract:** Concern about people with disabilities is now becoming one of the areas of interest within the European Union, which is seeking a cost-effective and socially acceptable solutions aimed at supporting a worthy life of this group of society. Specific areas of action aimed at improving conditions for social inclusion, well-being and the full exercise of the rights of people with disabilities are set out in the “European Disability Strategy 2010-2020: A renewed commitment to a Barrier-Free Europe” (European Disability Strategy 2010–2020: COM (2010) 636). Employment is one of those areas. In order to cope with the professional activation of people with disabilities the pattern of change should start from the immediate environment and living space of disabled. Increasing the number of employment opportunities (e.g. in the form of homework), create and ease the options for self-employment (e.g. social cooperatives). Therefore, the aim of this article is to look at how social enterprises act as labour market entities and what are results of their activity in Poland. We try to prove that social enterprises, i.e. social cooperatives are important entity for the activation of people with disabilities in the labour market by providing the analysis of the activities of two subjects.

**Key words:** public management, social enterprise, European Disability Strategy, professional activation, disability

### **Introduction**

A fundamental problem faced by the developed countries is to find such practices for public funds management that will allow for the effective achievement of social goals defined in the process of political choices made by citizens. It is crucial that the final outcome – the service provided – should be economically sound, qualitatively satisfying and compliant with the rules of social fairness.

The European Disability Strategy 2010-2020 is the EU's agenda for growth and jobs for the current decade. It is aimed at maximizing the involvement of all actors, especially third sector organizations, within local area in implementing social tasks. The idea of non-state actors is not to replace local authorities; it is rather enrichment in meeting growing social requirements. Third sector organizations can be a solution to the growing problem of municipalities. Local authorities, using law and policies, should encourage the formation and functioning of social cooperatives. Moreover, public services are now regarded as a key factor in boosting the competitiveness of the economy and ensuring social and territorial cohesion. That is why

proper actions should be undertaken, to empower local authorities, scout for resources, train social workers, inform and educate the employers to change their attitudes, modify the infrastructure to facilitate the access for handicapped and the most important, to stimulate the growth of third sector.

Actions undertaken to create jobs and conditions for the employment of disadvantaged people, including the disabled, are of particular importance for achieving social goals (Zrałek & Borski, 2018). In Poland, in 2018 the employment rate for people aged 20–64 was 72.8 %, which places us slightly below the average for the entire European Union (73.5 %). It is worth remembering that in the Scandinavian countries the total employment rate exceeded 80 %, however in countries with a similar socio-economic situation to Poland it was significantly higher: Latvia 77.7 %, Lithuania 78.1 %, and the Czech Republic 80.1 %. For women this indicator looks worse – 65.5 % in Poland compared to 67.5 % in the EU. According to BAEL data, among the inactive people, apart from learners and retirees, the most numerous groups were inactive because of: (1) family and home-related responsibilities (1.8 million); (2) illness and disability (approx. 1.5 million); and (3) discouragement stemming from the ineffective job search (approx. 237 thousand). Particular attention should be paid to people with disabilities whose professional activity rate was 18.3 % in 2018, which is half of the EU average. It is estimated that about 1.2 million - 1.4 million people with disabilities are inactive (BAEL 2018). For this group of society, employment in social economy entities, including social enterprises, can be a good way of reintegration into the labour market. The development of the social policy concept, in particular the attempts to implement practical solutions characteristic of active social policies, influenced the emergence of new provision methods for social services. One of such methods, which have recently gained in popularity, is the creation and growth of social economy entities. Such entities are a natural organizational response to the need for such pro-social solutions that, as their prime concern, pursue social goals while ensuring economic return on the invested public funds. By definition, the social economy is a system of enterprises and organizations, with respective legal

regulations, which aim to support those at risk of social exclusion. The primary role of the social economy is to prevent social exclusion. The groups that are particularly threatened with social exclusion are disabled people.

The need for social economy and social enterprises arises from the fact, that traditional political and economic solutions are no longer good enough to guarantee a minimal quality of life to a rising number of people. Therefore, social economy appears as an answer to the increasing disproportions between the rich and the poor and a response to the exclusion of large social groups from mainstream social life, such as people with disabilities. While social economy has been and is quite active in the context of activating the unemployed, it has not been used to that extent as an employment opportunity for inactive people such as people with disabilities. Therefore, the aim of this article is to look at how social enterprises act as labour market entities and what are results of their activity in Poland.

#### **European disability strategy 2010-2020**

The European Disability Strategy 2010-2020 adopted by the European Commission in November 2010, represents a fundamental policy instrument for persons with disabilities and their organisations to be used in order to make a barrier-free Europe. The Strategy identifies eight main areas for action and focuses on eliminating barriers in those domains: Accessibility (a prerequisite for participation of people with disabilities in social and economic life), Participation (subjected to accessibility, as the existence of any barriers hinders the opportunity to participate in local society), Equality (the essence is to take steps to eliminate discrimination on any grounds, especially disability, and guarantee effective protection from any discriminations), Employment (occupational training, guidance), Education and Training (low level of education, which adversely situates people with disabilities in the labour market, to transform, upgrade), Social Protection (the area of social protection associated with the right to retirement benefits and pensions, appropriate living conditions, clothing and housing adapted to the limitations resulting from the disability and financial capacity), Health (striving to ensure the access to health treatment and care, early diagnosis, rehabilitation and therapeutic education), and External Actions (increase the awareness and

knowledge of people with disabilities, about their rights and ways to enforce them, raising the awareness of the whole society including employees of government institutions and organizations). Each area has assigned and identified key actions, selected on the basis of their potential contribution to Strategy and EU objectives.

According to the European Disability Strategy 2010–2020, employment of disabled

people should be supported but also monitored. Commitment of local authorities should rise, be duty-bounded, true and long lasting.

Table 1 presents a brief summary of major European Disability Strategy assumptions and directions. Goals listed are meant to be achievable and completing them may bring independency to those, who need it most, especially for individuals with disabilities.

Table 1

**Summary of major european disability strategy**

Field	Employment
The overriding objective – EU level	Enabling much larger number of people with disabilities to earn for a living on the open labour market.
The actions envisaged in the strategy	To support national efforts and: analyse the situation of people with disabilities on the labour market; combat negative, discouraging attitudes and traps associated with demanding process of getting help and other benefits; assistance in people integration on the labour market through the use of the European Social Funds; continuous development of active labour market policies; increase the number of jobs offered; support structures and trainings in the workplace;
Examples of activities at the municipality level	<p><b>Living space and immediate environment</b></p> <ul style="list-style-type: none"> <li>• increase the number of employment opportunities in the form of homework (multilocation and tele-homeworking)</li> <li>• improvement of self-employment</li> <li>• development of database with designated job offers (telework offers only)</li> </ul> <p><b>Wider environment of residence</b></p> <ul style="list-style-type: none"> <li>• development of <i>home-to-work roadmap for disabled</i> to make commuting safe and possible</li> <li>• networking of all types of social institutions that serves disabled on labour market</li> <li>• inclusion of social economy in the process of professional activation and integration of those with limited or reduced efficiency</li> <li>• growth of employment in public sector</li> <li>• increase the number of professional workshops, vocational development and training centres</li> <li>• campaign to increase the number of job offers on secured market</li> <li>• ‘train the trainer’ sessions for fully engaged in professional activation of disabled, on job training for employees and employers (HR specialists, advisers, tutors)</li> </ul>

Source: Mokrzycka, A., (2012). *European Strategies Towards Rights of Disabled Persons – the meaning of The Disability action plan and European disability Strategy 2010-2020. Polityka Społeczna, special issue, Warszawa, 61-70*

The number of people claiming incapacity benefits increased rapidly in recent years. That is why the main objective of the strategy is to enable much larger number of people with disabilities to earn for a living on the open labour market. Government support programs have important implications for employment outcomes through the

incentives that they create for workforce participation. As it was highlighted in the Strategy, municipalities can try to support people with disabilities inter alia through inclusion of social economy in the process of their professional activation and integration. That can be achieved by making it easier to establish social enterprises.

### **Characteristics of social enterprises**

Considerable discrepancies exist as to the meaning of a social enterprise. First of all, it combines the characteristics of a non-governmental organization and a market entity, creating new jobs and setting additional goals of sustaining these jobs and providing services to local communities (Leś, 2004). Based on the proposal included in the UK government document, social enterprise can be defined as an institution that runs business activity, sets primarily social goals, reinvests the earned surplus for those purposes in the business or in the community, rather than being driven by the need to maximize profits for shareholders and owners (Dacin, Dacin & Matear, 2002). R. Dart argues that in order to fully understand the potential locked in social entrepreneurship, it is necessary to accurately define the concept of “a social enterprise” (Dart, 2004). Generally, it is regarded as a basic institution of the social economy, a manifestation of new entrepreneurship, which pursues social obligations and is shaped by practices of the third sector. They can adopt one of many available legal forms, but they share the commitment to finding solutions, based on commercial experiences, which will allow them to pursue social goals and reinvest profits from the operations with the benefit for the community (Haugh, 2006). J. Thompson and B. Doherty define them as organisations that apply business solutions to address social problems (Thompson & Doherty, 2006), while J. Hausner claims that they are part of the market economy that places their objectives and mission outside the market (Hausner, Laurisz & Mazur, 2007).

Literature review provides a more detailed explanation, which argues that social enterprises are the initiatives that fulfil specific criteria. When J. Defourny presented the study conducted by the EMES network that aimed to identify the criteria distinguishing social enterprises, he defined two groups of criteria. The definition by EMES comprises 9 criteria distinguishing social enterprises, including economic, social and managerial ones. They are formulated in a relatively conservative way, which makes them more universal, but on the other hand limits their applicability and raises numerous interpretation-related concerns. The authors of the definition argue, however, that the criteria should not be regarded as necessary

“conditions” that each organization has to fulfil to earn the label of the social enterprise, but they might rather serve as a description of “the ideal type” of such an enterprise (Defourny & Nyssens, 2013, Defourny & Nyssens, 2010). Despite various legal forms and areas of operation, social enterprises share a number of features:

- make a product or provides a service that involves business risk and it is verified in terms of the economic efficiency of this activity,
- are driven by social integration objectives on a scale of a given local community,
- give primacy to stakeholders’ interests over shareholder relations,
- their management culture is based on partnership and participation,
- democratic control comes from stakeholders,
- the earned surplus and accumulated capital are not owned individually, but they are used to pursue a particular social mission (Mair & d Marti 2006, Mason 2012).

Generally, the characteristic organisational forms that social enterprises adopt depend on the existing legal frameworks, on the political economy of welfare provision, and on both cultural and historical traditions of non-profit development in each country. As a consequence, the social enterprise sector nowadays may comprise both new typologies of organisations, as well as traditional third sector organisations (OECD, 2003). No matter the legal form, their principal purpose is not to generate commercial profit, but above all, to create workplaces for people at risk of social exclusion and professional marginalization (Sałustowicz, 2007) and engage in delivery of social services and work integration services for disadvantaged groups (such as people with disabilities) and communities (Wronka-Pośpiech & Frączkiewicz-Wronka, 2014, Wronka-Pośpiech, 2018).

### **Social enterprises in poland as a place of work for people with disabilities – polish perspective**

In Poland, despite few years of legislative effort, social enterprise is still an umbrella concept and neither official definition of social enterprise exists, nor a legal construct has been introduced into the system (Ciepielewska-Kowalik, Pielniński, Starnawska & Szymańska, 2014). An attempt to

provide a definition of a social enterprise has been recently made in the draft National Programme of Social Economy Development (KPRES, 2014), which defines social enterprise as an entity demonstrating the following characteristics:

- carrying out business activity with clear organisational boundaries and own financial reporting.
- the objective of business activity is either: or social and employment integration of people at the risk of social exclusion (operationalized as employing a minimum of 50 per cent of staff from among those at risk of social exclusion or at least 30 per cent of disabled); or o providing public benefit services while at the same time fulfilling pro-employment objectives.
- no distribution of profit or financial surplus among shareholders/partners; using profits or financial surplus to increase company capital, and in a certain share for: (a) social and employment integration, in case of enterprises with pro-employment objectives; or (b) providing public benefit services for the local community where an enterprise operates.
- democratic governance or at least consultative role of employees and other stakeholders; and a salary cap for managers.

As highlighted in “A map of social enterprises and their eco-systems in Europe, Country Report: Poland” (EC, 2014), The National Programme (Krajowy Program Rozwoju Ekonomii Społecznej 2014) assumes the adoption of an Act on Social Enterprise which would introduce a social enterprise status enabling organisations to register as social enterprises on condition that they fulfil certain conditions. Nowadays in Poland a number of organisations with diverse institutional forms have many of the distinctive features of social enterprises and are often referred to as such in the public discourse. The broad spectrum of social enterprises consists of the following types of organisations (EC, 2014):

- Non-profit organisations, including foundations, established in order to implement socially or economically beneficial activities and self-governing non-profit voluntary associations that perform revenue-generating activities.
- Co-operatives for the disabled and blind (being a specific subgroup of labour cooperatives)

and social cooperatives established to promote the social and professional reintegration of their members into the labour market.

- Vocational enterprises for the handicapped (ZAZ), objective of which is carrying out
  - rehabilitation activities (rehabilitation of disabled, especially with severe disabilities) along with economic activities.
  - Vocational therapy workshops (WTZ), which can be established by associations, foundations and other organisations and its primary objective is therapy and rehabilitation of disabled.
  - Social integration centres (CIS) and social integration clubs (KIS), which organise educational programmes for people at risk of social exclusion and support individuals and their families in re-establishing and maintaining their ability to participate in the life of the local communities.
  - Limited liability companies or corporations that pursue a public benefit mission (so-called non-profit companies).

However, basing on the nine guiding criteria by EMES, social cooperatives are closest to them when compared with other social enterprise models in Poland. What can be observed is a significant growth in their number as in 2009 there were 187 social cooperatives, in 2010 there were 276, in 2011 there were 402 social coops. This significant growth is a result of supporting social enterprises set up via public money, mainly European funds (Spółdzielnie...2019).

An analysis of key socio-economic challenges indicates the need for a new approach to the activation of specific categories of people who, due to the current labour market policy, were previously ignored. Institutional assistance to people with disabilities is a great opportunity for the development of the social economy sector, which, thanks to its flexibility and personalized approach, is an appropriate area to create jobs. In 2016, Polish social economy sector comprised 90.9 thousand non-governmental (civic) organizations and 1.5 thousand active cooperatives, among which the majority of 60 % they were social cooperatives. Social economy entities (in the segment of non-governmental organizations) constituted 133.4 thousand in 2016 full-time jobs and 50,000 employed under civil law contracts, which represented 1.4 % of average employment in the

national economy. Which is characteristic for this sector are: feminisation of employment (nearly 2/3 of employees), employment of people with disabilities twice as high as in the whole economy (6.5 %) and employment of people of retirement age (6.4 %) almost three times higher than in the national economy. This indicates the potential of the social economy sector as an organizer of jobs for people with difficulties in the labour market. In the cooperative segment of the social economy cooperatives for the disabled and blind as well as social cooperatives in 2017 employed over 33.5 thousand people on the basis of an employment relationship and approx. 2.4 thous. based on civil law contracts as the main form of employment. In total, in 2017, 11.9 thousand employees worked in cooperatives, among which the most numerous group were people with disabilities (10.1 thousand people) and the long-term unemployed (1.4 thousand people). This means that in the cooperative sector over 1/3 of employees are people at risk on the labour market (in social cooperatives it is nearly 50 % of people) (Spółdzielnie..2019) . Thus, the employment of these people in the cooperative sector is significantly higher than their employment in the economy and in non-governmental organizations. As for the economic condition of social enterprises, they are small entities of a local nature, with rather limited financial resources, carrying out tasks of low economic potential. Lack of resources results, among others due to the fact that support for enterprises is quite limited, which means that the expected growth requires additional support, among others through repayable instruments or other activities supporting social entrepreneurs. Of course, it should be remembered that social cooperatives, as well as other entities, especially those focused on employment and reintegration, often strive to balance their activities so as to ensure employment stability for employees, and not to maximize profits like other entrepreneurs. For this reason, these entities may encounter difficulties in accumulating capital necessary for investment and development, which means that it is in this area that the dedicated support should be provided.

#### **Two examples from polish ground**

Proof of the thesis on the need to create social cooperatives as important entity for the activation of

people with disabilities in the labour market was provided by the analysis of the activities of two subjects – social coop Józefowskie Centrum Rehabilitacji Zawodowej i Społecznej (Vocational and Social Rehabilitation Centre) and social coop Fundusz Aktywizacji Niepełnosprawnych (Disability Activation Fund), both operating in the urban-rural municipality Józefów, Lublin Province. The Józefów commune is inhabited by approximately 7000 people (16 % at pre-working age, 64 % at working age and 20 % at post-working age), but due to the negative balance of births and migrations this number is decreasing. Both of presented social coops are relatively young institutions – The first one was established on 14 October 2009, the second one has been in operation since 30 August 2010. Employees of both cooperatives have a disability certificate. Analysis of employment data in both entities indicates a stable increase in the number of employees.

*Table 2*

#### **The number of employees in social coops in 2009–2018**

Year	Number of persons employed	
	Social coop Vocational and Social Rehabilitation Centre of Józefów	Social coop Józefów Disability Activation Fund
2009	6	-
2010	15	12
2011	16	14
2012	16	18
2013	28	18
2014	37	22
2015	42	21
2016	46	22
2017	44	22
2018	44	22

*Source: own elaboration*

The Social Cooperative Józefowskie Centrum Rehabilitacji Zawodowej i Społecznej (Józefów Social and Vocational Rehabilitation Centre) used a grant from the District Labour Office and European funds to start its activity. Currently, it benefits from a grant from the State Fund for Rehabilitation of Persons with Disabilities, funds from the commune

budget, subsidies from the Labour Fund and European funds. The cooperative's activity concerns: performing services for the population in the field of cleaning, greenery care, housework, servicing the kindergarten department, running a rural common room, running school canteens in primary schools and kindergartens and performing conservation services for primary schools and kindergartens. The scope of activity is adjusted to the possibility of providing work by disabled persons employed by the entity. Financial support for the establishment of the second organization, the social coop Disability Activation Fund in Józefów was obtained from European funds and subsidies from the State Fund for Rehabilitation of the Disabled. The main areas of activity of the Disability Activation Fund are: running a milk bar; cleaning the City Public Library; running a temporary animal shelter; maintaining order in the city; running protected flats; running a website and the Public Information Bulletin of the City Hall in Józefów. The current functioning of the cooperative is mostly supported by the State Fund for the Rehabilitation of the Disabled, in addition, it also receives grants from the Labour Fund and funds from municipal local government units.

Cooperatives are not profit oriented and aim at current revenues to cover current liabilities. The character of the activity is targeted at activating disabled people, cooperation with the local environment, minimizing unemployment in the commune among the group of excluded people. The financial condition of both entities was described by the respondents as good.

Table 3

**Profits from business activity**

Year	Profit	
	Social coop Vocational and Social Rehabilitation Centre of Józefów	Social coop Józefów Disability Activation Fund
2012	8 926,00	17 893,06
2013	20 706,43	-32 291,19
2014	28 862,16	40 032,64
2015	8 183,89	-9 234,64
2016	24 385,57	4 118,67
2017	45 430,25	b. d.

Source: own elaboration

It should be recalled that the function of social enterprise is not only to produce specific goods and services, but above all to mobilise social capital, generate innovation and expand the market by including those who are hitherto excluded. A social enterprise is a specific part of a market economy, as it places its mission and goals outside the market. As already mentioned, the number of social cooperatives, despite the fact that they are a relatively new institution on the market, is growing rapidly, mainly as a result of European funds. Social cooperatives are mostly active in accommodation and catering services, health care and social assistance. A large part of them also operate in the field of administrative services and industrial processing. The largest part (45 %) of social cooperatives employs between 1 and 5 employees on the basis of an employment relationship, only 12 % of cooperatives employ more than 10 employees. More than one fourth of cooperatives employ employees only on the basis of civil law contracts. The cooperative often employs people on short-term contracts, which may be associated with seasonal work. Social cooperatives can benefit from many forms of support from public funds. National forms of support include the Labour Fund and State Fund for Rehabilitation of the Disabled (PFRON), support can also be obtained from local government institutions, foundations, private investors, they can also apply for reimbursement of social security contributions, or use the European Social Fund.

**Potential risks to the functioning of social enterprises – municipality and social entrepreneur perspective**

No matter how promising is the perspective of establishing social enterprises in order to alleviate social problems and enhance process of professional activation of persons with disabilities, it is necessary that decision-makers at the municipality level bear in mind everyday problems in the functioning of social cooperatives and take them into consideration prior to action.

In order to study risks in the activity of social enterprises modified questionnaire proposed in the Canadian social enterprise guide was used (Enterprising Non-Profits Program, 2005). Adopted measure consist 26 statements related to potential risks. The questionnaire was used to collect data in

the form of subjective opinion of respondents. Prior to this research, thorough examination of secondary data sources (foreign and domestic literature, published studies) was conducted. On this basis, the research tool was created making possible to collect the information about respondents' perception of potential risk factors. Target group in this research were representatives of top management (social entrepreneurs, managers managing social enterprises). Managers of social enterprises (social entrepreneurs) received the questionnaire directly, as variables used in the study require information to be provided by people who have a good knowledge of the functioning and development of the whole organisation. The respondents assessed a series of 26 statements, declaring the degree to which the statements accurately describe perilous situations. Responses range along a seven-point scale (1, "strongly disagree," to 7, "strongly agree"). The research was conducted in social enterprises operating in the formula of social cooperative based throughout Poland. The sample was selected randomly and comprised 160 social cooperatives (which equals 19 % of the total population), thus our sample formally meets the criteria of representativeness. Research took place in the period from 1 May 2015 to 30 June 2015.

The research indicates that ten out of twenty six surveyed risk factors can be considered as critical. The study helped to identify a hierarchy of risks in the activity of social enterprises. The analysis of the overall evaluation of the distinct areas (calculated as the mean of each respondent's rating of the items in the areas) demonstrated that, according to the respondents, the following risks are the most crucial for the organisation: (1) the lack of employee involvement, (2) damage to the brand and reputation, (3) a decrease in the income (revenue), (4) a failure to comply with, or a violation of, terms and conditions of the contract, (5) the responsibility we bear for the quality of goods/services, (6) a deterioration of market conditions, (7) intentional or unintentional actions to the detriment of customers, (8) a failure to comply with or a breach of the contract by the operators and organizations we work with (partners), (9) a theft of cash earned by the organization (10) the loss of funding (Wronka-Pośpiech, Frączkiewicz-Wronka & Laska 2017).

It is especially important due to the dynamic growth in the number of social cooperatives in the recent two years, being a result of supporting the social enterprise set-up via public money (European funds in particular). These funds have proven to be a great incentive for individuals that are socially or economically excluded. However in the next programming cycle 2020+, they should be spent more wisely, for example on additional coaching or mentoring after the start-up phase, in order to prevent social coops from closing down after the end of financing period.

In sum, social services underlie certain quality and standard of living. Logic, that stands behind social services, guaranteed by amended European Social Card and Universal Declaration of Human Rights, secure the society in respecting their rights to social justice, bringing social cohesion. Public authorities have a general responsibility for efficient operation of social services. Not only additional funds maintain a high level of quality but also provision of knowledge and expertise. Hence the need for special attention to potential risks, which may destructively affect continuous growth of social sector. In fact, their precise identification may assist in the preparation of such a management tool, which may increase the effectiveness of social enterprises in fulfilling their organisational objectives. Social services in all EU countries are provided by a wide range of organizations from the social sector. The largest proportions of them are those with objectives to help the society, increase the welfare, but gain no profit from operations (associations, cooperatives, foundations). Derived from various initiatives (public, charitable, philanthropic, religious, private, etc.) fulfil an important role. The more so, because the nature of socio-economy-behavioral characteristics of people forming them, hamper smooth functioning on the open market.

Summing up the results of presented research results, social coops in Poland most often face with lack of understanding and interest from local authorities, which could not only be a source of contracts (for example by using social clauses) but also could help them through counselling and support. Social cooperatives also have difficulties with gaining new orders and contracts on the commercial and public market – especially as the

latter are a subject of complicated public tendering procedures.

### Conclusions

In order to cope with the professional activation of people with disabilities the pattern of change should start from the immediate environment and living space of disabled. Increasing the number of employment opportunities (e.g. in the form of homework), create and ease the options for self-employment (e.g. social cooperatives). The substantial expansion of educational opportunity should also take place. The longer time-perspective, focuses on developing macro solutions designed to ensure that jobs are available for everyone who wants to work. These, indeed optimistic, long-term objectives are realistic and achievable, but with significant amount of resources. Nowadays in many European countries social enterprises turned out to be a cost-effective and socially acceptable solution aimed at supporting a worthy life of people with disabilities. Gathered data shows that if the gap between the participation rate and unemployment rate for people with disability could be reduced, the cumulative impact on economy would be significant. Improving employment opportunities for people with any kind of disability is a critical element for enhancing the quality of life for handicapped, their families and carers, which is why introduction of social enterprises is so important. The new programming period for the objectives financed from European Union aid funds 2020+ through increasing the resources clearly demonstrates the growing role of the social economy and social enterprises in the implementation of public policies aimed at reintegration of the socially marginalized groups, the disabled, on the labour market.

### References

1. *Badania Aktywności Ekonomicznej Ludności wyrównane sezonowo w latach 2010-2018* (2018). Warszawa: GUS.
2. Ciepielewska-Kowalik, A., Pieliński, B., Starnawska, M., Szymańska, A. (2015). *Looking for Social Enterprise Models in Poland: Institutional and Historical Context. ICSEM Working Papers, No. 2015-11, The International Comparative Social Enterprise Models (ICSEM) Project, ICSEM Working Papers, No. 2015-11. Liege.*
3. Dacin, P.A., Dacin, M.T., Matear, M., (2010). *Social entrepreneurship: why don't need a new theory and how we move forward from here. Academy of Management Perspectives, 24(3), 37-57.* <https://doi.org/10.5465/amp.24.3.37>
4. Dart, R. (2004). *Legitimacy of Social Enterprise. Nonprofit Management and Leadership, 14(4), 411-424.* <https://doi.org/10.1002/nml.43>
5. Defourny, J., & Nyssens M. (2013). *Social Coops: When Social Enterprises meet the Cooperative tradition. Journal of Entrepreneurial and Organizational Diversity, 2(2), 11-33.* <http://dx.doi.org/10.5947/jeod.2013.008>
6. Defourny, J., & Nyssens, M. (2010). *Conceptions of Social Enterprise and Social Entrepreneurship in Europe and the United States: Convergences and Divergences. Journal of Social Entrepreneurship, 1(1), 32-53.* <http://dx.doi.org/10.1080/19420670903442053>
7. European Commission. (2014). *A map of social enterprises and their eco-systems in Europe. Country Reports: Poland. Brussels: European Commission Directorate General for Employment, Social Affairs and Inclusion.*
8. *European Disability Strategy 2010–2020: A Renewed Commitment to a Barrier-Free Europe, COM(2010) 636 final, SEC(2010) 1324 final; Brussels, 15.11.2010 SEC(2010) 1323 final. Retrieved from: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2010:1324:FIN:en:PDF*
9. Haugh, H. (2006). *Social enterprise: Beyond economic outcomes and individual returns. In J. Mair, J. Robinson, K. Hockerts, (Eds.), Social entrepreneurship, 180-206. Basingstoke, UK: Palgrave Macmillan. Retrieved from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.458.6683&rep=rep1&type=pdf*
10. Hausner, J., Laurisz, N., & Mazur, S. (2007). *Przedsiębiorstwo społeczne – konceptualizacja. In J. Hausner (Ed.), Zarządzanie podmiotami ekonomii społecznej, 9–22. Kraków: Małopolska Szkoła Administracji Publicznej.* <https://doi:10.1108/03068290610660643>
11. *Krajowy Program Rozwoju Ekonomii Społecznej (2014), Uchwała nr 164 Rady Ministrów z dnia 12 sierpnia 2014 r. w sprawie przyjęcia programu pod nazwą "Krajowy Program Rozwoju Ekonomii Społecznej do 2023 roku. Ekonomia Solidarności Społecznej", Monitor Polski 2014 poz. 811, Retrieved from: http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WMP20140000811*
12. Leś, E. (2007). *Rola trzeciego sektora w polityce społecznej. In G. Firlit-Fesnack, M. Szyłko-Skoczny*

*Social enterprises as place of work for people with disabilities – evidence from Poland*

- (Eds.), *Polityka społeczna*, 361–372. Warszawa: PWN.
13. Mair, J., & Martí, I. (2009). *Social entrepreneurship in and around institutional voids. A case study from Bangladesh. Journal of Business Venturing*, 24(5), 419–435. <https://doi.org/10.1016/j.jbusvent.2008.04.006>
  14. Mason, C. (2012). *Up for grabs: A critical discourse analysis of social entrepreneurship discourse in the United Kingdom. Social Enterprise Journal*, 8(2), 123–140. <https://doi.org/10.1108/17508611211252846>
  15. Mokrzycka, A., (2012). *European Strategies Towards Rights of Disabled Persons – the meaning of The Disability action plan and European disability Strategy 2010-2020. Polityka Społeczna, special issue*, 61–70, Warszawa
  16. OECD (2003). *The Non-profit Sector in a Changing Economy, Paris. Retrieved from: https://www.oecd.org/cfe/leed/thenon-profitsectorinachangingeconomy.htm*
  - Salustowicz P. (2007). *Pojęcie, koncepcje i funkcje ekonomii społecznej. In J. Staręga-Piasek (Ed.) Ekonomia społeczna. Perspektywa rynku pracy i pomocy społecznej, Instytut Rozwoju Służb Społecznych*, 21–46. Warszawa
  18. *Spółdzielnie jako podmioty ekonomii społecznej w 2017 r. (2019). Warszawa: GUS.*
  19. Thompson, J., & Doherty, B. (2006). *The diverse world of social enterprise: A collection of social enterprise stories. International Journal of Social Economics*, 33(5/6), 399–410.
  20. Wronka-Pośpiech M., Frączkiewicz-Wronka A., Laska K. (2017). *Risk perception in the activity of social enterprises. In K. Raczkowski (Ed.), Risk Management in the Public Administration*, 189–225, London, New York: Palgrave Mcmillan. DOI 10.1007/978-3-319-30877-7
  21. Wronka-Pośpiech, M. (2018). *Rola liderów w sukcesie przedsiębiorstw społecznych. Katowice: Wydawnictwo UE Katowice.*
  22. Wronka-Pośpiech, M., & Frączkiewicz-Wronka, A. (2014). *The use of ICT for achieving the objectives of the business model – social enterprise perspective. Polish Journal of Management*, 2, 33–42.
  23. Zralek, M., & Borski, M., (2018). *Wspomaganie niezależnego życia i włączanie w społeczeństwo osób z niepełnosprawnościami w praktyce – kilka uwag na tle wdrażania Konwencji o prawach osób niepełnosprawnych. Themis Polska Nova*, 1(13), 81-106. Retrieved from: [https://czasopisma.marszalek.com.pl/images/pliki/tpn/Themis2018\\_13.pdf](https://czasopisma.marszalek.com.pl/images/pliki/tpn/Themis2018_13.pdf)

**UDC 164.01**

**JEL Classification Code C51, F 15, L11**

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## **THE DEPENDENCE OF CHINA BELT AND ROAD INITIATIVE EFFICIENCY TO THE LEVEL OF LOGISTICS INFRASTRUCTURE DEVELOPMENT**

**Annotation.** The article analyzes the peculiarities of the impact of logistics infrastructure on the effectiveness of project implementation. The role of LPI as an indicator of infrastructure development, investment opportunities and its peculiarities are highlighted. The regional peculiarity of logistics development with the help of LPI is outlined. Abilities for Belt and Road initiative where analyzed and emphasized the status of logistics practice in the Asian countries, which are involved into the project. Analyzed the peculiarities of formation of international and domestic LPI, their differences in creation, as well as factors considered for statistics bases. Key opportunities for the development of the BRI project and the prerequisites for its creation have been identified. Distinguished input and output indicators of the LPI in to the two types: areas for policy regulations (inputs) and service delivery performance outcomes. Formed the basic factors which need to be taken into consideration during the decision making for investments into the logistics infrastructure of BRI project. Infrastructural improvements that have already been implemented or are being finalized were highlighted. The key risk factors in project implementation are highlighted, with opportunities to consider and offset their impact on the final implementation of the project.

**Key words:** Logistics, Logistics Performance Index (LPI), Supply chains, China Belt and road initiative, New Silk Road.

### **Formulation of the problem**

Logistics is the basis for the efficient formation of flows, the way to create correct protocols in the management of materials, information, people and finance. Logistics creates a significant basis for sustainable development. The processes built on the logistic principles allows to increase the potential of the development of international activity, since they are immediately guided by international standards. Given the opportunities that businesses now receive through the Internet, namely:

– International cooperation is simplified, and access to international markets depends more on the ease of doing business in a particular country, and not from the locally competitive enterprise itself.

– With information on international standards, borderline rules, tax characteristics, a company can often adapt its activities to a specific customer-partner.

– the preconditions for the formation of databases are created, and their effective application in the course of consulting clients of the enterprise in an online mode with any localization (language, time of service, the ability to react locally, etc.);

– the possibilities for intermodal transportation are increased, since the document circulation is simplified between elements of logistic chain;

– Increasing trust between partners through effective communication;

The restrictions on its activities could be created usually locally. It is possible to formulate plans globally, and only due to the ability to find relevant information, its elaboration and rapid implementation at the enterprise provides high competitiveness and growth potential.

Logistics capabilities depend on readiness for change and adaptation to new environmental rules. Logistics in the framework of the project of the new silk road proposed by China is a critical factor in the quality of which the whole project will depend.

Logistic is the main element of optimization. Which enterprise will be ready for changes proposed by the market – those will survive. Supply chains are only as good as their weakest link. That's why the analysis of Logistics infrastructure is critical for evaluation of main bottlenecks and possibilities of Belt and Road initiative.

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

The problem of logistics infrastructure in general and the BRI project in particular is being investigated by many scientists. In particular, Hübner W. [1, 2] explores the ideas of the Silk Road in the new paradigm of the world economy. Bożyk P. [3, 4] analyzes international economic relations, including the impact of the development of the BRI project on them. Prof. Krykavsky [5] explores the logistical features of the development of national infrastructures, the impact of LPI on investment attractiveness.

#### **Problem statement of the article.**

Logistics is very complex issue. It includes beyond transportation – warehousing and storage, terminal operations, customs brokerage, information exchange between countries, corporations or independent entrepreneurs, procedures which helps to cover conditions of products sent. Totally, the costs of end products on average covers usually up to 30 % of costs for logistics operations. The Logistics Performance Index helps countries in general and enterprises individually get better competitive conditions on the global market by good

LPI marks, give “green light” for investors to work with those companies. More similar LPI are between countries or enterprises – better possibilities for integration and collaboration.

The Belt and Road Initiative brings together a large number of countries whose level of development is quite different. It should be noted that, as a rule, improvements made in countries with lower GDP per capita produce more overall economic benefits than in more developed countries. The best level of logistics contributes to the development of trade, quality of services and attracts investors. One of the key elements of logistics that critically affects the performance of business entities is the ability of customs: the speed of goods documentary paperwork, goods verification, the ability to work with a unpredicted increase in demand for checkpoints, available infrastructure, etc. The World Bank says that: “better logistics have a greater effect on trade promotion than tariff cuts: Logistics costs influence trade costs more than tariff barriers in most countries” [6].

In addition, logistical flow management capabilities and the transparency of their movement control allow companies to form more openly global supply chains. The number of options are opening for optimizing production processes, optimizing costs, developing products, their assembly, manufacturing of spare parts, selecting partners, choosing options for delivering goods, and finally - increasing the level of customer service at the final stage of service.

The Logistics Performance Index (LPI) is a complex indicator of countries infrastructure status based on logistics performance. The LPI is calculated on a survey of global freight forwarders and express carriers about pros and cons of local logistics where they operate. Generally, we can distinguish LPI from two perspectives - domestic and international. The main difference between them are:

1) Domestic LPI is a result of local logistics experts survey. It contains information regarding logistics infrastructure, availability of logistics services, level of legal control, possibilities of multimodal delivery, the costs and safety of transportation.

2) International LPI gives information from trading partners which are operating based in other countries. This kind of information gives real overview of the status of countries LPI. International LPI methodology contains procedure which requires analysis of six main elements of logistics in the country. That main elements are following [7]:

1. Efficiency of clearance processes (e.g. customs, ports, railway and airports);
2. Logistics-related infrastructure;
3. Ease of arranging competitively priced international shipments (“International shipments”);

4. Competence and quality of logistics services;
5. Ability to track and trace consignments;
6. Timeliness of delivery.

In general, for evaluation of LPI take into account answers from logistics professionals to the questions covers 6 mentioned areas of work. Respondent answers questions only regarding countries where they had experience of work (experts provide rates for up to 8 countries), but it is forbidden to rate own country where operates expert. The International LPI’s core components are depicted on the figure 1.

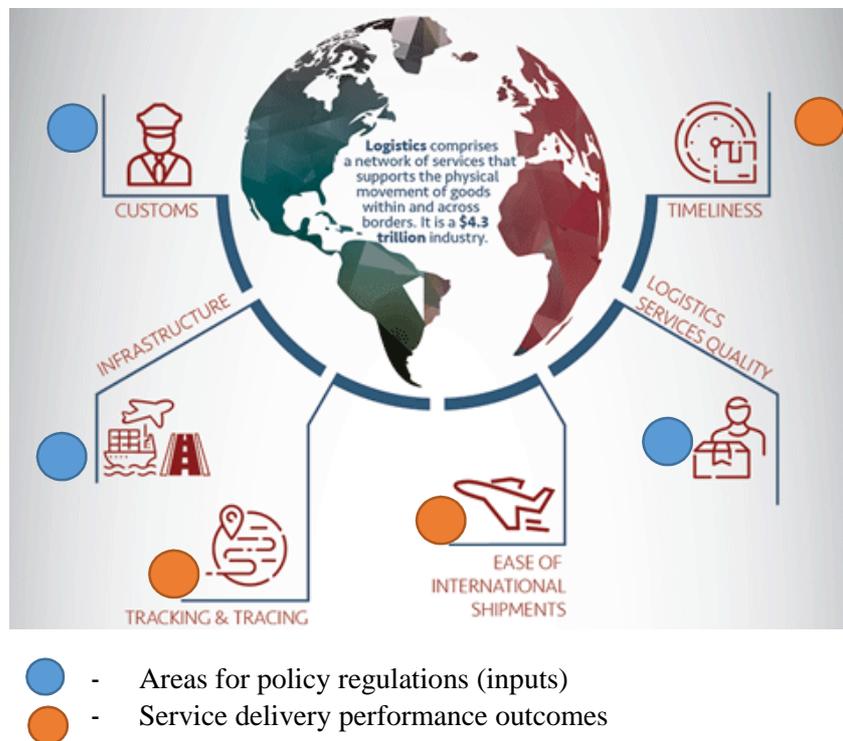


Fig. 1. Input and output indicators of the LPI

The eight countries are chosen based on the most important export and import markets of the country where the respondent is located [8]. The analysis of LPI countries indicators shows that customs, infrastructure and logistics services quality belong to the area of policy regulations, and indicates what kind of rules for operation activities in the country exist. Those regulations are almost uncontrolled by single operator and could be improved by a complex of actions of countries government. Other three indicators: timeliness, tracking and tracing and ease of international shipments related to the supply chain performance,

and are more manageable by companies. It shows the countries culture of logistics and gives opportunities for prediction of effectiveness for future improvements of logistics services in the country.

In the case when some LPI indicators are over-interpreted in the analyzed period of time, the countries score should be considered in the bigger time scale (for a couple of years, which will shows overall countries logistics performance) [7].

However, it is also necessary to take into account that the level of logistics infrastructure is usually different within one country. And with

certain regions that have significant business activity, the country's overall logistics performance index may increase. This factor also poses the risks of correctly predicting the implementation of the new silk route. For example, China has an extremely well-developed infrastructure of southern coastal areas as well as infrastructure in large cities. In contrast, the northwestern part of China lags far behind in the development of logistics infrastructure, availability of skilled staff etc. In such a situation, when planning the project implementation, guided by the logistic efficiency index, it is necessary to take into account the possibilities of specific regions, where it is planned to introduce new objects or reconstruct old ones.

#### **Outline of the main material of the article.**

Based on the description of policy research working paper by Julia Bird "Reshaping Economic Geography in Central Asia" (2019) the Belt and Road Initiative (BRI) is a project that seeks to foster improved connectivity between China and the rest of Asia, the Middle East and on to Africa and Europe. The initiative, launched in 2013, encompasses more than 65 countries, representing over 62 percent of the world's population; the potential scope for economic transformation is large. However, the benefits of building new infrastructure for every country affected by the initiative are highly uncertain, and the spatial incidence of effects may vary widely within each country. Building roads and railway links and reducing times crossing the borders can facilitate trade, but the growth of industry in some regions may be at more expensive level than in others regions [9, p. 2].

The implementation of the project by China aims to increase trade with Europe and within Asia, as well as to increase geopolitical influence in those areas where China is investing. It should also be noted that the implementation of infrastructure is very often the responsibility of experts from China. This approach is a type of protectionism, since it implies full control of the Chinese side on the project implementation, provides the ability to appoint management from its own experts, employs a significant number of people, and generates additional opportunities to cooperate on better terms with local businesses. The BRI project is large-scale, long-lasting and a bridgehead for the development of more stable and flexible logistics chains for China.

Analyzing the scope of works that needed for successful launch of initiative it could be summarized that there are big number of risks which could be controlled by initiators but for that need should be the same willingness from each of the partner. The biggest problem of any system is its heterogeneity. The reason for this is, first of all, difficulties with planning, predicting needs in the middle of the ecosystem, correct risk assessment, planning the volume of necessary resources, etc. Analyzing the planned silk road (not taking into account its different routes) we can speak of an initiative, as the formation of a highly complex logistic chain, which combines different levels of infrastructure development, approaches to the organization of work, weather conditions, and the mentality of the country, which is appropriate should be identified as elements of the logistics chain.

Logistics infrastructure within BRI is not perfect and that is why to predict risks and gain win-win situation for all partners of the BRI its needed to provide detailed analysis of countries LPI within main planned routs.

Countries participating in the BRI project have significant differences in the level of logistics infrastructure, in particular in the areas related to trade, goods movement, transport, and material security. In general, if we analyze Fig. 2. the quality of trade and transport-related infrastructure can be argued that the differentiation is extremely high. For example, the participants of the project are Singapore, whose LPI index is higher than the European countries, and given the small geographical length of the country, and its "homogeneity" in relation to the level of development - this indicator objectively points to the whole picture of this partner in the project. In the Chinese situation, as noted previously, the index is 3.75 out of 5, which is one of the highest among the project partners, but geographically, the quality of trade and logistics infrastructure is not sufficient in the northeast to fully meet the project's BRI needs.

Accordingly, the volume of investments will be significantly different compared to other regions of the country. In general, there is a significant correlation between the LPI index and the level of logistics development in the countries. For example, indicators from Afghanistan, Bhutan and Iraq, Ukraine which are approaching the 1.81, 1.91, 2.03, 2.22 accordingly (one of the lowest level among BRI participants in the project), indicate a significant gap in logistics performance compared to

LPI leaders. At the same time, the analysis of economic development in general and GDP per capita in particular points to paltry differences in the welfare of the population within the country. To sum up, in the BRI project involved countries that are world leaders in logistics efficiency and countries with some of the lowest LPI rates. This fact confirms that one of the most risky factors in the way of BRI project implementation is a significant logistical differentiation, which also causes significant risks in logistic processes locally.

It should also be noted that apart from the LPI factor, which indicates the experience of counterparties with the country's logistics infrastructure, it is important to understand the status of key infrastructure entities that will be involved as logistics hubs and key facilities in the BRI project. Table 1 show the results of the survey on the quality of ports, roads, railways and airports of the BRI members [7]: 100 – very low quality, 0 – good quality. In the table indicated part of the countries, which will participate in the BRI project.



Fig. 2. Quality of trade- and transport-related infrastructure of BRI economies; Source: International LPI 201812

Table 1

**Quality of key logistics infrastructure elements of BRI project countries**

Country	Infrastructure			
	Port	Airport	Railway	Road
Indonesia	83	67	80	83
Russian Federation	50	50	50	75
Vietnam	40	30	n/a	60
India	23	18	26	48
Uzbekistan	20	20	40	20
Saudi Arabia	20	11	63	10
Turkey	15	13	50	15
Greece	14	14	77	36
China	0	0	9	18
Singapore	0	0	17	0
Poland	0	33	50	0

Source: improved by author based on [7]



and cheapest modes of transport) is an important argument for ensuring regional development. In addition, it is advisable to develop the infrastructure of roads, highways for fast transportation to inaccessible (for other modes of transport) places. Port development is also an

important element of diversification of supply routes, cheaper and also keeping the pricing policy at a very flexible level when there is variability in cargo delivery options. In the figure 4 depicted areas where was made transport improvements under the BRI project.

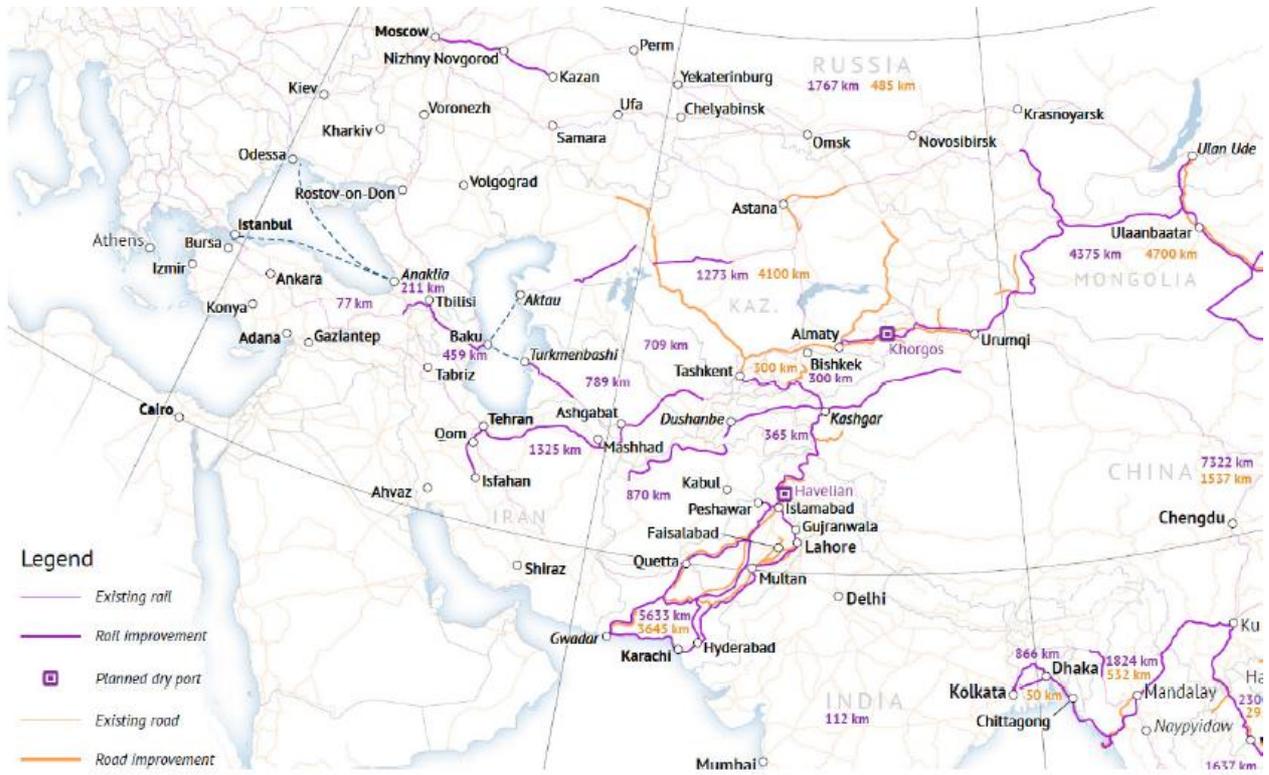


Fig. 4. Map of Transport Improvements under the BRI.

Source: [9]

The scale of infrastructure change, as can be seen from Figure 4, is very large. Improvements are of a local nature at the moment, in which it is impossible to talk about the possibilities of networking and securing the first deliveries to Europe. However, testing the capabilities of routes, their bottlenecks, and identifying risks is what experts are currently working on.

In general, there are a number of risks that could potentially be identified or encountered by partners in the development of the necessary infrastructure [11, 12]:

- 1) political instability in the region;
- 2) customs procedures, instructions, restrictions are very important in the BRI project area;

3) in some countries, there are international sanctions, restrictions on investment, restrictions on the activities of international companies, which in turn also reduces the possibility of attracting business activities in these regions;

4) weak development of transport infrastructure;

5) lack of professional staff;

6) difficulties in attracting foreign specialists, in particular because of low pay and language barriers;

7) the level of LPI in the BRI countries of the project is very different, which creates different levels of infrastructure tasks, which in turn increases the cost of project implementation possibilities to plan and execute project strategy;

8) within the BRI project, countries with the highest level of LPI and at the same time one of the lowest levels are involved. This fact points to the problem of heterogeneity of logistical tasks, different level of influence of infrastructure improvements on the economy of regions;

9) the level of infrastructure development within one country is very uneven. Yes, China's northeast and south have good LPIs, but the northwest and central China have significant infrastructure problems. This fact raises the problem of development of the land route of the project;

10) corruption in some countries of the project is very high. This creates infrastructure risks, security of supply chains and corresponding investment opportunities;

11) the qualification and quality of railway service providers is lower than the quality and qualification of road and maritime service providers, despite the greater development of railway infrastructure;

12) the scale of the project raises a number of environmental and social problems. Thus, the development of infrastructural facilities provokes an increase in deforestation, the creation of dams or the laying of roads in green areas. In the context of social problems, the growth of local business activity increases migration flows. Opportunities for mobility are increasing on a large scale, which is also a difficult controlled and not always positive process for the economies of the less industrialized regions [13];

13) low-GDP countries' commitment to developing their own infrastructure under the BRI project raises the problem of increasing debt obligations to creditors, investment banks etc [14, 15].

### **Conclusions**

Notwithstanding the risks listed in the implementation of the BRI project, China's initiative on a new silk route is a positive project. Of course, the biggest goal of the project initiator - China is to increase its economic growth and spread Chinese products in Europe and around the world, reduce the level of influence of the US and its neighbors on maritime supply chains, as well

as increase the areas of influence in countries where infrastructural transformations occur. , because very often it is the Chinese specialists who manage the implementation of infrastructure change. However, on the other hand, China's commitments are also the highest. The risks involved are significant and, if the project is implemented, the Asian countries will be able to stabilize the political situation, establish greater cooperation and overcome the low standard of living of the majority of the region's population.

### **References**

1. Hübner, W., Rybicka, M., Wieszczycka, W. (2016). *Liderzy Azji i tradycje Szlaku Jedwabnego w nowej architekturze świata*, (w:) Hübner W. (red.), *Azja XXI wieku i renesans Szlaku Jedwabnego. Tradycja kształtująca przyszłość*, Wydawnictwo Akademii Finansów i Biznesu Vistula, Warszawa;
2. Hübner, W., Rybicka, M., Wieszczycka, W. (2017a). *Nowy Szlak Jedwabny – różne perspektywy narodowe i różne cele do pogodzenia*, (w:) *Polityka gospodarcza Polski w integrującej się Europie 2016-2018*, Instytut Badań Rynku, Konsumpcji i Koniunktur, Warszawa.
3. Bożyk, P. (2008), *Międzynarodowe stosunki ekonomiczne*, Polskie Wydawnictwo Ekonomiczne, Warszawa;
4. Bożyk, P., Misala, J., Puławski, M. (2002). *Międzynarodowe stosunki ekonomiczne*, PWE, Warszawa;
5. Krykavskiy, Y. V. & Yakymyshyn, L. Ya. (2018). *Komplementarnist stratehii marketynhu ta lohistyky v lantsiuhu postavok tovariv povsiakdennoho popytu [Complexity of marketing and logistics strategies in the supply chain of fast moving consumer goods]* *Marketynh i tsyfrovi tekhnologii - Marketing and Digital Technologies*, 2(1), 21-32.
6. *Connectivity, Logistics & Trade Facilitation*. World Bank, 2019. Retrieved from: <https://www.worldbank.org/en/topic/trade-facilitation-and-logistics>;
7. *Christina Wiederer Logistics Infrastructure Along the Belt and Road Initiative Economies*. *MTI Practice Notes*, World Bank, 2018. Retrieved from: <http://documents.worldbank.org/curated/en/259561545148936579/pdf/133058-MTI-Practice-Note-5-Final.pdf>;
8. *Connecting to Compete 2014 Trade Logistics in the Global Economy*. Retrieved from: <https://wb->

- lpi-media.s3.amazonaws.com/LPI %20 Methodology.pdf*;
9. Bird Julia, *The Belt and Road Initiative: Reshaping Economic Geography in Central Asia? Social, Urban, Rural and Resilience Global Practice*, World Bank, April 2019. Retrieved from: <http://documents.worldbank.org/curated/en/836301554729486900/pdf/The-Belt-and-Road-Initiative-Reshaping-Economic-Geography-in-Central-Asia.pdf>;
  10. *China Belt and Road Initiative: Measuring the impact of improving transport connectivity on international trade in the region – a proof-of-concept study*. RAND Corporation 2018, Retrieved from: [https://www.rand.org/content/dam/rand/pubs/research\\_reports/RR2600/RR2625/RAND\\_RR2625.pdf](https://www.rand.org/content/dam/rand/pubs/research_reports/RR2600/RR2625/RAND_RR2625.pdf);
  - Aggregated LPI 2012-2018. Retrieved from: <https://lpi.worldbank.org/international/aggregated-ranking>;
  12. Elizabeth Losos, *Is a Green Belt and Road feasible? How to mitigate the environmental risk of BRI Infrastructure Project*. Retrieved from: <https://blogs.worldbank.org/trade/green-belt-and-road-feasible-how-mitigate-environmental-risk-bri-infrastructure-project>;
  13. Indermit Gill, *Winners and losers along China's Belt and Road*. Retrieved from: <https://www.brookings.edu/blog/future-development/2019/06/21/winners-and-losers-along-chinas-belt-and-road>;
  14. Michele Ruta, *How much will the Belt and Road Initiative reduce trade costs?* Retrieved from: <https://blogs.worldbank.org/trade/how-much-will-belt-and-road-initiative-reduce-trade-costs>;
  15. *Belt and Road Economics, Opportunities and risks of transport corridors*. International Bank for Reconstruction and Development, The World Bank, 2019, Retrieved from: <https://openknowledge.worldbank.org/bitstream/handle/10986/31878/9781464813924.pdf>.

UDC 336.76

Jel Classification Code G10

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## IPO COSTS ON THE POLISH CAPITAL MARKET

**Annotation.** The effectiveness of IPO processes is a frequent research subject for finance scholars. This article examines the cost of such processes on the Warsaw Stock Exchange in 2008–2017 based on a sample of 136 companies. Research results indicate that IPO costs for transactions worth up to PLN 50m are significantly higher than for the remaining transactions and decline as the value of the IPO increases. At the same time, poor state of the WSE related to the absence of new capital and the loss of trust among investors due to events related to failure to comply with corporate governance mean that it may be difficult to see the return of a larger number of IPOs and the amount of equity raised in the upcoming years.

**Key words:** IPO, cost of IPO, stock exchange

### Introduction

A company's decision to list on the public markets is one of the most critical in its history. It requires a precise analysis of all the benefits, but also the related costs and obligations. The main motive behind the IPO process is the desire to raise equity for the company as a result of a stock issue. In many instances it is also an opportunity for a divestment by existing shareholders. Both opportunities are associated with the necessity to incur costs of the entire stock listing process.

The purpose of this article is to assess changes at the level of direct Initial Public Offering costs on the main market of the Warsaw Stock Exchange. Moreover, the article poses the following research hypothesis: IPO costs on the Warsaw Stock Exchange are the highest for transactions worth up to PLN 50m and differ significantly compared to larger-sized transactions. It will be possible to reach the goal and verify the hypothesis made by analyzing the direct Warsaw Stock Exchange IPO

costs of 136 companies which conducted this process in the 2008–2017 timeframe.

### Theoretical aspects of IPO costs

The key moment in a company's life cycle is to go public: to launch an Initial Public Offering (IPO). While the benefits are clear, the IPO decision itself is always costly, financially and organisationally (Helbing et al., 2019). The motives behind the decision to list are the subject of numerous scholarly research studies (Pagano et al., 1998, Szyszka 2014). For the issuer, aside from benefits arising from being a public company, conducting an Initial Public Offering through a public subscription is tied to the necessity of pay for certain expenses. These are partially obligatory and partially depend on the decisions of company authorities and in that sense are optional. The first cost category includes above all court fees, tax and notary fees paid by the company in connection with the process of registering the increase of company's initial capital. Fees collected by the KNF, KDPW and the WSE for registration and identification activities related to shares subject to the public subscription are also obligatory. The company also has to pay the costs of mandating a brokerage house as the entity which offers the shares during the IPO process, as well as an auditor to examine its financial statements. It is not mandatory in a legal sense but worth considering hiring a legal advisor for the IPO process, a financial advisor, a PR agency and occasionally also other types of advisors, which naturally leads to the increase of the costs of a stock issue (Puławski, 2013).

Source literature includes cost classification proposed by Ritter, who distinguishes three cost categories: a) costs of underestimating the issuing price, b) the gross underwriter spread, c) other expenses, i.e. the expenses of legal advisory services, audit and those related to the printing of the issuing prospectus [Ritter 1987]. Non-financial costs such as increased oversight, or scrutiny, for instance, can act as a significant deterrent to the filing of IPOs (Bessler et al., 2017).

For the purpose of empirical studies, IPO costs are classified as direct and indirect. According to the Polish law, direct costs of the public offering have to be made public in a current report that contains the information about the number of shares in the offering, issuing price, amount raised, the figure and type of offering costs which include a) the cost of preparing and conducting the offering, b) underwriter fees, c) cost of the issuing prospectus, including advisory costs, d) cost of promoting the offering. Additionally, the issuer should publish the information on how these costs are accounted for in their books and how they are shown in the financial statement.

In turn, indirect costs are the opportunity costs of the vendor or the issuer of stock in a situation when the stock price on the first day of trading is higher than the issuing price, or the sale price. Underestimating price of the shares offered is common on the financial markets and serves as something of an incentive to purchase shares in the public offering. Indirect costs also include the costs of time spent by managers to prepare the company for the stock market debut, which are difficult to estimate. Examples include time spent to prepare the issuing prospectus, investor meetings or the participation in promotional activities. In the context of IPO costs, it is worth to refer to studies (Signori, 2018), which indicate that in the 2008-2018 timeframe, 15 % of all companies conducting an IPO in Europe were zero-revenue companies. That is certainly an interesting segment of companies for an analysis of the cost of capital they raise in an IPO since their valuation is not based on traditional metrics.

Source literature, particularly studies by Polish scholars, devotes a significant amount of space to the impact of the crisis on the number of IPOs held, as well as their expenses. For instance, [Wawryszak-Misztal 2015] has shown in her study that the financial crisis has a negative impact on the amount raised from the share issues and on the relations between the expected

and actual amounts raised. Moreover, the number and value of IPOs on the financial markets is shown to be significantly smaller in periods of crisis. [Henry, Gregoriou 2014].

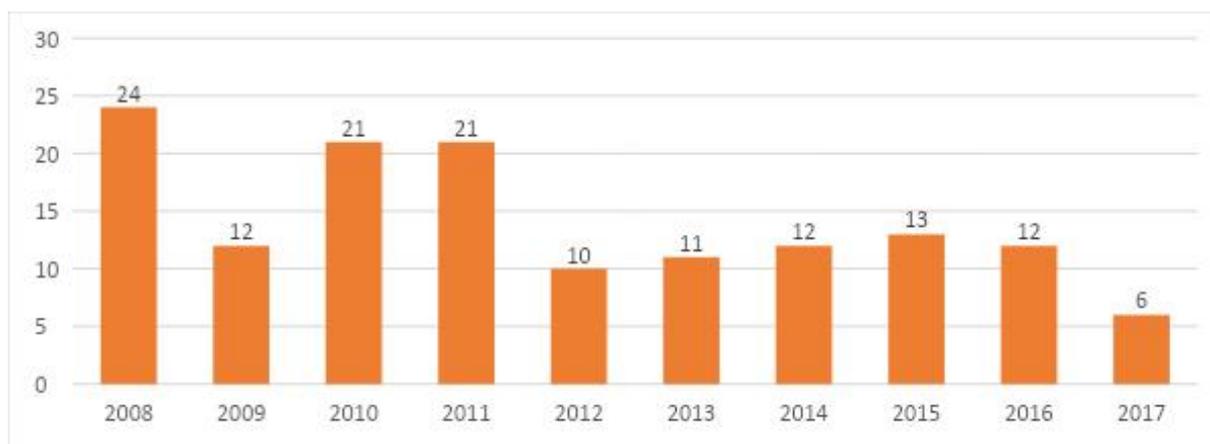
### **State of the Warsaw Stock Exchange**

The last few years have been difficult for the capital market in Poland. First, in 2013 was the de facto dismantling of the Open Pension Funds (OFE), reducing considerably the amount of available capital. The OFE funds were a stable supply-side factor providing the equity, particularly equity needed for IPOs. It is enough to note that thanks to access to capital, the Warsaw bourse attracted the attention of companies from the Central European region, with companies from Ukraine accounting for the majority. A special WIG-Ukraine index was created to promote investments into companies from that region. Unfortunately, discontinuation of OFE capital has halted the development of the domestic market. The second big blow for the capital market in Poland were the various events related to the failure to observe corporate governance rules. The biggest of its kind was the default of debt collection firm GetBack, whose consequences for the market have already started to generate coverage in academic works in Poland [Rogowski, Gemra, 2018]. Confidence in the capital market suffered as a result of the above events, impacting the level of investor interest in the Warsaw Stock Exchange. Data which reflects the state of each bourse are the statistics of the number of IPOs and the value of capital raised by companies. Figure 1 shows the data with the number of IPOs.

Considering the above data from figure 1, note several aspects. First, the number of IPOs is visibly lower since the appearance of the financial crisis in 2009. It is also worth noting that after 2009, the number of IPOs once again returned to pre-crisis level, evidence of WSE's good condition at the time. Meanwhile after 2012, the number of IPOs became visibly lower. Of course there were outliers and the best statistics were observed in 2017, but the number of IPOs declined compared to the previous years. The situation was the worst in 2017. The chart ends that year, but considering the events of 2018 and 2019, no visible improvement is seen.

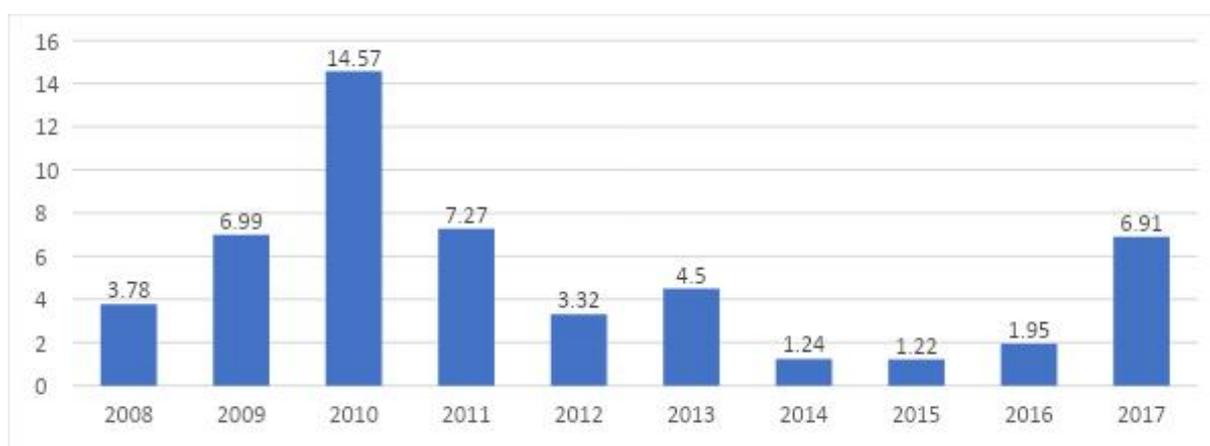
Besides the number of IPOs, one should look at the value of all the transactions, shown on Fig. 2.

### *IPO costs on the Polish capital market*



*Fig. 1. Number of IPOs on the Warsaw Stock Exchange in 2008–2017*

*Source: proprietary research.*



*Fig. 2. Value of IPOs on the WSE in 2008–2017*

*Source: proprietary research.*

The crisis period starting in 2009 on the Polish market was not worst time to conduct an IPO. However, if we analyze the data in greater detail it is all due to a single transaction worth nearly PLN 6bn, i.e. the privatization of PGE energy group. The year 2010 was a record one, but that was also due to privatization transactions, this time those of PZU, Tauron and the listing of the WSE itself. The year 2011 marked the privatization of JSW mining group, i.e. a transaction worth PLN 5.37bn. Finally, 2012 WSE saw the debut of Alior Bank. The transaction, worth over PLN 2bn, was one of the first from the private sector to have such a strong impact on IPO volumes. As late as 2013 Energa and PKP Cargo debuted on the WSE with a combined volume of PLN 3.83bn as the last privatization projects. After 2013, the IPO volume

collapsed. Only in 2017 the listing of telco Play, Dino grocery chain and GetBack have visibly improved the image of the IPO market.

To summarize the assessment of Initial Public Offerings on the WSE it should be noted that the situation over the past few years is deteriorating. The only exception was the year 2017, but after that period there are no signs indicating that the situation is even going to stabilize. Things are getting worse. On the one hand, this is due to the lack of access to capital and on the other to the end of privatization process of state-owned companies from Poland. Previously, there was the Civic Shareholding program dedicated to individual investors, which stimulated this investor category and encouraged it to invest on the WSE. However, in 2013 the program was shut down.

**Costs by company size - research results**

Data for 2008–2017 period was analyzed in order to examine IPO costs on the Polish capital markets. A total of 142 IPOs took place over this time period. Companies which list on the stock exchange in Poland are required to publish a current report summarizing the offering, including its costs. The costs are split into the following categories: cost of preparing and conducting the offering, underwriter fees, cost of issuing prospectus and the offering’s promotional costs. Unfortunately, not all companies publish such data and some, even when they do publish them, will not break the data down into individual components. Consequently, the study covered 136 companies which did publish the above data.

Referring once again to cost components it is worth noting that the first category listed above is

the brokerage house fee. This fee is usually variable, depending on the amount of equity raised. Underwriters are very rare in Poland, hence usually there are no associated costs. On the other hand costs related to the issuing prospectus, a mandatory document essential for the execution of the entire process, include the fees of a legal advisor. The last category is advertising for the offering and usually that budget is allocated to a PR advisor who coordinates the entire advertising campaign. Aside from brokerage fees, which are usually paid on a success fee basis, the remaining costs are fixed and obligatory. Thus, if the amount of capital raised is much smaller than expected, fixed costs become more material.

Fig. 3 shows the average cost of raising capital for companies on the Polish market.

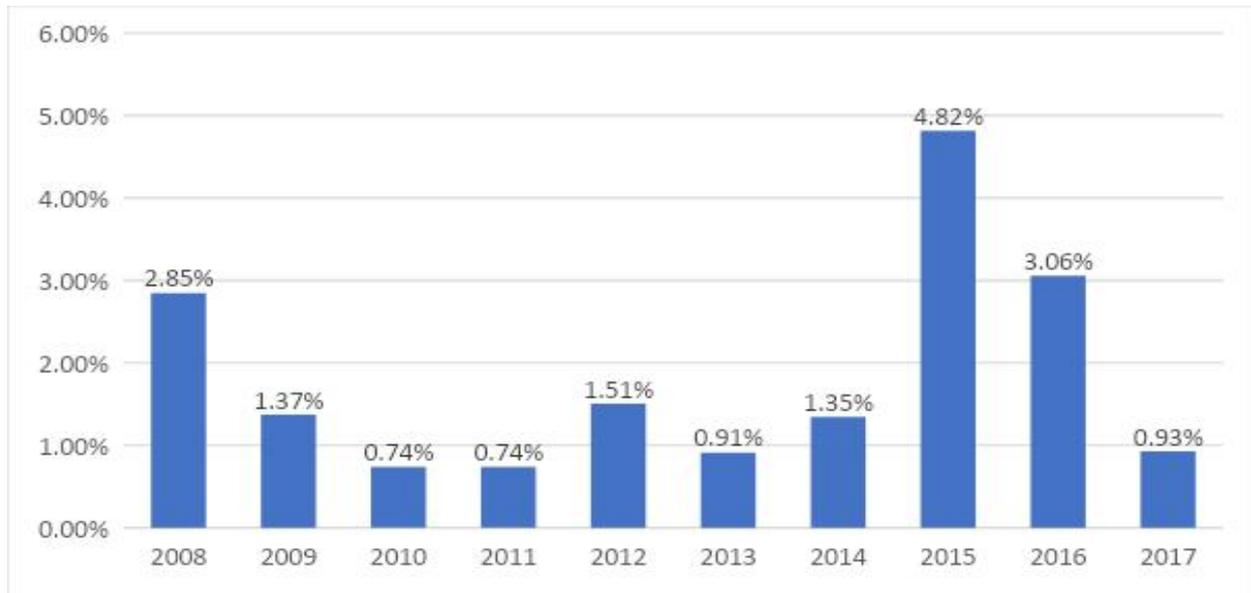


Fig. 3. Average cost of raising capital through stock issuance in 2008–2017

Source: proprietary research.

When analyzing the chart note that the smaller the transaction the greater the costs. If we look at each year holistically, it is variable costs related to the brokerage fee that differ in particular depending on transaction size. With bigger transactions, nominal brokerage fee becomes significant enough that in percentage points that value is lower than in the case of smaller transactions. Moreover, when analyzing expenses, particularly in those years when large transactions took place, it must be noted that

these are relatively low values in relation to the transactions.

Let us look then at companies which held the highest- and lowest-cost IPOs. The data is shown in table 1.

The companies in question, those which paid the most for the capital raised, have simply made unsuccessful deals. An earlier part of this article mentioned that some IPO-related costs are fixed and obligatory, thus with a low value of equity raised we saw extremely expensive

### *IPO costs on the polish capital market*

processes. Companies nonetheless decided to list on the WSE. On the opposite pole are large companies which raised equity from share issues in a very effective manner. The cheapest capital raise was made by a private company which manages Dino supermarkets.

In connection with the previous data, companies holding IPOs in Poland were divided into

three categories, depending on transaction values. The first category are companies which executed transactions worth up to PLN 50m. There were 66 such companies. The second category are those with transactions in the PLN 50m – 250m range, with 46 companies. The last group are companies whose offerings exceeded PLN 250m – there were 24 such companies. The data is shown in table 2.

*Table 1*

#### **Companies with the highest and lowest IPO costs**

<b>Company name</b>	<b>IPO value</b>	<b>Total IPO costs</b>	<b>Cost of capital</b>
NANOGROUP	4 180 000	1 179 122	28,21 %
Towarzystwo Finansowe SKOK	4 165 159	1 460 000	35,05 %
GPM Vindexus	1 751 628	858 210	48,99 %
Anti	731 304	518 420	70,89 %
IZNS Iława	135 151	444 519	329,00 %
DINO POLSKA	1 654 978 000	3 720 000	0,22 %
JSW	5 371 482 656	13 774 727	0,26 %
PZU	8 068 542 813	25 611 049	0,32 %
ATM Systemy Informatyczne	96 309 862	347 293	0,36 %
SOLAR Company	156 000 000	595 427	0,38 %

*Source: proprietary research.*

*Table 2*

#### **Cost of IPO by value**

	<b>Total amount raised</b>	<b>Number of companies</b>	<b>IPO cost</b>
<50 PLN m	1 355 766 159	66	6,89 %
From 50 to 250 m	4 969 312 040	46	2,59 %
Over 250	44 582 635 286	24	0,91 %

*Source: proprietary research.*

Analysis shows that IPO cost for transactions worth up to PLN 50m is over 2.5x higher than for transactions worth PLN 50m to PLN 250m. The difference between small transactions and those over PLN 250m is even larger. It means that it is possible to validate positively the hypothesis made in the text which says that IPO costs on the Warsaw Stock Exchange are the highest for transactions worth up to PLN 50m and differ significantly compared to higher value transactions. The differences are material and significant.

#### **Conclusion**

Analysis presented in the article indicates that the recent years have been difficult for the WSE, as shown by the declining number of IPOs and deal volumes. Furthermore, the hypothesis made in the article has been validated. IPO costs for transactions of up to PLN 50m are significantly higher than for larger transactions. This implies several conclusions. First, for smaller companies, the cost of raising capital and conducting an IPO may be relatively high, moreover it goes up as the amount

of capital raised declines. Due to increasingly lower demand on the WSE, quite often not all shares offered as part of the IPO are sold. Since some of the costs are fixed, they account for an increasingly large part of the entire process. Secondly, because of lower investor propensity to participate in IPOs, it is difficult to place large transactions on the Polish market. Over the past five years only in 2017 transactions worth close to PLN 1bn were made, thanks to Dino, Play and GetBack. One can then expect smaller transactions, where the cost is high. Perhaps a hypothesis should be made that IPO costs for small companies in Poland are high and that scares away these companies from the stock exchange while worsening the situation on the capital market. One potential solution would be to develop the alternative NewConnect market and encourage some of the companies which are considering listing on WSE's main board to list there.

#### References

1. Signori, A., (2018). *Zero-revenue IPOs*. *International Review of Financial Analysis*, 57, 106–121.
2. Bessler, W., Schneck, C. & Zimmermann, J., (2017). *Growth Strategies of Initial Public Offerings in Europe*.
3. Helbing, P., Lucey, B. & Vigne, S., (2019). *The determinants of IPO withdrawal – Evidence from Europe*. *Journal of Corporate Finance*, 56, 415–436.
4. Puławski, M. (2013). *Koszt pierwszej oferty publicznej na rynku akcji w Polsce w latach 2008-2012*. *Zeszyty Naukowe Uniwersytetu Szczecińskiego*, 63, 418.
5. Pagano, M., Panetta, F. & Zingales, L. (1998). *Why do companies go public? An empirical analysis*. *The Journal of Finance*, 53, 1, 27–64.
6. Szyszka, A. (2014). *Factors influencing IPO decision. Do corporate managers use market and corporate timing? A survey*, *International Journal of Management and Economics*, 42, 1, 30–39.
7. Ritter, J.R. (1987). *The costs of going public*, *Journal of Financial Economics*, 19, 2, 269–281.
8. Wawryszuk-Misztal, A. (2015). *Expected and Actual Proceeds from Share Issue on the Warsaw Stock Exchange, Managing Intellectual Capital and Innovation for Sustainable and Inclusive Society. Proceedings of the MakeLearn and TIIM Proceedings of the MakeLearn and TIIM Joint International Conference, 27–29 May 2015, Bari, Italy, To Know Press, International Academic Publisher, Bangkok-Celje-Lublin, 1429–1436*.
9. Henry, S. & Gregoriou, G. (2014). *IPO firm characteristics pre- and post-financial crisis*. *Academy of Accounting and Financial Studies Journal*. 18, 2, 67–76.
10. Rogowski, W. & Gemra, K. (2018). *Wpływ przypadku firmy GetBack na różne obszary polskiego rynku finansowego*. *Kwartalnik Nauk o Przedsiębiorstwie*, 4, 89–103.

## HISTORICAL ASPECTS OF THE DEVELOPMENT OF ACCOUNTING SYSTEM IN THE CONTEXT OF HOSTILITIES

**Abstract.** The urgency of carrying out scientific researches on the influence of military actions on the accounting system is substantiated in the article. The main directions of the development of accounting system in the context of the military operations implementation (accounting system for the subjects of the military operations, accounting system for enterprises that provides a support in the course of military conflicts, accounting system for the property of enterprises, whose activities were directly influenced by military actions, is considered as a political tool for military conflicts). It is substantiated that the occurrence of hostilities leads to the transformation of the accounting system – its simplification, both in the subjects of their implementation, and in enterprises that provide support during military conflicts. Control function is the most important function of accounting system during the war, the implementation of which allows to mobilize the resources necessary to effectively counteract the aggressor country. It has been established that in the condition of hybrid war, domestic enterprises adjust the value of assets over which control has been lost. A promising area of the research is the consideration of accounting system as a political tool in military conflicts.

**Key words:** accounting system, history of accounting system, hostilities in Ukraine, hybrid war, accounting system as a socio-economic institute.

### Introduction.

The development of accounting system as a separate functional science and as a practical activity directly depends on the actions and events occurring in its environment. On the one hand, environmental factors are considered as the objects of accounting system (for example, changes in the exchange rate or value of the securities in the capital

market), and, on the other hand, causes the need for the transformation of theoretical and methodological principles of the accounting system. One of these factors is the implementation of hostilities that affects most of the processes occurring in society, in particular, this causes a violation of traditional approaches to business activities, which significantly affects both the objects of accounting system and the order of accounting system organization at the enterprises.

### Literature review.

Problems of the accounting system development in the context of military operations are devoted to the work of A. Belousov and A. Zelenyna (Belousov and Zelenyna, 2010), S. Vedernykov and E. Rosenberh (Vedernykov and Rosenberh, 1947), J. Wollmers, V. Antonelli, R. D'Alesio and R. Rossi (Vollmers et al., 2016), A. Djed and R. Sarikas (Djedj & Sarikas, 2009), A. Kashaev and A. Shein (Kashaev and Shein, 1985), V. Mazdorov (Mazdorov, 1972), V. Funnell and M. Chwastiak (Funnell & Chwastiak, 2015). However, these studies mainly reveal the problems of the accounting system functions transformation and the development of accounting system practices during the classical form of conducting hostilities that took place during the twentieth century, without taking into account other contemporary forms that affect the functioning of national accounting system. The expansion of the military-political conflict in the East of Ukraine, which began in 2014 and still continues, as well as the conduction of the hybrid war by the Russian

Federation, necessitate an analysis of the directions of accounting's development during the hostilities based on the study of existing historical experience and the rethinking of the value of accounting system as a means of ensuring the level of national security.

**The main purpose of the research** is to isolate and analyze the areas of accounting system development in the context of military operations. The achievement of this goal will allow to systematize all possible variants of the accounting system's development in the context of the implementation of military operations, which will formulate the ways of their practical implementation, and link the role of accounting system as a political tool in military conflicts.

**Methodological approach.**

The methodological basis of the study is the historical method and system approach, which allowed to consider in the historical retrospective of the peculiarities of the development of accounting system during hostilities, to identify the historical patterns of such development, and to formulate general directions of the development of the national accounting system in this context. To substantiate the understanding of the essence of accounting system as a political tool during military conflicts, the socio-positive theory was used. According to the theory, the accounting system is considered not as a passive observer and registrar of the consequences of economic life's facts, but as an active participant in socio-economic processes related to the activity of the enterprise. The results of statistical

observations based on financial statements, audit findings and litigation were used to determine the procedure for the assessment of the lost property of domestic enterprises as a result of hybrid military aggression.

**Conducting research and results.**

The analysis of the professional literature on the accounting system shows that the issue of the development of accounting system in the context of military operations in the post-Soviet countries is traditionally associated with the Second World War. At the same time, this topic is widely covered in the world literature on accounting system both as an example of specific wars, and through the search for common features regarding the transformation of the accounting system in military conflicts. In recent years, such studies have become relevant in the Russian Federation's hybrid war against Ukraine.

If we consider war as a separate factor in the external environment of the national accounting system, then we can state that in such difficult periods for a country, scientists do not pay due attention to the development of accounting system, so it usually remains the same without progressive changes, or on the contrary, is partially degraded by its gradual simplification in order to fulfill the tasks brought to it by users and dictated by the terms of wartime.

As a result of the analysis of scientific publications, one can distinguish the following areas of development of accounting system in the conduction of hostilities (Figure 1).

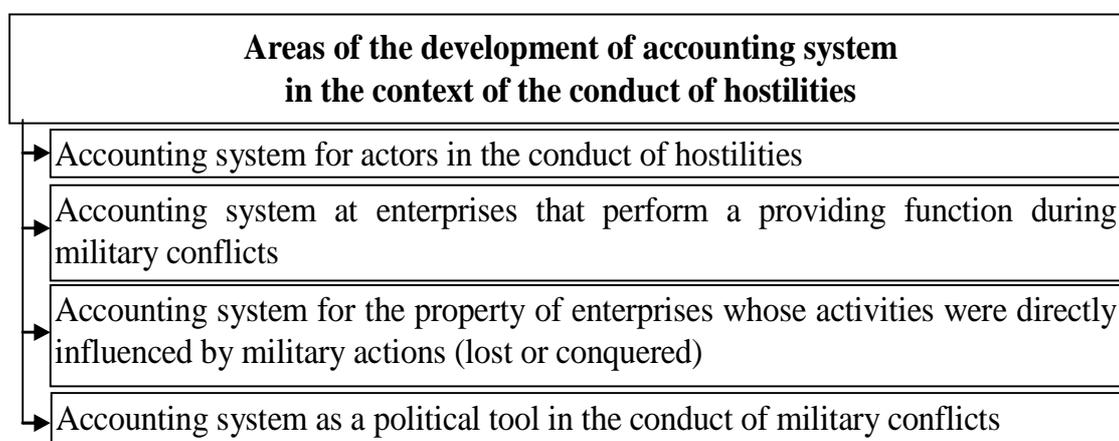


Fig. 1. Areas of the accounting system's development in the context of hostilities

## *Historical aspects of the development of accounting system in the context of hostilities*

I. Accounting system for the actors in hostilities (military units). During the war, the accounting system and financial apparatus of military units, as state structures, operates under extremely hard conditions, which in many cases do not allow the full implementation of the main accounting system functions, and leads to the need for simplification of accounting system and its adjustment under the existing conditions. Changing the form of accounting system in the direction of its simplification is usually dictated by an attempt to ensure the efficiency and reliability of accounting system information, which significantly damages its relevance.

The need to change the existing accounting system rules during hostilities was foreseen even in the records of the registration of military units published during peacetime. Thus, in the "Regulations on the management of the economy in separate parts of the troops", 1904 (Zashehuk, 2003), it is noted that there is a possibility of derogations from the traditional practice of reporting during the war time. In particular, it was allowed: 1) to prolong the reporting time of the received treasury funds; 2) the head of the economy could himself implement the accounting system policy without the consent of the regiment commander, but the cost should have been not more than thousand rubles; 3) the ability to increase the amount of advances issued at the discretion of the regimental commander. Thus, the differences in keeping records in peace and war time were the possibility of slightly transforming existing accounting system practices in connection with the occurrence of complications in communication between the subject of accounting system (the manager of the economy) and the person responsible for his organization (commander of the regiment).

During the hostilities, more radical changes are made in the accounting system. In particular, according to S. Vedernykov and E. Rosenberhyh, explaining the peculiarities of the organization of accounting system during the Second World War, the specific conditions of financial activity of the military units in the current army require some changes in the practice of financial accounting system and reporting of troops. The practice during the first months of the war showed that the peaceful forms of financial accounting system in military

units were excessively detailed and technically not adapted to the conditions of wartime. In order to simplify and unify financial accounting, the main accounting system registers for the financial sector of the military unit used in peacetime were subject to restructuring in relation to the prevailing conditions (Vedernykov and Rosenberh, 1947). One of such important and fundamental decisions was the introduction of a special register - a checklist that was supposed to overcome the problem of the absence of military units of their current accounts and the need to release their money and government bond bonds. Another example of the simplification of accounting system procedures was the introduction in August 1941 of a simple standard form of a monetary book, which replaced the money magazine and the book of monetary personal accounts. In addition to the convenience of this book, its format was also adapted to a field bag used by counters of military units for its storage, which in general improved the reporting process by military units in the context of hostilities.

One of the consequences of the war is the increase in the proportion of women in accounting services and in general at enterprises, which was especially noticeable at a time when all men able for war were recruited into the army, and the process of its implementation required spending significant amounts of human resources. In particular, when Black, (2006), had investigated the role of women in the British Military Payroll Department during the First World War, and analyzed the peculiarities of the historical development of the accounting system profession, he confirmed that widespread involvement of women in the implementation of accounting system procedures was an example of proto- feminization of British accountancy. In general, this fact can be considered as the main reason for the growth of the number of women accountants in the postwar years in the USSR, where this figure in 1985 reached 89 % (National Economy of the USSR for 70 years, 1987).

II. The accounting system of enterprises that perform a provisioning function during military conflicts is also an object of change, which is dictated by the need to transform the enterprise management system under war conditions. The depth of such changes depends on the peculiarities of the military conflict, in particular, on the level of

its impact on the country's economy. If this is a local conflict that does not significantly change the functioning of the national economy, the national accounting system will also not undergo significant changes. At the same time, there may be some changes in the existing accounting methods related to the activities of enterprises that ensure the functioning of the army. So, J. Wollmers, V. Antonelli, R. Dalescio and R. Rossi (Vollmers et al., 2016) cite examples of the changes in the methodology of managerial cost accounting in Italian industrial groups that seek to obtain price advantages for further participation in tenders and auctions conducted by the Ministry of Defense and the Ministry of Ammunition of Italy during the First World War. Another example of such changes that affect the methodology of accounting system for enterprises preparing for hostilities is the publication of the US Accounting Committee for Accounting Procedures ARB 13 "Accounting for Special Reserves Arising After the War", 1942 (Accounting for Special Reserves Arising Out of The War, 1942).. This document discloses the features of accounting reflection and the subsequent use of reserves that have already been created and can be created by enterprises engaged in the production for military purposes or significantly suffering as a result of hostilities.

If the military conflict changes the basic principles of the functioning of the national economy, gaining for a specific country of an inclusive scale (for example, gaining the status of domestic war) and forcing to switch to a model of management of enterprises taking into account the needs of "military time", then under such conditions there is a change in the requirements for the functioning of the national accounting systems both at the level of the system of regulation, and at the level of organization and methodology of the operation of a specific enterprise accounting system. The most typical example is the Soviet accounting system, which has undergone significant changes during 1941–1943. According to V. Mazdorov, the military situation in the country identified new tasks for accounting. The war has become the reason for the restructuring of accounting system, which was reflected in its simplification and reduction of reporting, increased operational control over economic expediency, the preservation of socialist

property, and the economical spending of funds and materials (Mazdorov, 1972). A similar thesis became common for the representatives of the Soviet accounting system. Ya. Halperyn, N. Kyparysov and N. Leontiev also notes that the fascist Germany's attack on the Soviet Union has given rise to increasing attention to the correct recording and reporting of socialist enterprises. During the war, a lot of work was done to streamline accounting and reporting, to reduce and simplify the forms of reporting (Halperyn, Kyparysov and Leontev, 1945). A. Kashaev and A. Shein also emphasizes that during the war there were significant changes in the organization of accounting; it was necessary to implement a very strict regime of economy and control over the costs of material, labor and financial resources with a particular persistence (Kashaev and Shein, 1985).

Thus, the most important function of accounting system during the war was a control function, the fulfillment of which created the prerequisites for effective counteraction to the aggressor country, in particular, through increasing the efficiency of the use of available resources and finding the deep reserves of the national economy. As history showed, such a reorientation of accounting system gave positive results. A. Djaatej and R. Sarikas emphasized that accounting system itself played an important role in the process of obtaining a victory in the war by the Soviet Union (Djaatej & Sarikas, 2009).

In addition to simplifying the accounting system procedures that took place in the production cost formation, capital expenditures, as well as simplifying the reporting procedure (monthly telegraph reporting), the methodology of Soviet accounting system has changed considerably. As a result of violations of economic relations between enterprises there were significant amounts of overdue debts, and a significant amount of losses and unforeseen costs, for which account was introduced special accounts, in the name of which was the reason for their isolation - the terms of military time. The simplification of the accounting system, in particular, the abandonment of a large number of primary documents, made it possible to introduce new economic instruments, one of which was the card system of the distribution of food, introduced in the USSR in July 1941, and provided

the establishment of rates of consumption of goods per person per month.

During the war there was also a transformation of the approaches to accounting system organization, which was conditioned by a chronic shortage of trained accountants and a reduction of time for the implementation of the accounting process. According to A. Belousov and A. Zelenyna, during the war began to widely use group (cumulative) information on cash and banking operations, as well as procurement of material values and settlements with suppliers, shipments of inventory and payments to buyers. The harmonization of chronological and systematic registers, simplification of the distribution of maintenance and management costs, the use of the coefficient method in determining the cost price of certain types of products, etc. was recommended (Belousov and Zelenyna, 2010). In general, the authors came to the conclusion that the results obtained during the war in organization of the future accounting system were the basis for the development of journal-order form of accounting, which in the early 1950's began to be widely implemented in various sectors of the national economy of the USSR.

In such a case, when a civil war takes place in the country, which is a form of the solution of contradictions that arise between different sections of the population, and which ends with the victory of the party that is embarking on reforming the economic structure adopted in the country, the accounting system also undergoes significant changes. The extent of such changes depends on the contradiction level between the previous economic pattern and the newly created post-civilian outcomes. Thus, as a result of the civil war in the United States (1861–1865), slavery was abolished (1865) and that led to the need to exclude from the accounting system the accounts used to record the slaves and value them.

The consequence of the civil war in Russia (1917–1923) was the coming to power of the Bolshevik Party and the gradual establishment of a Soviet government on the overwhelming majority of its territory, which over the next ten years formed the model of Soviet accounting, which fundamentally differed from market-based accounting system at the theoretical, methodological, and organizational level. The definitive methodological

feature of Soviet accounting system was the transition to a monotonous accounting regulation, which in general led to the formation of the concept of expanded univariance of accounting methodology (Legenchuk, 2017). Thus, the accounting system of enterprises that perform a provisioning function during armed conflicts may undergo changes depending on the peculiarities of the military conflict that determine its role in the economic life of a particular country.

III. The property accounting of enterprises, whose activities were directly influenced by military actions (conquered or lost). The hostilities between the armed forces of certain countries or political entities in most cases has economic preconditions, which is justified by the limited resources and unlimited needs of people. In some cases, the desire of participants in the war to seize the necessary resources or entire economic areas determined the nature of combat operations and the direction of the deployment of military aggression. The reason for the war may be claims for property rights or territory which belongs to the other party to the armed conflict. As a result of the success of such claims of one party to the conflict as a result of nationalization (expropriation) there is property that needs to be reflected in accounting, and the other party - there is a disposal of such property that can be considered from the standpoint of accounting as a loss or as a temporary loss.

The most typical example of expropriation of property in the captured territories is the actions of Germany during the Second World War. Thus, during the years of occupation, German troops looted and destroyed 38 % of Polish national property, 63 million tons of coal and about 2 million tons of oil were extracted from France, and all stocks of strategic raw materials were exported from Belgium, Holland, Denmark, Norway and other occupied countries, industrial goods and food, 80 million dollars of gold were exported from Austria, and 25 million dollars from Czechoslovakia (Shifman, 1964). The expropriated property was exported from the occupied countries to Germany, which was included in the assets of powerful German monopolies or public financial institutions.

A similar situation at the end of the Second World War was in the former Soviet territories, which were liberated from the German occupation

by the Soviet troops, as well as in the territories that were liberated but were not included into the USSR. However, the nationalization of property was already carried out by representatives of Soviet power. In order to ensure proper control and unification of this process in April 1943, the Council of People's Commissars of the USSR issued Decree No. 404 regulating the issues of accounting and the use of nationalized, confiscated, depreciable and landless property. In particular, according to Art. 4 of this document, all issues related to the identification, accounting, valuation and sale of property, valuables and funds must be carried out by the financial authorities (Approval of the provision on the procedure for the accounting and use of nationalized, confiscated, escheat and ownerless property, 1943). The transfer of nationalized and confiscated property was carried out by the financial authorities by the cooperation with higher authorities both on a royalty-free basis and on a fee basis, using actual value, purchase prices, etc.

When establishing of the new government in the territory entrenched in the war as a result of the accession of such a territory to another country or the creation of a new country by combining several territories, the enterprises and institutions existing on it are usually the subject to nationalization. Thus, in 1917, on the territory of post-revolutionary Russia, all the banks and the banking state monopoly, railway transport, the navy and the annual fleet were nationalized, and in June 1918 a separate decree proclaimed the nationalization of the whole large industry (enterprises with more than 1 mln. Rubles of assets). According to A. Lozynskyi after the nationalization of 1917–1918, the highest leadership was involved in organizing the correct accounting system of the means of production expropriated in the bourgeoisie and ensuring the preservation of the state fund (Lozynskyi, 1939). Thus, one of the consequences of hostilities is the seizure of property and new territories, with enterprises placed on them. As a result of nationalization, these objects should be included in the assets of enterprises and institutions. The main problem of their accounting system is the establishment of their real worth, taking into account their real value, and the costs incurred for their delivery and transfer to their place of their subsequent use. In the other party to a military

conflict which loses it on a temporary or permanent basis, there is a loss of certain types of property, enterprises or territories, which should also be reflected in the accounting system of the corresponding level.

In order to account the lost property during the Second World War, a separate (27th) section of the invoice plan was introduced at Soviet enterprises - D "The wartime accounts". According to V. Mazdorov, this section included 21 first-order invoices and two sub-accounts, for example: 270 – "Fixed assets are not evacuated"; 251 – "Materials on the way that did not arrive before evacuation to the enterprise"; 252 – "Inventories are not evacuated"; 253 – "Commodity-material values evacuated, but not arrived at the location of the enterprise", etc. (Mazdorov, 1972). The introduction of such proposals was based on the general policy of the need to evacuate the most important enterprises from the front-line districts to the eastern part of the Soviet Union, which was practically implemented through the evacuation council set up in 1941. Accordingly, the proposed system of accounts was intended for the accounting of those assets of the enterprise that were either not evacuated (by type of assets) or did not reach a definite place for their evacuation, as well as for accounting receivables and creditor indebtedness, as there were significant doubts to their repayment due to the capturing of the territory where the enterprises were located and even after the evacuation, such enterprises have not yet restored their activity. All other evacuated objects were counted using other traditional accounts used by enterprises in the peaceful period of time.

During the evacuation of property, the primary responsibility for the safety of evacuation and the subsequent formulation of such property was taken by the accountants who were required to strictly adhere to the existing requirements, in particular, regarding the documentary registration of such transactions. At the same time, in the process of evacuation of the property of enterprises, significant expenses were incurred, which had to be reflected in the corresponding accounts ("Expenses caused by evacuation"), and in many cases the property did not reach its final destination as a result of the rapid advance of the enemy troops, and as a result inefficient logistics. Therefore, one of the

directions of the development of the accounting system during the war was the improvement of the accounting record of non-documentary cargoes.

Today, under the conditions of temporary occupation of certain territories in the Donetsk and Lugansk regions and the annexation of the Crimea, at domestic enterprises whose structural units remained in these territories and over which the management was stopped, such a method of accounting system for lost property used during World War II in the Soviet accounting system is not used. For example, all nationalized property of DTEK ENERGY BV, located in the occupied region of Donetsk and Lugansk and in the annexed Crimea, is included in the assets of this company, as evidenced by the published unaudited consolidated financial results for the six months of 2018 (Results Corporate Presentation DTEK ENERGY BV, 2018). However, according to the Audit Opinion on DTEK CRIMENERGO's Financial Statements dated March 20, 2017 (Auditor's Report on the Financial Statements of PJSC DTEK CRIMENERGO, 2017), the value of non-current assets located in the temporarily occupied territory of Ukraine, in 2015 a 100 % impairment provision was accrued based on prudence and IFRS 36, "Impairment of Assets." As a result, in 31.12.2016, net assets of PJSC "DTEK CRIMENERGO" were negative – -1025951 thousand UAH. In September 2018, the media reported that DTEK ENERGY BV was being sued at international courts in the Russian Federation for expropriated property located on the territory of the annexed Crimea (DTEK was sued in international courts in Russia for the stolen property during the annexation of the Crimea, 2018), which testifies to the enterprise's efforts to compensate for the losses incurred. Accordingly, for the assets of DTEK ENERGY B. V., which remained in the occupied part of the Donetsk and Luhansk Oblasts and in the annexed Crimea, separate special accounts for their accounting system are not used, and their value is adjusted on the basis of their level of depreciation.

Additionally, in accordance with IFRS 36, "Impairment of Assets", asset utilization decreases not only as a result of the loss of control over such assets, but also when specific assets lose their value because of the breach of contract performance or in case of termination. Today's situation is typical for the assets of the thermal power plants included in

DTEK ENERGY B.V., since after the loss of control over the mines that were the main suppliers of anthracite, their value needs to be re-evaluated as a result of the losses. In more detail, this issue is covered in the study. Iukhymenko-Nazaruk (Iukhymenko-Nazaruk, 2017), which implies the use of the provisions of the non-institutional theory, requires the use of the concept of specific assets in accounting, which will justify the ways to improve the accounting in a hybrid war.

IV. Accounting system as a political tool in military conflicts. According to the traditional point of view, the accounting system is considered as a means of fixing the results of hostilities and as a means of providing information management to enterprises that support the subjects of war. In this approach, accounting system performs a passive function during military conflicts. Unlike this approach, inspired by the representatives of the London School of Economics (E. Hopwood, P. Miller, A. Bemanni, M. Bromovich, etc.), V. Funnell and M. Chwastiak proposed to consider accounting system as a political tool that can be used by the entities of its organization to overcome political crises. That means that the accounting system is proposed to be considered not as something derivative and secondary, necessary to reflect the existing economic reality, but as a primary thing in relation to social processes and relations that are formed as a result of the functioning of accounting system as a separate socio-economic institute.

According to the authors, for all national states the account of military operations served to realize wider political goals. From the Crimean War to the war on terrorism, accounting system was used to establish civilian control over the military, the introduction of sound business practices in the war, and the creation of visible and invisible reasons that should legitimize the use of force (Funnell & Chwastiak, 2015). Through the implementation of the information function, accounting system allows political elites to justify the reasons for a military conflict, and due to the control - to influence the subjects of the implementation of military conflicts, thus, simultaneously influencing the order of deployment of military action.

### Conclusion

One of the environmental factors that affect the development of the national accounting system is military actions that affect both their parties and other actors whose activities are influenced by the hostilities. On the basis of the analysis of scientific publications, four main directions of the development of accounting system during military operations are identified: 1) Accounting for the subjects of the conduct of hostilities; 2) Accounting system at enterprises that perform a providing function during military conflicts; 3) The property accounting of enterprises, whose activities were directly influenced by military actions; 4) Accounting system as a political tool during military conflicts).

During military operations, there is a transformation of existing approaches to the organization of accounting system – its simplification, as well as the adaptation of the methodology of accounting of assets and liabilities as a result of changing the normal conditions of the operation of enterprises. During hybrid war, it is necessary to improve the methodology of the valuation of assets over which control has been lost, and the methodology for evaluating specific assets, the execution of contracts whose operation was endangered by the opportunistic behavior of counteragents or changes in the regulatory regulation of enterprises. A promising direction for conducting the further research is to deepen the public value of accounting system as a social and institutional practice, in particular, to reveal its role as a political tool or social ideology that can be used to overcome socio-political crises associated with military conflicts.

### References

1. *Audytorskyi vysnovok (ZVIT NEZALEZHNOHO AUDYTORA) vid 20 bereznia 2017 r. shchodo finansovoi zvitnosti PAT «DTEK KRYMENERHO» [Auditor's Report (INDEPENDENT AUDITOR'S REPORT) dated March 20, 2017, on the financial statements of PJSC "DTEK CRIMENERGO"]*. Retrieved from <https://dtek.com/content/files/audytorskyi-vysnovok-schodo-finansovoi-zvitnosti-tovaristva-za--2016-rik.pdf> [in Ukrainian].
2. Belousov, A. Y. & Zelenina, A. V. (2010). *Osobnosti buhgalterskogo ucheta v period velikoy otechestvennoy voyny [The features of accounting system during Great patriotic War]*. *Vestnyk Stavropolskogo gosudarstvennogo universiteta – Messenger of Stavropol State University*, 68, 13–17 [in Russian].
3. Vedernikov, S.S. & Rozenberg, E.K. (1947). *Kurs buhgalterskogo ucheta dlia podgotovki schetovodov [The course of accounting system for the preparation of accountants]*. Leningrad: «Typography named after Volodarsky» [in Russian].
4. Halperin, Ya.M. & Kyparisov, N.A. & Leontev, N.A. (1945). *Kurs teorii buhgalterskogo ucheta [The course of accounting theory]*. Moscow: «GOSPLANIZDAT» [in Russian].
5. *DTEK pozyvaietsia v mizhnarodni sudy do Rosii za vkradene pid chas aneksii Krymu maino [DTEK is sued in international courts in Russia for property stolen during the annexation of Crimea]* Retrieved from <http://www.umoloda.kiev.ua/number/0/2006/126257/> [in Ukrainian].
6. Zashchuk, Y. (1904). *Polozhenie ob upravlenii hozyaystvom v otdelnyh chastyah voisk. [Regulations on the management of the economy in certain parts of the troops]*. Varshava: «Typography of the district headquarters» [in Russian].
7. Kashaev, A. N. & Shein, A. V. (1985). *Ob organizacii buhgalterskogo ucheta v period Velykoy Otechestvennoy voyny [On the organization of accounting during the Great Patriotic War]* // *Bukhhalterskyi uchet – Accounting*. 5. 16–18 [in Russian].
8. Lehenchuk, S. F. (2017). *Bahatovariantnist v bukhalterskomu obliku: istoriko-teoretychni aspekty [Multivariance in accounting: historical and theoretical aspects]*. Zhytomyr: ZhDTU [in Ukrainian].
9. Lozinskiy, A. Y. (1939). *K istorii razvitiya buhgalterskogo (balansovogo) ucheta. Opyt (skhema) issledovaniya [To the history of the development of balance accounting]*. Saratov: «Kommunist» [in Russian].
10. Mazdorov, V. A. (1972). *Istoriya razvitiya buhgalterskogo ucheta v SSSR: 1917-1972 gg [The history of the development of accounting in the USSR: 1917–1972]*. Moscow: «Finance» [in Russian].
11. *Narodnoe hozyaistvo SSSR za 70 let (1987) [The national economy of the USSR for 70 years]*. Moscow: «Finance and statistics» [in Russian].
12. *Postanovlenie Soveta Narodnyh Komissarov SSSR № 404 “Ob utverzhdenii polozheniya o poryadke ucheta i ispolzovaniya natsionalizirovannogo, konfiskovannogo, vymorochnogo i beshozyainogo imuschestva” (1943) [Resolution of the Council of People's Commissars of the USSR No. 404 “On Approval of the Provision on the Procedure for*

*Historical aspects of the development of accounting system in the context of hostilities*

- Accounting and Use of Nationalized, Confiscated, Fatal, and Ownerless Property”]. Retrieved from <http://docs.cntd.ru/document/901855443> [in Russian].*
13. Shifman, M. S. (1964). *Voyna i ekonomika (vooruzhennoe vozdeistvie na ekonomiku voyuyuschih stran v pervoy i vtoroy mirovyh voynah) [War and economy (armed influence on the economy of the warring countries in the first and second world wars)]. Moscow: «Voenyzdat» [in Russian].*
  14. Yukhymenko-Nazaruk, I. A. (2017). *Rozvytok teorii i metodolohii bukhhalterskoho obliku v konteksti neoinstytutsiinoi teorii [The development of the theory and methodology of the accounting region in the context of neoinstitutional theory]. Zhytomyr: Vydavets O.O. Yevenok [in Ukrainian].*
  15. *IH 2018 Results Corporate Presentation DTEK ENERGY B. V.* Retrieved from [https://dtek.com/content/files/dtek\\_prez\\_irfy\\_new\\_2018-autumn\\_main\\_final.pdf](https://dtek.com/content/files/dtek_prez_irfy_new_2018-autumn_main_final.pdf)
  16. *Accounting Research Bulletins. Committee on Accounting Procedure. (1942). “Accounting for Special Reserves Arising Out of the War”, 13, 111–118.*
  17. Black, J. (2006). *War, Women and Accounting: Female Staff in the UK Army Pay Department Offices, 1914–1920. Accounting, Business & Financial History, 16, 2, 195–218.*
  18. Djatej, A. & Sarikas, R. (2009). *The Second World War and Soviet accounting. Accounting history, 14, 1-2, 35–54.*
  19. Funnell, W. & Chwastiak, M. (2015). *Accounting War: The Politics of Military Finance. “Routledge”.*
  20. Vollmers, G., Antonelli, V., D’Alessio R. & Rossi, R. (2016). *Cost Accounting for War: Contracting Procedures and Cost-Plus Pricing in WWI Industrial Mobilization in Italy. Retrieved from <http://ssrn.com/abstract=2634591>*

## STATE REGULATION AND STRATEGIC DEVELOPMENT MANAGEMENT OF ENTERPRISES OF STATE SECTOR: METHODS AND MECHANISMS IMPROVEMENT

**Abstract.** In this article, conceptual frameworks and practically used regulating instruments, methods and mechanisms of state regulation of strategic development of public interest enterprises of the national economy are summarized and analyzed. The matter of concepts, which form specifically directed towards strategic development of bodies of state administration in modern world's usage, are evaluated from the perspective of Ukrainian economy. Efficiency of particular methods and instruments of state mechanisms are evaluated from the standpoint of their permanent influence on the efficiency of the nationwide processes of prolonged economic growth and the achievement of economic entities of both capabilities of competitive ability and investment prospects. The hypothesis of the research is the assumption that the use of a foreign experience in developing of modern theoretical and conceptual, and applied designs will facilitate the development of adjusting instruments for Ukrainian economy to influence strategic development of sectors of national economy and of public interest enterprises. In this article, main problems are analyzed and the ways of formation of adaptive state regulation and management of strategic prospects of economic patterns development in the context of worldwide market of capitals and investments are suggested. It can guarantee their capability growth and consolidate their strategic positions of Ukrainian economy. The system of state leverages are notionally studied in a sole context with a goal-directed corporate management and argued that such a context will provide creation of coordinated economically-financial mechanism and selection of the instruments to increase the efficiency of state regulation of strategic development of national enterprises.

**Key words:** state regulation, state and corporate management, concepts of strategic management, enterprises of state sector, methods, mechanisms.

### Introduction

The range of problems of a perfect conception functioning and implementing its provisions into practical processes of regulation is represented in many business areas and economic realms, but it is the most dynamic in public management. The necessity of reforming of processes of state institutes influence on development strategy of public interest enterprises, particular economic enterprises (associations) of a state sector of Ukraine and business companies is the result of existing problems.

Against a background of existing Ukrainian problems, the results of analytical examination of world practice demonstrate examples of efficiency of the methods and mechanisms of state influence which are used in industrialized countries. At the same time, many factors which permanently cause problems in this area of government interference in business of economic entities are shown. On the basis of mentioned problematic aspects it is possible to conclude that the development of theoretical and conceptual basis of consistent regulation of strategy is one of the most relevant issues in the area of state management and regulation. It can be explained by dynamic changes of global and European integration processes which are increasing in Ukrainian transformational economy and create the necessity of a permanent revision of essence and principles of state regulation mechanisms of strategic development of national economy.

Stabilization of national economy of any country and especially of countries of emerging

market is linked to applying investment activities management of state-run enterprises which can adapt to global economic processes. This applying can be done by forming effective and efficient instruments of their provision mechanism. Many Ukrainian theorists and experts admit that “exploring foreign experience of state regulation of strategic development regarding its conceptualization and adaptation to Ukrainian best practices” [1]; “the world’s experience repeatedly and convincingly proves that revision and modernization of regulating systems of economic and social areas have no alternatives for not only solution to crisis developments but also creation of long-term premises of rapid and stable development” [2].

### **Problem formulation**

The world’s practice reveals that institutions of state provide strategy of development as a socially important part for economic entities of national economy. It falls within both enterprises which belong to strategic areas of national economy and state-run enterprises. In conditions of Ukrainian transformational economy it causes a chain of different problems. New economic climate makes enterprises of national sector constantly adapt to changes of market environment, overshadowing the issue of increasing their strategic potential.

According to official statistics of capability increasing by enterprises of different national economies and comparing this data with Ukrainian economy it is possible to draw conclusion that there are serious problems with an existing mechanism in the area of state management. Many Ukrainian scientists research and reveal key problematic factors of methods and mechanisms of state regulation in specific areas. These studies suggest different instruments and ideas on general mechanism of state regulation in area of small enterprises, rural, communal sectors, energy industry, high-tech industry, banking etc. Nevertheless, Ukrainian scientists have not developed main concepts of creating general system of methods and mechanisms of state institutes, which are directed towards regulating processes in a single context along with internal management of strategic development of enterprises. An urgent practical need brings up to date and justifies the necessity of developing of theoretical principles of state

regulation mechanism. To achieve a purpose it is necessary to solve the following tasks:

- to reveal the essence and main directions of state regulation in the world’s economic theory and practice, eliciting specific features of Ukrainian economy in this area;

- to analyze and evaluate permanent instruments of state regulation of national development strategy of state-run enterprises and public interest business enterprises;

- to define and justify an adaptive way of increasing efficiency of strategic management on enterprises of national sector suitable for Ukraine. It should be done by the interaction of methods and instruments of partnership between the state and a private sector.

The objects of the research are used methods and mechanisms of state regulation and management of strategic development of Ukrainian state sector enterprises and the instruments of influence on forming potential by state economic entities.

The subject of the research is defined as formed complex of theoretical and conceptual aspects in Ukrainian and the world’s science, and, on their basis, created practical aspects of state regulation in interrelated system of economy management strategy.

The hypothesis of this research is the idea that one of its components lies in the area of the change of state bodies’ functions, formation of a system of more efficient instruments and mechanisms of state regulating policy and adjusting it to modern principles of corporate strategic management, because, despite considerable theoretical achievements in regulating methodology, there is no a sole position of theorists and experts on the area of public management.

**Problem definition** is related to the absence of a formed basic conception of and effective and efficient state regulation with specific instruments. A great quantity of problems is related to the interaction between state methods and the system of economy management to overcome problems of strategic development of national economy business.

### **Methodological approach**

Methodology of the study is based on fundamentals of economic theory, basic principles of state and corporate management with the use of

methodology of systematic analysis. It allowed creating interdisciplinary analysis disposition of regulation concepts. The methods, which were used, allowed methodical evaluation of studies of Ukrainian and foreign scientists, who study economy. These methods also helped to generalize conceptual approaches and patterns of state regulation of a long-term economic development.

To provide determined results, there are used general scientific methods of research which meet classification standarts: D81 - Criteria for Decision-Making under Risk and Uncertainty which are studied equally to the unit E02 - Institutions and the Macroeconomy. Taking into consideration the necessity of combination of administrative methods and market management principles, suggested research is made considering instructions of the units E44 – Financial Markets and the Macroeconomy and E6 – Macroeconomic Policy, Macroeconomic Aspects of Public Finance, and General. On the basis of basic principles of the units E61 - Policy Objectives; Policy Designs and Consistency; Policy Coordination and F2 – International Factor Movements and International Business. Specific elements of formed conception are suggested in this research. In suggested conception the principles of scientific studies according to the units F21 - International Investment; Long-term Capital Movements, F43 - Economic Growth of Open Economies and G28 - Government Policy and Regulation are also taken into consideration.

#### **Analysis of the latest publications**

There are many researches dedicated to finding solution to problems of regulation in management activity. The analysis of these researches allows us to affirm formed considerable methodological base for solving existing regulation problems. Many publications are based on empirical analysis, suggesting their own methodological instruments of regulation of many areas. The analysis also shows that the influence of state institutes on functioning of economical enterprises is determinant for the countries with emerging market. Authors of the researches emphasize that efficiency of state regulation actions influences on the development of a state economy and implementing of economic changes which means that it influences on creating premises for strategic development of

specific economic entities. Moreover, while developing conception of regulation which is adaptive to modern conditions, interdisciplinary aspect is emphasized. It means that it is necessary for combining a wide range of regulation methods into sole state regulation mechanism.

The results of the analysis of foreign sources on issues related to developing conceptions of regulation as synthesized structure show that "...the concept of regulation experiences deficiencies in common understanding...regulating is an interdisciplinary phenomenon but not a specific phenomenon for each academic field [3]. To overcome such as conceptual disadvantages foreign scientists justify the necessity of forming of three systems of rules to provide an efficient regulation. They are the following:

- the rules of formal and informal actions;
- the rules of monitoring;
- the rules of influence [4].

It is worth mentioning that many researchers point out the necessity of specific requests mentioned above determining, for example, the urgency of interfering into the management of a problematic process as a main characteristic of regulation [5].

It is also worth mentioning that scientists determine three subsystems to form an integral system of regulation which are the following:

- a subsystem of standards (determining aims of regulation)
- a subsystem of data collection (a set of methods for revealing possible deviation from an aimed path);
- a subsystem of correcting (instruments of influence on an aimed path of a management object) [6].

In Ukrainian studies, for example [2], it is also stressed on the necessity of interdisciplinary approach in this area. In this research the problem of regulatory, resource and institutional provision is revealed on the basis of the use of both systematic analysis methodology and the results of interdisciplinary polemic. On the basis of such as development, an integral conception of systematic mechanism of strategic regulation of a stable and constant development with justifying necessity for modernization of the aim-forming unit of national and regional aims of development of the course of their concretization and coordination is suggested [2].

According to the results of the studies of state influence on development potential of economic entities of national economy, the scientists believe that the implementation of sufficient and specifically determined functions will allow solving problematic issues of enterprises functioning and development on the basis of coordination of the course of administrative and economic processes in a system of strategic management development [7, p.54]. On the basis of systematic analysis regarding insufficient influence it is possible to come to a conclusion that the factors are decreasing a part of a state management and the opportunities of Ukrainian enterprises to create development potential in consequence of wrong approach to economic reforms. These factors were based on conviction that the market has unlimited opportunities for self-management. To overcome such as fundamentally wrong original principles, scientists justify the necessity of developing of other legal bonds between economic entities and state authority. These studies suggest integrated control over public and private sectors of economy with the use of new approaches to the set of efficient and effective forms and methods of state influence for modern Ukrainian economy and its development potential [8, p. 112].

### **Results of the research.**

Formed in global economic theory and practice basic principles of conception and selection of instruments have rather good basis to develop systematic state and corporate management of strategic development of national macro- and microeconomic business formations. Modern conceptions are based on the works of famous economist such as I. Ansoff, J.-J. Lambin, Arthur A. Thompson, A. J. Strickland, P. Doyle etc. Evaluation of basic principles of formulated conceptions permits to claim that these principles contain enough methodological frameworks. Scientist from different countries suggest their own methodical instruments for solving problems with regulation of fields of many economic affairs and for different types of economy which work within these conceptions. With the development of global processes, the change of the world's financial economic architectonics, theorists and experts made different alterations into formed system of state and private management.

Regarding methods and means of influence on development of economic entities, the mechanism of activity state regulation is regarded through the complex of forms, methods, means of influence on economy which include economic contacts created between subjects and objects of regulation in the process of determination and implementation of the aim [9]; "...state regulation is an influence on reproductive processes in economy with the use of appropriate means in order to guide economic units towards achieve purposes and priorities of a state policy of social development" [10].

Encyclopedia of a state regulation determines state regulation as a "complex of instruments with the help of which a state sets requirements for enterprises" [11, p. 153]. Analysis and evaluation of suggested mechanisms demonstrate that authors consider methods and instruments of state regulation and management of strategic development of enterprises differently. They emphasize on the ways of interaction between state regulation and used market conceptions of economy entities' management. However, many researches outline the problems of regulation with objects of only one specific area of study, and that is why there exists a discipline aspect which does not solve general economic problems of development regulation of interdisciplinary processes (socioeconomic, stable development etc.).

All mentioned above suggest different forms, methods and means of regulation which comes from particular management programme and set aims and strategies. On the basis of used programmes system of functions and procedures of making regulation decisions is being created. As a result, general principles of state regulation are fading. Some Ukrainian researches emphasize targeted aspect of state economic regulation: "purposeful and active influence of state and supragovernment bodies of management on functioning expanded recreation and development of integral economic system of a country using economic laws and solving economic contradictions" [12].

Methods of state regulation with used instruments of strategic development management of national economy in it can be divided into such methods which are characterized as direct administrative influence and indirect regulating influence on subjects to management. Multitude of

administrative methods the most efficient and prospective are considered those, which provide regulation of the biggest assistance to create conditions of efficient functioning of enterprises, acquisition of prolonged development potential by economic entities (first of all, on big business enterprises and state enterprises). Judging by the set of instruments in general mechanism of implementation of process of state-management activity it is possible to determine process and aim approaches. The first one considers the mechanism of state regulation as a mean of realization of specifically determined process which is coordinated with the system of corporate management. The second one orients mechanism's function of state regulation to achieving clearly determined aim.

Economic methods themselves are usually considered through financial (concessional lending, accessibility to investment resources, common financing of socially important projects), fiscal (optimization of tax burden) and resources — the development of personnel, including training and re-qualification of a personnel on the basis of state educational programmes; access to business entities to material resources [13, p. 157].

Enterprises of state and municipal type ownership and public interest enterprises of national economy mainly are considered as a subject and object of the study of state influence on their strategic development. According to National report "Aims of stable development: Ukraine" (09/15/2017) there was created a national system of aims of stable development in Ukraine, the basis of which consists of 86 tasks of development and 172 indicators for monitoring of their accomplishment. All mentioned above require implementation of integral and efficient system of state regulation which would be based on taking into account all objective systems of rules of functioning of modern management systems. For determined parameters of this research considering administrative influence on chosen segment of economy, data of 2018 of State Statistics Service of Ukraine are shown, according to which there are 3851 state business enterprises are registered (32 state enterprises, 12 719 municipal enterprises).

Experience of many highly-developed countries proves efficiency and the necessity of the existence of state sector in economy, especially in those areas which form economic security of a state

and national economy further development. Particular issues regarding nature and level of influence on these processes in Ukraine are still remain controversial, since a point of view is put forward which is based on basic market principles. According to it, state regulation of the majority of areas of business activity should be minimized.

The efficiency of collaboration between a state and a business enterprise is proved by the experience and success of many countries (Japan, Korea, Taiwan etc.), where national strategies are provided by close collaboration between a state and a business enterprise. This experience also shows that such as strategies (relations between state institutions and a business enterprise) in some countries are less successful. Generally, there is a dominant opinion that for national economy development and stable functioning of economy units, state regulation is important for forming of investment prospects of national economy: "strategic management is an activity with economically effective accomplishment of long-range goals on the basis of receiving competitive advantage and active interaction with environment" [14, p. 5].

In our opinion, for Ukrainian transformational economy, government guarantee of capital investment projects need to be recognized determinant for strategic development of specific economic units.

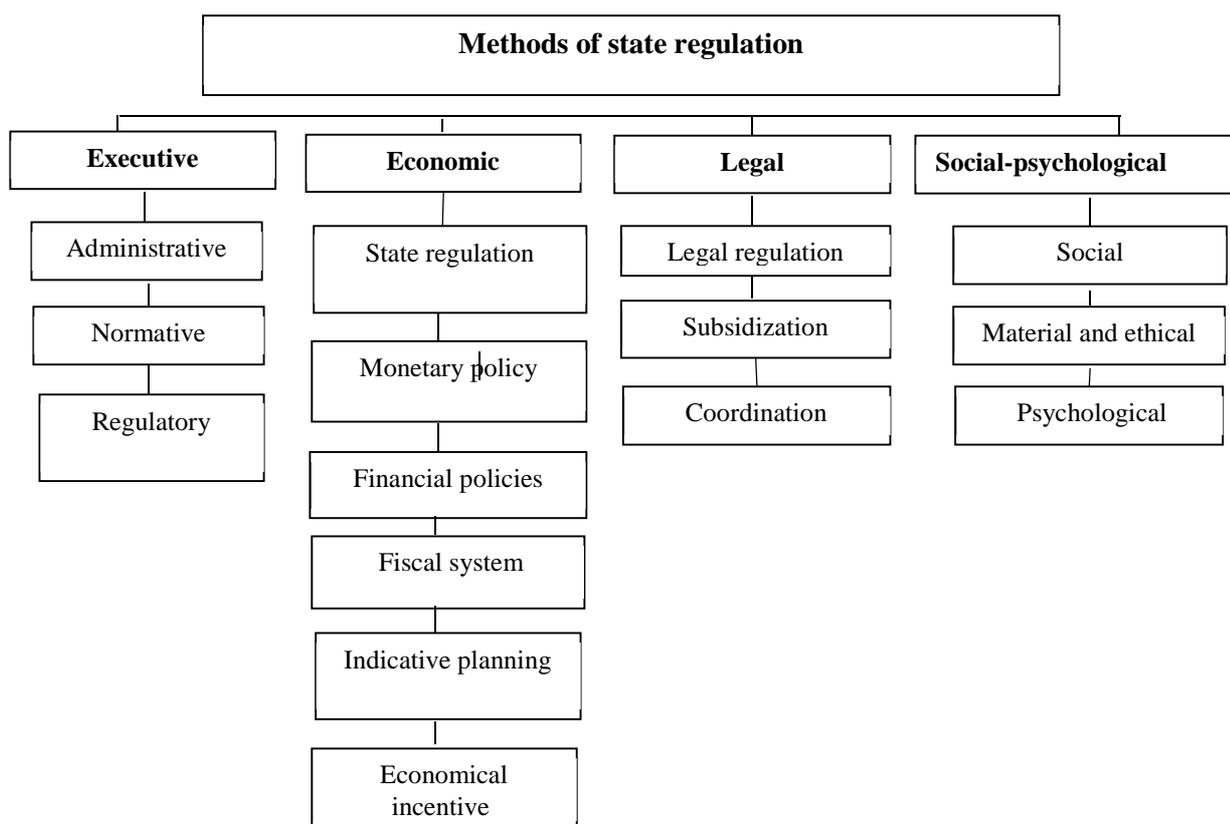
Based on development status and structure of different national economies, specific and universal procedure for efficient intervention of a state into the area of economic intercourses is impossible. Based on Ukrainian transformational economy, first of all, it is necessary to set the boundaries of a state participation in economic management of national economy and specific issues of state regulation and mechanisms of state management depending on specific economic circumstances, set priorities and general development project of a state.

The area of state regulation has integrated nature, which is provided by adequate set of forms, methods and institutions of state regulation of general economic processes. Despite the structure of this system, main aims of state regulation are always considered as provision of stable development of economy structures and economy itself. Increasing of competitiveness of national goods on the international markets and providing investment prospects are also considered as main aims of state regulation. Described main aims can find their

reflection in functions of state regulation and state management.

In integrated mechanism of state regulation and state influence in strategic development of economic sectors, specific national economy units it is necessary to determine efficient actions of executive bodies of different levels including forming infrastructure project which would be executed by them and nonprofit sector has to be involved. In the world's practice the set of different methods is used, but the most common

classification of the methods of state regulation is the classification by their division into special and general (fig.1). These methods are implemented through the complex of means in the processes of implementation of administrative functions of a state and state institutions' influence on units. The system of such as methods shows managing (regulating) influence of management entities on objects of management and, in fact, it is a matter of state influence on the economy of economic entities.



*Fig. 1. Classification of the methods of economic regulation according to the nature of influence on economic activity of its entities*

The structure of state regulation mechanism studied through the system of measures designed by a state taking into consideration requirements of the market and subjects of business. This system includes legal and economic mechanisms: the mechanism of incentives, support and control assistance; forms and methods of state regulation implementation, government bodies and funds which have to be engaged in activities of enterprises and subjects of business. Market regulatory institutions act as separate enterprise and become apparent in interaction with other business entities.

Selection of components of regulating economic mechanism of industrial structures activities is especially important. Among those components scientists determine the following: incentive basis and stimuli, economic relations of economic agents, forms and methods.

The structure of modern mechanism of regulation over activity of industrial structures is based on using of systems of interrelated instruments and institutional methods of regulation (Fig. 2).

While creating an adaptive mechanism of state influence on forming of prospective development of important for their national economic entities it is necessary to determine factors accurately for a favourable development, which are systematized in the table 1.

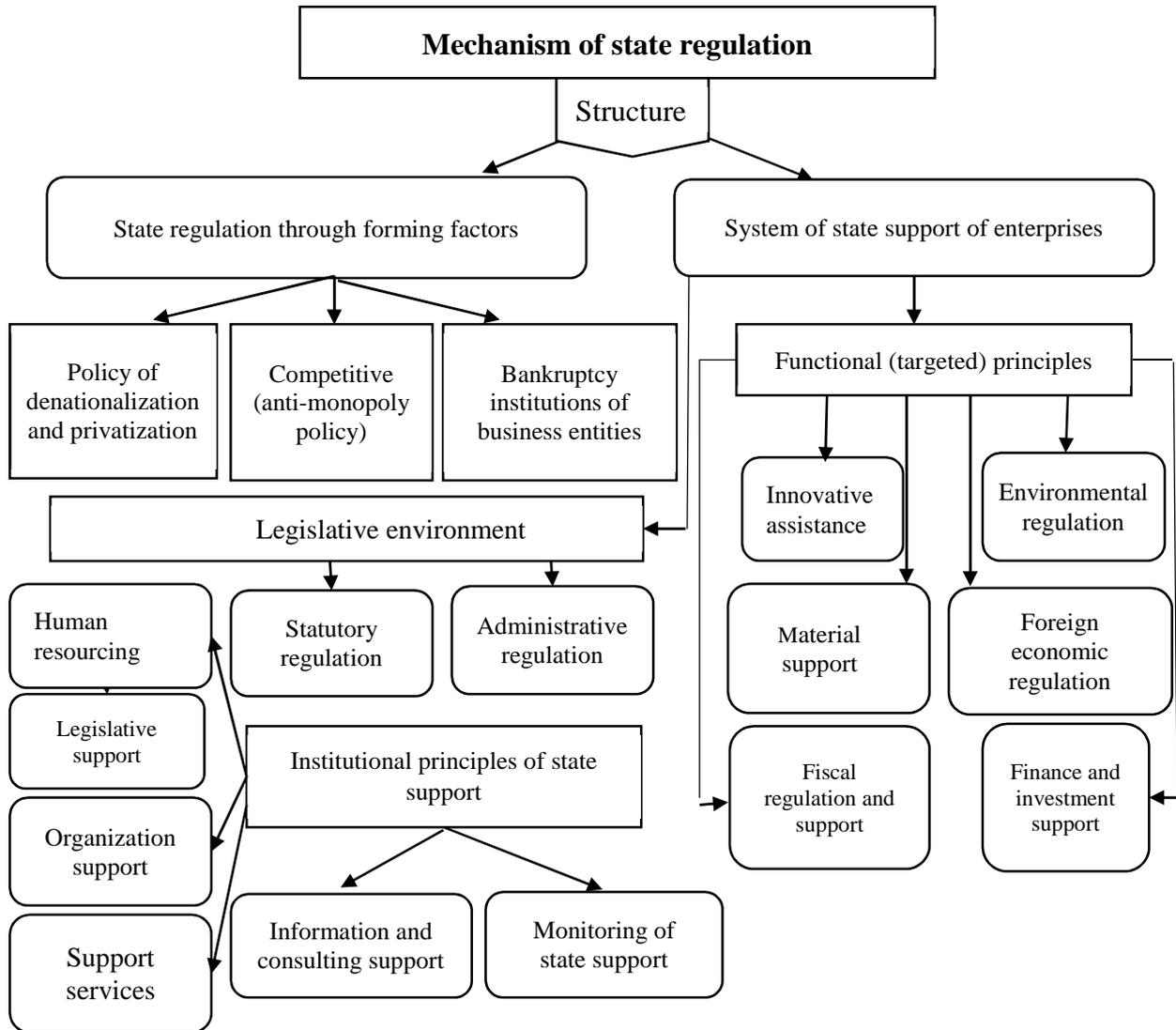


Fig. 2. Mechanism of state regulation of economy entities functioning

Table 1

**Factors and prospects of strategic development of enterprises on current level**

Current evolvement	
Favorable factors	Factors, which influence on development
1	2
<ul style="list-style-type: none"> <li>- business activity of society;</li> <li>- extension of the middle class and increase of the level of democratization;</li> <li>- availability of development programming and support carried out by government bodies on all levels;</li> <li>- softening of administrative barriers to access to business activity;</li> <li>- availability of supporting services;</li> <li>- availability of developed system of self-organization</li> </ul>	<ul style="list-style-type: none"> <li>- absence of negative tendencies of development, sufficient level of investment activity;</li> <li>- efficiency of state legal administration and support;</li> <li>- systematic nature of solving development problems;</li> <li>- stabilization of competitive environment, reduction of monopoly level and corruption in "business-state" relations ;</li> <li>- liquidation of shadow markets;</li> <li>- sufficient level of economic stability of enterprises activities</li> </ul>

1	2
Prospects of development	
<ul style="list-style-type: none"> <li>- improvement of accessibility of enterprises to funding and financing resources;</li> <li>- reduction of level of industrial energy and resource consumption, increasing of competitiveness;</li> <li>- popularization of national enterprises on foreign market;</li> <li>- development of investment activity of enterprises;</li> <li>- increasing of quality of regulation system of enterprise;</li> <li>- improvement of protection of property rights</li> <li>- economy-wide stabilization.</li> </ul>	<ul style="list-style-type: none"> <li>- reduction of level of competitiveness as a result of incorrect innovation activity of national enterprises;</li> <li>- increasing of resource consumption of national industries as a result of prices increasing;</li> <li>- lose of grounds on market and reduction of quantity of national enterprises under conditions of European integration.</li> </ul>

The search of instruments which are specific and efficient on practice in the system of state regulation of strategic development of enterprises and economy in general is important for effectiveness of state management.

Instruments of state regulation of strategic development of enterprises are considered as mechanisms and institutions with the help of which, regulating activity is conducted in economy. This activity is aimed at distribution of resources and formation of proportions is conducted in macroeconomic system.

The most important parts in state regulation of strategic development of enterprises play economic instruments. The most important parts are the following: macroeconomic planning, budget, taxes, money, loans, prices, salary. The

main instruments of regulation are the following: 1) direct state stimulation of scientific research works and developmental works by the means of distribution of budgetary resources and extra-budgetary financial resources (state-guaranteed order, grants, credits); 2) indirect state stimulation of science and mastering of their achievements in state and private sectors of economy; 3) granting of different range of credits and benefits to innovative companies of the process; 4) formation of innovative climate in economy and services of providing with researches and developments. In generalized form, the systematic instruments form the context and nature of influence on economic phenomena and Ukrainian economy in general according to determined areas of state regulation (fig. 3).

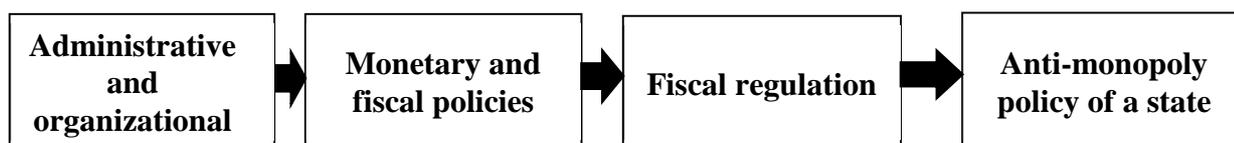


Fig. 3. Main areas of state regulation of strategic development of enterprises of national economy

Suggested areas of actions, according to tasks which are solved by a state and forms of its interference into economy, can be seen in such structure (Fig. 4). They are grouped according to the level of the most possible influence of state regulation.

Summarizing all mentioned above, it is possible to conclude that the ways of development and state regulation policy in the area of stabilization of enterprises activities are the creating of

favourable business environment due to intensification of both finance and credit and investment support of enterprises, and creating the development system of potential of enterprises of a state sector of economy, and of public interest enterprises of a private industry.

Experience of functioning of many Ukrainian enterprises in modern conditions proves that despite having sufficient industrial potential, considerable part of enterprises cannot hold their competitive

positions on market. It creates the necessity of detailed study of the structure of external environment of enterprises, and it is also necessary to carry out an analysis of tendencies of the change of its factor. Strategic development of national business entities should be considered as a combined category which is formed under the

influence of the chain of factors of both internal and external environments, which act interdependently and interrelatedly. Despite being in market terms of economy, which are characterized as having increased dynamic and indeterminacy, enormous importance in it is taken on external environment factors.

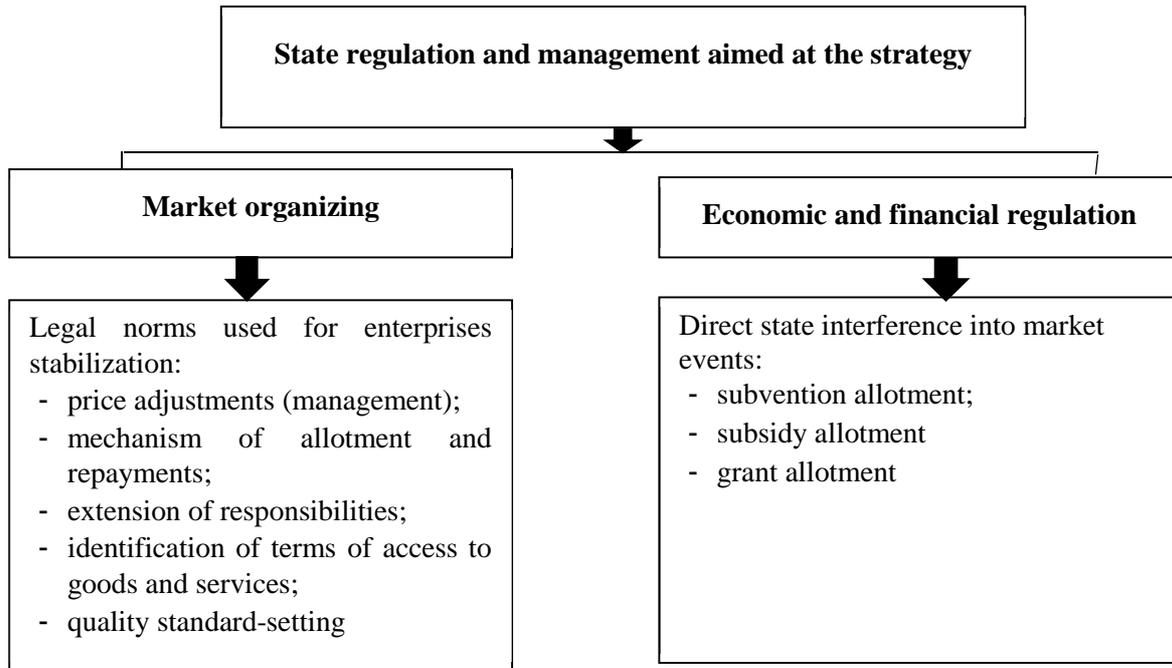


Fig. 4. State regulation division according to their tasks and forms of state interference [15, 9.10]

To evaluate changes it is possible to suggest using substantive rate evaluation while their gaining of potential of a long-term development. This evaluation should be based on available data on enterprises activities: balance sheet (checklist 1) and profit and loss account (checklist 2). This method helps to determine strengths and weaknesses of enterprises development. Since the rating is determined basing on a chain of different factors, which characterize different aspects of enterprises activities.

Final rate evaluation includes all important operation factors of enterprises which are the following: their industrial potential, product profitability, efficiency of the use of industrial and financial resources, state and location of factors of industry, sources of funding etc.

In the processes of state regulation it is possible to use another analytical approach to evaluate factors and conditions of enterprises

activity state to determine strategies of their development. One of these methods of strategic analysis permits to determine which enterprises are secured in conditions of unstable market. This methodology presupposes that there exists effective, cheap and reasonable way to evaluate enterprises activity state in administrative system.

### Conclusions

Improvement of methods and mechanisms of management of strategic development of enterprises of state sector is connected with specific socio-economic changes in countries which appear as a result of improvements in both internal and external environments. The system of management has to react to external challenges appropriately and in time to provide effective enterprises functioning. On one hand, a state has to assist in effective functioning of private sector, because it is fundamental for economy itself, but on the other

hand, a state has to provide competitiveness of enterprises of state sector as equal market entities.

### References

1. Latynin, M. & Lukashov, O. (2017). *Kontseptualni pidkhody do derzhavnoho rehulivannia stratehichnoho rozvytku rehionu za kordonom [Conceptual approaches to state regulation of strategic development of the region abroad]* *Mizhnarodnyi naukovi zhurnal "Internauka". – International Scientific journal "Internauka"*, 9 (31), 18–26 [in Ukrainian].
2. Tolubyak V.(2018) *Yednist derzhavnoho rehulivannia i stratehichnoho upravlinnia: aspekt staloho rozvytku rehioniv. [Integrity of state regulation and strategic management: sustainable development of regions case]. Investytsii: praktyka ta dosvid - Investment: practice and experience*, 10, 83–87 [in Ukrainian].
3. Koop, C. & Lodge, M. (2017). "What is Regulation? An Interdisciplinary Concept Analysis," *Regulation & Governance* 11:1,P. 95–108. Koop, C. and Lodge, M. (2017), "What is Regulation? An Interdisciplinary Concept Analysis", *Regulation & Governance*, vol. 11:1, pp. 95–108.
4. Levi-Faur, D. (2013). *The Odyssey of the Regulatory State: From a 'Thin' Monomorphic Concept to a 'thick' and Polymorphic Concept*. *Law & Policy*, 35, 29–50.
5. Moran, M. (2003), *The British Regulatory State: High Modernism and Hyperinnovation*, OUP, Oxford, United Kingdom.
6. Hood, C., James, O., Peters, B. G. & Scott, C. (ed.). (2004). *Controlling Modern Government: Variety, Com-monality, and Change*. Edward Elgar Publishing, Cheltenham, UK.
7. Kharchenko, V. A. (2014). *Kontseptualni zasady formuvannia systemy stratehichnoho upravlinnia rozvytkom pidpriemstva.[Conceptual basics of formation of the system of strategic management of the enterprise development].* *Skhid - Skhid*, 5, 52–56 [in Ukrainian].
8. Shcherbina, V. S. (2013). *Hospodarske parvo [Business Law]. (6<sup>th</sup> ed., rev)*. Kyiv: Jurinkom Inter [in Ukrainian].
9. Karsekin, V. I. & Hlopyak, S. V. (2009), *Udoskonalennya instrumentiv finansovo-investytsiynoi polityky u sferi derzhavnoho rehulivannia [Perfection of tools of financial and investment policy in the sphere of state regulation]*, Kyiv: Znannya [in Ukrainian].
10. Stechenko, D. M. (2007), *Derzhavne rehulivannia ekonomiky [State regulation of the economy]*, Kyiv: Znannya [in Ukrainian].
11. Kovbasyuk, Y. V., Hrytsyak, I. A. & Surmin, Yu. P. (2011), *Entsyklopediya derzhavnoho upravlinnia [Branch Management]. (Vol. 1-8). (4rd ed.)*. Kyiv: NADU [in Ukrainian].
12. Stepanenko, S. V. (2013). *Evoliutsiia naukovykh pohliadiv i vybir kontseptsii pidvyshchennia efektyvnosti derzhavnoho rehulivannia protsesiv ekonomichnoho rozvytku [The evolution of scientific views and the choice of concepts for improving the efficiency of state regulation of economic development processes].* *Teoriia ta praktyka derzhavnoho upravlinnia - Theory and practice of public administration*, 2, 193–200 [in Ukrainian].
13. Mamatova, L. (2017). *Derzhavne rehulivannia pidpriemnytskoi diialnosti v Ukraini [State regulation of entrepreneurial activity in Ukraine].* *Visnyk Pryazovskoho derzhavnoho tekhnichnoho universytetu. Serii : Ekonomichni nauky - Bulletin of the Azov State Technical University. Series: Economic Sciences*, 33, 153-160 [in Ukrainian].
14. Marusheva, O.A. (2018). *Stratehichne upravlinnia mekhanizmom normatyvno-pravovoho rehulivannia sotsialno-ekonomichnykh vidnosyn u budivnytstvi [Strategic management of the mechanism of legal regulation of socio-economic relation in construction]* *Teoriia ta praktyka derzhavnoho upravlinnia- Theory and Practice of Public Administration*, 4(63), 1–6 [in Ukrainian].
15. Yermolenko, O. A. (2013). *Osnovni instrumenty derzhavnoho rehulivannia v enerhetychnii haluzi Ukrainy [The main instruments of state regulation in energy sector of Ukraine].* *Naukovi visnyk ChDIEU - Scientific journal of ChSIEM*, 3(19), 9–15 [in Ukrainian].

**UDC 658.5.011:004.01**  
**JEL Classification Code C89**

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## **THE SPECIFICS OF DESIGNING INFORMATIONAL DOCUMENTS OF NONAUTOMATED DATABASE OF THE COMPUTER ACCOUNTING SYSTEM**

**Abstract.** Theoretical aspects of designing informational documents of nonautomated database of computer accounting system (CIS-BO) are clarified. At the same time, the main emphasis is on such components of nonautomated database, as information documents with operational and resultant information, because for machine processing of data their proper construction defines the efficient operation of CIS-BO. The conditions of functioning CIS primary documents remain the leading carriers of input (primary) data and a means of registration performed by enterprises or establishments toward economic operations. Despite current trends in the use of paperless informational technology, the document is still the most widespread carrier of information. There is a technique of designing forms of operational information, taking into account the peculiarities of the application of different methods of controlling the correctness of informational input. Also, there are works on creating visual forms of information output.

**Key words:** computer accounting informational system, informational software, nonautomated database, automated database, methodology for designing primary documents, work with creating visual forms of information output.

### **Formulation of the problem**

There are many options for creating computer accounting informational systems. Computer specialists develop an automated data base of such systems, but the question of designing the nonautomated data base of such a system is still actual. It is specially true for informational

documents with operative information and information about results. The primary documents for sales, that enterprises and organizations use, in the vast majority do not take into account the specifics of their work. The accountant needs to cross out the unnecessary lines and columns of such documents to exclude any possibility of illegal actions in the future (writing in the documents of non-existent material as sets in the warehouse, fictitious production of products by the employee, etc.). A thoughtful designed primary document, especially for the conditions of machine information processing, dramatically improves the efficiency of using CIS-BO.

Also, purchasing software for accounting automation, the buyer chooses a specific list and content of documents with results. But many of these productive forms do not suit the buyer, do not contain the complete information needed to make effective management decisions. Such forms need to be modified and must be designed for the specific nature of the enterprise or organization.

Based on practical experience in the development CIS-BO for budget organizations, machine-building enterprises, exploration expeditions, etc. we are deeply convinced that accountants have the best knowledge of the subject area, and only they understand which information and in which extent should be shown in primary and output documents of enterprise. First of all, accounting staff should

develop informational materials for nonautomated IB KIS-BO, because they will operate this system, and accordingly, the theoretical and practical aspects of designing such documents should be shown in specific guidelines for employees of accounting services in enterprises and organizations.

### **Analysis of the latest researches and publications**

In [1], the authors made an overview of works - monographs, educational textbooks and manuals, scientific articles - devoted to the issues of implementation informational systems and technologies in accounting. Several aspects in building computer accounting systems have not been disclosed at all, or are referred superficially in scientific work. This concerns, first of all, the issues of building a nonautomated database of CIS-BO and, in particular, the design of informational documents of nonautomated database. Thus, the author of the monograph [3, p. 134] considers the improvement of commercial information carriers in CIS-BO but does not show the peculiarities of their design, especially taking into account the methods of controlling the correctness of the input of information, etc. aspects. The monographs [4,5] make no mention in aspects of building the nonautomated database, although the author considers the audit in the context of the use of computer accounting systems. In scientific articles, the authors, covering the issues of application of informational systems and technologies in accounting, donot even mention the peculiarities of designing information documents of the nonautomated database CIS-BO. To some extent, such issues have been reflected in several text books [6, 7, 8, 9], but quite superficially. Therefore, the problems of designing a nonautomated database o finformational documents requires more detailed study.

**The purpose of the article** - to develop the methods of designing documents of the nonautomated database KIS-BO, that accountants will use and show its practical implementation.

### **The presentation of the main material**

In [1], the authors considered the methodology of designed codes that existed in the

nomenclature as an existing component, fixed in the system of informational and exploratory system, based on a computerized system of accounting survey and subjects that were presented by separate methods, developed a methodology for designing informational data, necessary for this. For performing in hole amount accounting functions in management of the enterprise and for preparing the reports provided to external users, it is necessary to collect, register, transmit, accumulate, store and process credentials, which in turn requires the implementation of this informational process, the availability of the necessary forms of work organization, technical means, methods and ways of data transformation, as well as staff of specific qualifications. All of this makes an automated accounting information system, which is an integral part of the CIS (AIS) of the enterprise.

Through KIS-BO's security components, as it is known [1, 2], are informational and methodological materials, a classification and coding system, and a database (IB), which in turn contains both nonautomated and authomated IB.

The structure of the nonautomated IB KIS-BO is shown in Fig. 1.

Based on the purpose of the article, we are interested in informational documents with operational and based on results information, since their correct construction ultimately depends on the effectiveness of CIS-BO, regardless of whether the company purchased this system in the software market, or develops its own.

Own practical experience of developing CIS-BO for budget organizations, machine-building enterprises, etc. allows us to assert that accountants are best in the subject area and only they understand what the content of the primary documents in the accounting areas should be in content and what resultant information in the source machine charts most fully reflects the essence of the accounting processes. Therefore, information documents with operational and based on results information for nonautomated IB KIS-BO should, in our opinion, be developed by the accountants who will operate this system. Therefore, accountants should have a deeper theoretical knowledge and practical aspects of such work.

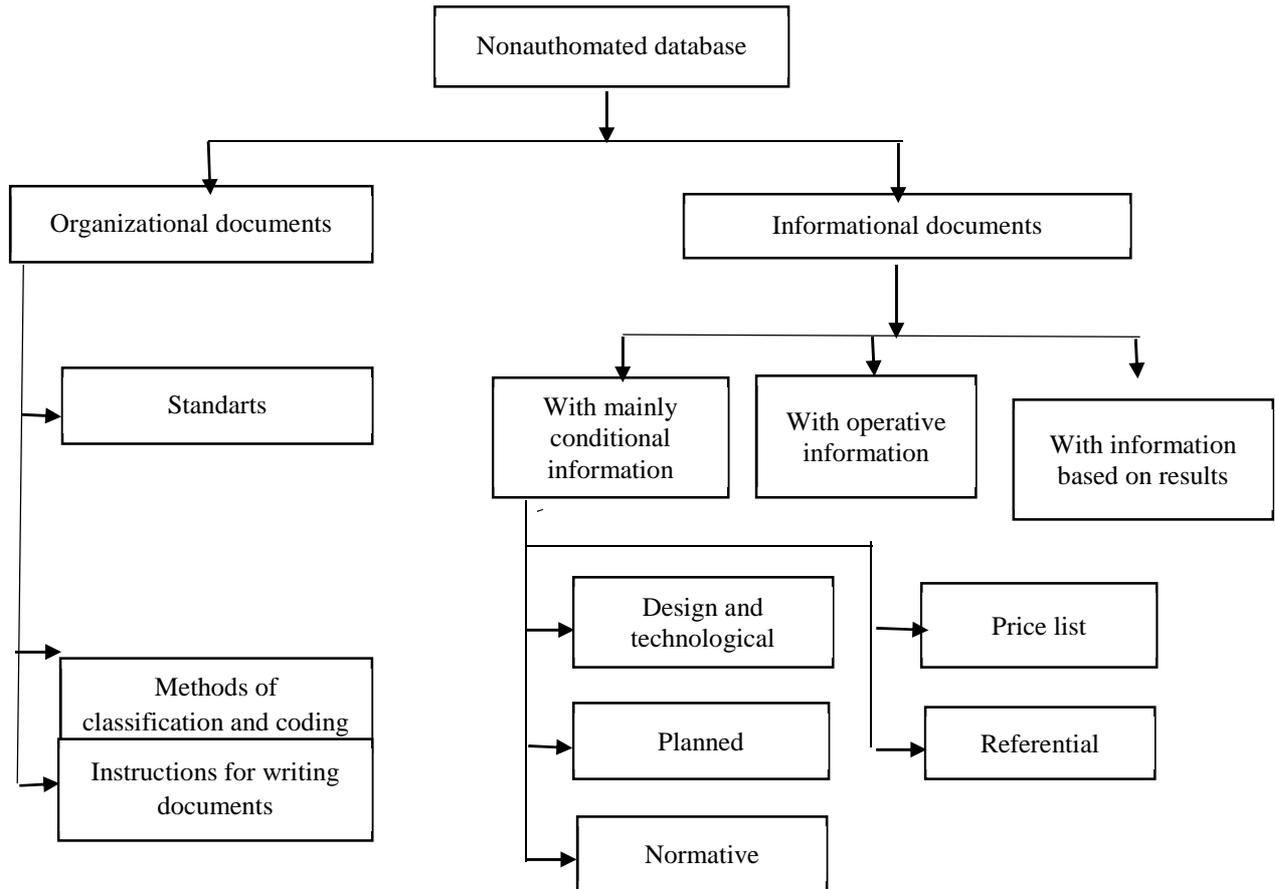


Fig. 1. Structure of nonautomated database

In order to consider the question of development informational messages about work, CIS-BO IB adheres to certain basic concepts that need to be noted in such questions.

In the functioning IC are the original documents that were based on the most recent (primary) data received from the service, which were recorded in their own enterprises. Not using current trends, using “paperless” information technology, the document is the most widespread in new information.

There are some problems when designing forms of input and output documents. In our opinion, the most important are two, in particular:

1) designing the content of the documents, the composition of the details and indicators that will be included in these documents;

2) designing the geometry of documents, that is, placing details in the form of documents.

In conclusion, from the successful resolution of the first problem depends the effectiveness of management decisions based on the resulting CIS-

BO information. The documents should necessarily have all the details are required to compile a complete set of accounting records, control and analysis of business activities. Primary documents are the basis of accounting, and are a means of prompt action, guidance and control over the course of the production process. In addition, primary documents are a kind of link between contractors and company management.

For example, a piecework contract is a task for the contractor and is intended for operational planning, the link between the contractor and the work manager, is controlled and signed by him (master, foreman, etc.). Once the work has been completed, the outfit is the basis for accounting the implementation of the plan, the determination of labor productivity, the calculation of wages, as well as for the distribution of wages in the direction of production costs and performs a number of other functions.

Material values accept and release based on primary documents od these values.; carry out

quantitative and summative accounting in warehouses and in bookkeeping, writing off the amounts of value of tangible assets in the directions of production costs for making it; prompt accounting in the logistics department of the enterprise; compile statistical reports and the like.

Therefore, when designing primary documents, it is necessary to take into account the requests of all business units that use the input data recorded in these documents.

Thinking about the second problem of designing informational documents - creating their geometry - let's clarify some familiar concepts, including:

- forms of primary documents;
- a model of document construction;
- the technique of designing the primary material.

As is known [2], there are three forms of initial construction of the documents: questionnaires, linear, tabular (plate), combined.

**The questionnaire form** of construction involves the placement of machine-requisite details in a vertical sequence. For the typed names of the details left side of each line is used, and the right hand is used for hand answers to the questions. This form can be used if the primary documents are filled by different persons. According to the questionnaire method, identity cards of employees, some zones of statistical reporting forms were constructed.

An example of constructing a document in a questionnaire way is given below.

Name of the details	Meaning of details
Place of work (direction, department)	
Basic number	
Surname, name and middle name	

**The linear form** of construction involves dividing the blank into zones for recording separate groups of logical or arithmetic dependencies. At the same time, it is filled by one artist and belonging to one particular accounting work or having another form of connection. In this form, there are two columns for each prop: one for the name and the other for the data recording. Forms built on a linear basis are common in accounting work. They can

include all single-line documents, such as individual outfits, income and expense documents for accounting for tangible assets, etc.

An example of constructing a document in a linear way is given below.

Department		Field		Executer	
Name	Code	Name	Code	Surname, initials	Basic number

**A spreadsheet or tabular form** of construction provides several rows for each zone or group of details. This principle of creation comes from a linear structure. The advantages of this form are the compact placement of details and the ability to capture a larger amount of information than in other forms. It reduces the total number of primary documents in the enterprise.

Below you can see an example of constructing a document in a tabular way.

Name, sort, material scale	Number of nomenclature	Unit of measurement	Amount		Price	Total
			Sent	Accepted		

Documents that combine different forms, such as linear and tabular, linear and questionnaire, etc., are more common. Therefore, the most effective is the combined form, in which part of the details is in a linear form, and the other part is in a report card and questionnaire (for example, a card for the production of workers, etc.). Combined form fully connects the benefits of different principles of form building.

As an example of a document designed for a combined form of construction, give a type of invoice for the delivery of finished products (Fig. 2).

Invoice № \_\_\_\_

Date	Type of operation	Warehouse-receiver	Department-sender

Who is the receiver of material (Surname, name, middle name)

Name, sort, material scale матеріалу	Number of nomenclature	Unit of measurement	Amount		Price	Total
			Sent	Accepted		

Handed over \_\_\_\_\_ Accepted \_\_\_\_\_

Fig. 2. Form of nomenclature for delivery of finished products

Documents that reproduce the processes of operating in structural units of management are different in purpose and divided into estimates, designed and technological, planned, regulatory, accounting, operative, and more. Such grouping allows determining the sources of origin of each type of documentation, routes of their movement, organizational bases of development, tools, and methods of processing.

Despite the wide variety of unified forms of primary documents, unique (own) forms of internal documentation are developed for specific information processing systems that satisfy certain specific user conditions. Such forms shall be designed in accordance with the requirements of the standards.

The primary document contains a definite composition of detail-signs, referential and grouping, detail-basics, input, and output. On the document form, the details are following the rules that require the unified documentation system and the requirements of standardization of documents.

The standard forms the formats and sizes of the document fields and rules for the placement of details, taking into account the sample form. A sample form is a model for building a document (Fig. 3).

Adress and name of company	Index of document and approval stamp
	Name and meaning of details-signs, regular on document
<b>Name of document and his number</b>	
Zone of content (name of the rows, columns and meaning of details)	
Zone of jurisdiction (signature of responsible person, seal)	

Fig. 3. Model of making document

Each document divides into six zones. The first four zones are the title part of the text, the fifth zone is the informative part, and the sixth zone is the legal part.

Forms of primary documents should be as much as possible adapted for machine processing of information and convenient for human perception. First of all, it is necessary to take into account the logical sequence of placement of details, ease of filling, reading, and processing. It is advisable to place the information on the document in the following order: constant, then variable referential and grouping signs, and detail-basics.

A requirement is also to minimize the details of the document. It is not required to make regulatory, pricing, referential, as well as secondary data, which significantly simplifies the forms of materials, dramatically facilitates their completion and further processing, improves the reliability of the information, reduces the time spent on the preparation of arrays and their control. **Usually in primary documents enters unique columns and rows to record the control numbers to control the completion of documents**, transfer of data to machine carrier, and input to EOM. The accountant must have minimal knowledge of methods of controlling the correctness of transferring information from primary documents to the computer to understand the need for designing unique columns and rows in materials to record the control numbers. So let's look at this more detailed.

Designing processes of controlling the correctness of filling and transferring data from primary documents [2, p. 74-77] is connected with the knowledge of methods of ensuring the reliability of the information in the economic informational system.

Most of the control methods based on the introduction and use of excess digits, details, records. You can apply double and usual excess.

Excess bits calculates according to a specific algorithm for converting values of a controlled number and recorded together with a controlled number. An example of this method is module control. Excess details are a function of manipulating a set of controlled details. The summation is preferably used — the received checksum records in a unique column for this.

Excess records contain control information regarding the block of notations or files in general (for example, balance control).

*Double redundancy* forms during second transferring of data to machine carrier with subsequent comparison of results. Usual redundancy is on reasonably foreseeable values of controlled details. These include module control and checksum.

**Module control.** To calculate the control discharge is widely used methods of control module 9,10,11,13. Firstly determines the sum of S bits of code (the amount of the products  $K_i$  obtained after multiplying each digit  $P_i$  by its weight, or the serial number  $N_i$  in the system,  $K_i = P_i * N_i$ ). Then sum divides by the selected module  $m$ . The resulting residual  $d$  subtracts from a division from the same module. The resulting difference  $R = m - d$  (or its lower digit) in the form of a control digit is right from the code.

*Example.* Calculate the control digit number 24856 modul 9

$$S = 2 * 5 + 4 * 4 + 8 * 3 + 5 * 2 + 6 * 1 = 66$$

$$S / m = 66 / 9 = 7 (3), d = 3$$

$$R = m - d = 9 - 3 = 6$$

Therefore, the number with the check digit 248566. When entering such codes in the computer programmatically, the necessary checks perform and an error will be detected (or not), if any.

*If such method of control is used in CIS-BO, when making codes, such as 5-digit number plates, the code length will increase to 6 characters and, accordingly, in the original document of the "Number plate" should have sufficient width to record such details.*

**The checksum** can organize through the line or column of the document. The checksum - is the sum of all the digital details in the control sequence. Determine it before transferring the data to the

machine manually using calculators. Examples include finding checksums for the following document:

Department	Number plate	Code of detail	Amount	Checksum
01	1000	202	30	1233
01	1000	103	10	1114
01	1000	301	20	1322

After transferring data to the machine carrier, the checksum is again calculated, but with the help of the program. The failure of the checksums, calculated manually and automatically, indicates an incorrect line.

*If the described method of control is used in CIS-BO, the accountant must design a graph for noting the checksums when making primary documents.*

Using the checksum on a document column, you can similarly detect the location of an error. Quite often, the accounting notes use the excess files that characterize the document as a whole. Such methods include **balance control**. Let's say you need to provide the user with the following content:

Surname, name, middle name	Number Plate	Salary	Receive	Total receiving per person
A	100	300.00	102.00	198.00
B	101	105.00	12.50	92.50
C	102	176.50	19.25	157.25
		581.50	133.75	447.75

The control is to calculate and compare the amounts:

$$581.50 - 133.75 = 447.75$$

Methods based on usual redundancy include:

- boundary check method (fork method);
- method of reference;
- method of checking the structure of the code;
- method of checking sums and products.

A **boundary check method** is possible if the set of allowable values of the controllable props is within some bounds of the prohibited values.

Amin  $\leq$  A  $\leq$  Amax

Suppose that the value of the props "warehouse code" is in the range from 1 to 12. Then the control is organized using the looking rule: 1  $\leq$  warehouse code  $\leq$  12.

The method is sufficient if the values of the controlled props are evenly spaced on the numerical axis.

**The method of reference** is based on specially created tables that contain the correct requisition codes (for example, vendor codes, employee ID codes, etc.). During the control, the reference table is used to find the controlled code. If such a code is found, the error is considered missing.

Look at an example. The primary documents of the "Sheet of Account a working time" provide information on each employee (each number plate) about the time worked on calculating salary. When from the primary document the accountant who conducts calculations about salary dials the number of number plate, program, in which the information leads in (implements the control of the input of the data by the directory method) goes to the directory with the information about employees. The code from the original document number plate is matched alternately with all the plate numbers in the register before (or not) these codes match. In the first case, the information collected from the primary documents saves in the computer. In the second case (if the number plates do not match) - the error message will be displayed on the monitor screen. In this case, the following actions of the operator (accountant) are possible:

1) the wrong code number plate was typed; you need to correct the error and repeat the input;

2) the correct number plate number has been typed, but the information about this employee is not present in advance in the employee manual. It is necessary to supplement the directory with information about the new employee, so repeat the data from the original documents "Sheet of account the working time."

From the example, we can conclude that updating of directories (before the task is solved) is a prerequisite for controlling the entry of information by the method of the directory.

There are other methods for controlling the correct entry of information into your computers, such as the code structure check method, the sum and product check method, and more. The essence of these methods is in detail in [2].

Today, there are software systems that provide entry and control of data. For the most part, these packages control the format of the props, the presence of forbidden characters, the values of excess bits, the range of signification, the nomenclature of significance by reference, the total sums.

All methods of control of the reliability of information are exclusively programmatically. The same techniques that do not require this are done manually according to the instructions – for example, control of correctness of filling of primary documents.

When thinking about the construction of the primary document, the details that are transferred from the primary material for further processing by CIS-BO should be concentrated in one part of the report and surrounded by a thickened line. Do not move to machine carrier and are not surrounded by a thickened line on the primary document details that can be found in the process of machine processing of information from the referential arrays.

*Example 1.* From the original document "Invoice from tangibles" does not transfer to the computer the name of the material, the price of its unit, the name of the group of measure, etc., because these details can be selected by the nomenclature number of content from the pre-formed directory of names and prices of tangibles. Accordingly, on the original document "Invoice for the receipt of tangible assets" such details as the name of the material, the price of a unit of material, the name of the group of measure, etc. do not encircle by thickened line.

*Example 2.* If a primary document from accruing salary is processed, for example, a sheet of account the working time, it is not transferred to the

computer from the document the name, surname and middle name of the employee, since the nameplate gives the last name, first name and middle name will be found and selected from a pre-generated directory. Therefore, even in the original document "Sheet of account the working time" the name, surname and middle name are not bolded.

*It is advisable to carry out the design of primary documents in the following sequence (the technique of designing primary documents):*

- determine the content of the original document, the composition of included details;
- to place details in a particular sequence and interconnection;
- develop a sketch of the primary document form (full-scale design);
- unify the types of primary documents;
- agree with the format of the original document with the content of the machine media;
- clarify the form of the original document;
- make a sample document for ordering in a printing house.

If technical means take part in making the primary document, particulars of such factors need to be taken into account. Materials from which data is transmitted by fax, telegraph (they have entered service marks) have certain features.

The size of the blank is determined by the amount of information in this document. The width of each column depends on the maximum number of digits recorded in that column. Abbreviations are used to record textual information. Formulas for calculating the size of the primary document are given in [2, p. 89]

The found width and length values select the appropriate format according to the standard (in the pulp industry produce paper rolls of appropriate sizes) to adjust the width and length of the individual columns and rows of the document. Usually the following standard formats are mm: 420 x 297; 297 x 210; 210 x 148. From a specified sketch, a sample document becomes ready for approving a form and printing.

**The design of inference information about results** has a lot in common with the design of primary documents, especially in determining

storages, a sequence of placement of details. At the same time, design characterizes by some specific requirements, like operational capabilities of the technical means, general data processing technology, purpose and methods of their use.

All output forms divide into two groups:

- intended for visual use;
- designed for machine use.

The first group includes paper documents (machine diagram, diagrams, graphs), a board, a television screen. The second is all machine carriers.

Works in designing visual forms of output makes in the following sequence in:

- determining the list of data with results;
- dividing the result indicators by machine diagram, and video diagram, compiling a list of source forms;
- giving each form a name and number (code);
- determining the frequency of assembly and the time of receipt of each initial form;
- determining the location of the typescripts and the required number of copies;
- developing a sketch of the original form;
- determining the composition of the informational arrays required to obtain each form;
- establishing the sequence of making the initial forms and the general technological process; preparing reference examples of the initial forms, which are then discussed and specified;
- approve specified forms of output.

Especially noteworthy is the development of the sketch of the visual form of output. First of all, for every type is determined the content of its three zones :

- a title or title page of the machine diagram, which presents once or partially on each page;
- column header (column names and numbering are on each page);
- the main subject (information) part.

The last zone is with rows of two types: specified and summary. Specified rows contain the data that is in the records of the input arrays. The details in the specified row should be from left to right in the following order:

- permanent;
- variable;
- total in amount.

Before entering details in the specified sequence, it is necessary to establish a hierarchy of crucial and quantitative and final details. It is essential to make the following: at the beginning the key details, which has the highest level in the hierarchy, then which has the next level, etc.

Talking about basic details, they are in the reverse order: at the beginning, the details with the lowest level of the hierarchy, followed by the next level details, and so on.

**Example.** The following details must be noted: department (K1), station (K2), plate number (K3), sum by plate number (P1), sum by district (P2), sum by department (P3). The hierarchy of key details and essentials will be as follows:

$$K1 \rightarrow K2 \rightarrow K3 \text{ and } P3 \rightarrow P2 \rightarrow P1.$$

Then, in accordance with the stated rule, the document with the results will take the form:

Department	District	Number plate	Sum of number plate	Sum of district	Sum of department
K1	K2	K3	P1	P2	P3

The summary lines contain the quantitative and total results for specific grouping characteristics, the results of the performed calculations. Estimated indicators (the amount for the districts, the amount for the department, etc.) are sometimes not in the column of machine diagrams, but in rows. Then the summary lines enter the totals indicating the results of the calculation for each detail. For example: “Summary for District 1”, “Summary for District 2”, “Summary for Department 1”, “Summary for Department 2”, etc. Often, text lines (such as “Together by ...”, “Total,” etc.) add to the summary lines.

During determining the content and form of the document takes into account its purpose, sphere, and features of use, frequency of receipt, etc. It is important to relate different performance metrics to determine whether you can combine them into one form or whether you need to form two or more similar forms at the same time. It is necessary to remember about the technical capabilities of the informational means of output, but also the features of the provided software tools for data preparation and output. For example, when designing video games, the informational capacity of the display screen, the number of lines per frame, and the number of characters per line are taken into account.

When processing information on the computer, all the outgoing documents are first

formed on machine carriers and then displayed in the form of machine or video diagrams. In such materials, the resultant information is in two modes: regulatory and query. In the regular method, the machine diagrams are issued according to the plan following previously set terms. For example, payroll is made monthly, and the user can get it following clearly set dates.

The request mode ensures that the resulting information can be seen at all times. For example, querying the number of employees of an enterprise by staff category as of the current date, etc.

### Conclusions and perspectives of further research

Therefore, the accountant, who will operate this system, should develop the informational documents, in particular, operational and documents with result information, as one of the components of the CIS-BO nonautomated database. Using the methods proposed in the article and acquainted with the peculiarities of designing informational documents and having a thorough knowledge of accounting processes of the company, only an accountant will be able to create effective forms of primary documents and documents with results, on which rational management decisions base.

The subject of further research is the creation of a methodology for the design of rational document circulation, which is important for automated information processing at the enterprise.

### References

1. Shkvir V., Borshchuk I. (2018). *Methodology of construction accounting nomenclature codes of non-automatic informational base of computer accounting system. Economics, Entrepreneurship, Management*, 5 (2), 51–58. <https://doi.org/10.23939/eem2018.02.051>.
2. Shkvir, V. D., Zagorodniy, A. G. & Vysochan, O. S. (2017). *Informatsiini systemy I tekhnologii v obliku ta audyti [Information systems and technologies in accounting and auditing: textbook], (4th ed, rev) [in Ukrainian]*.
3. Benko, M. M. (2010). *Informatsiini systemy I tekhnologii v bukhalterskomu obliku [Information systems and technologies in accounting]*. Kyiv: nats auction.-econ. Unt. [in Ukrainian].
4. Ivakhnenkov, S. V. (2010). *Informatsiini tekhnologii audytu ta vnutrishnohospodarskoho kontroliu v konteksti svitovoi informatsii [Information technology of audit and internal control in the context of world information.] Zhytomyr: PE "Ruta" [in Ukrainian]*.
5. Ivakhnenkov, S. V. (2005). *Kompiuternyi audyt: kontrolni metodyky i tekhnologii [Computer audit: control techniques and technologies]*. K: Knowledge [in Ukrainian].
6. Susidenko, V. T. (2016). *Informatsiini systemy i tekhnologii [Information system and technologies]*. Kyiv: Tsentr uchbovoi literatury [in Ukrainian].
7. Sytnyk V. F., Pysarevska T. A., Yeromina N. V. i Kraieva O. S. (2001). *Osnovy informatsiinyh system [Basics of information systems: textbook], (2 edition, rev)*. K: KHEV [in Ukrainian].
8. Honcharuk Y. A., Marushko N. S, Lozovytskyi D. S. and Volyniak H. M. (2014). *Informatsiini systemy i tekhnologii v obliku [Information systems and technologies in accounting: textbook]*. Lviv: Mahnoliia 2006 [in Ukrainian].
9. Zhuravleva I. V. & Pasenko N. S. (2005). *Informacionnyie sistemy i tehnologii v uchete [Information systems and technologies in accounting: textbook]. X: XHCV [in Russian]*.

## THE EFFECTIVENESS OF THE PUBLIC SERVICES CO-PRODUCTION PROCESS – RESULTS OF A SYSTEMATIC LITERATURE REVIEW

**Abstract.** Nowadays co-production is seen as a valuable route to public service reform and to the planning and delivery of effective public services, which is gaining increasing attention. Despite this our understanding of co-production is limited and we still have a lot to learn about how and why coproduction works (and does not). Therefore there is a need to improve knowledge and ability to use co-production successfully. One of the unclear issues are the conditions under which co-production will most likely be effective and how important is trust in this context. This research gap was accepted as a research problem in the article. The main goal was to find answers to two research questions. First, what factors influence the effectiveness of the co-production of public services process? Second, what is the place and role of trust among the factors conditioning the effectiveness of the co-production process? The research was carried out using the systematic literature review and then the word cloud technique as a visualization of word frequency in a given text. As a result of the study, six key conditions for the effectiveness of the service co-production process were identified. One of them is trust, which also affects other factors, however, this is not the most important condition of effectiveness among those indicated in the literature.

**Key words:** public management, governance, public services, co-production of public services, effectiveness, trust.

### Introduction

Nowadays the steadily growing importance of services is one of the most important trends, including the public sector (Wolfl, 2005; Cali et al., 2008; Van de Walle & Scott, 2009; Przywojska, 2014; Denhardt & Denhard 2015). Currently observed social, political, economic and

demographic changes force public organizations to search for the new ways of providing public services (Keating, 2001; Kożuch, 2004; Pollitt & Bouckaert, 2004; Mandl et al., 2008; Mihaiu et al., 2010; OECD, 2011; Calabro, 2012; Osborne et al., 2016; Lewis & Fall, 2017; Frączkiewicz-Wronka & Kozak, 2018). Hence, methods of action suspending the effectiveness of providing public services are sought in order to address the citizens needs and satisfy their growing expectations. More and more often the solution is seen in deep engagement of both service providers and service users (which is fundamental for co-production), public services can be managed more effectively and efficiently and meet users' needs in a better way (Bovaird, 2007; Mangai & De Vries, 2018; Holmes, 2011; Stewart, 2009). Consequently one of the proposed solutions is striving to create an institutional environment fostering the co-production of public services.

The idea of co-production has been known since the 1970s. The precursors of defining the concept were American political scientists and economists Vincent and Elinor Ostrom. The main thesis they formulated in the book *Public goods and public choices*. In *Alternatives for delivering public services: Toward improved performance* (Ostrom & Ostrom, 1977) was that the collaboration between those who supply a service and those who use a service is essential if most public services are to yield the desired results.

Nowadays co-production is seen as a valuable route to public service reform and to the planning and delivery of effective public services, a response

to the democratic deficit, a route to active citizenship and active communities, and as a means by which to lever in additional resources to public services delivery (Osborne et al., 2016). Co-production as a new way of thinking about public services has the potential to deliver a major shift in the way of providing services, in ways that make them much more effective, more efficient, and more sustainable (Boyle & Harris, 2009).

There is no single definition of co-production. Co-production is defined, among others, as the voluntary or involuntary involvement of public service users in any of the design, management, delivery and/or evaluation of public services (Osborne i in., 2016) or regular, long-term relationships between state agencies and organized groups of citizens, where both make substantial resource contributions (Bovaird, 2007) or the involvement of citizens, customers, consumers and / or social organizations in the production of public services (Alford, 2009). Research in various disciplines of science (political science, economics, sociology, management, public policies) increasingly emphasize the importance of the growing role of citizens and the third sector in providing social services. At the beginning of the 21st century, along with the spread of the model of public governance that dominated theoretical considerations over the public sector (Hausner, 2008; Osborne, 2010; Pestoff, 2012; Wilkin, 2013; Denhardt & Denhardt, 2015), and the renewed interest in the participatory role of citizens, co-production became the subject of deep theoretical analysis and popular management practice in the local environment (Alford, 2002; Joshi & Moore, 2004; Osborne & Brown, 2005; Brandsen & Pestoff, 2006; Pestoff et al., 2006; Bovaird, 2007; Mitlin, 2008; Needham, 2008; Meijer, 2012; Pestoff et al., 2012; Jakobsen 2013; Osborne i Strokosch 2013; Poochaoren & Ting, 2015; Frączkiewicz-Wronka et al., 2016; Osborne et al., 2016; Sicilia et al., 2016; Kozak, 2017). Increased interest in co-production over the last two decades has provided important insights about it, at the same time becoming important challenges for public management (Verusche i in. 2012). Co-production as a new way of thinking about public services has the potential to deliver a major shift in

the way of providing services, in ways that make them much more effective, more efficient, and more sustainable (Boyle & Harris, 2009).

J. Fledderus (2015) argue that one of the most important contemporary researchers in the phenomenon of co-production, not co-production as such, but the way in which co-production is organized and managed determines its effectiveness. Effectiveness refers in this context to both the effectiveness of services as a result of co-production and the effectiveness of the co-production process - the extent to which this objective is achieved.

Effectiveness is understood as a “degree to which something is successful in producing a desired result; success” (Oxford Dictionary of English). Effectiveness relates to getting the right things done (Drucker, 2006). Effectively is the action that causes the intended result (Kotarbiński, 1982). The presented praxeological approach causes that the concept of effectiveness refers only to the concept of action and the concept of effectiveness can not be attributed to things (Zieleniewski, 1978). Effectiveness should therefore be seen as a measure of the success of the action (Kondalkar, 2010). The second important feature of effectiveness is purposefulness. Effectiveness consists in the fact that the measures taken lead in the expected way (not accidentally) to the intended result (Kotarbiński, 1982). The measure of effectiveness is the degree of approach to the goal – the cost is not taken into account (Griffin, 2013). Effective action is therefore the best way to achieve the expected results (Bukłaha, 2012).

Referring the concept of effectiveness to co-production, co-production will be effective if it will be a deliberate and practical action. Effective co-production will succeed in bringing the desired results such as creating the public/social value and increasing the quantity, quality and effectiveness of public services (Alford, 2009; Bovaird, 2007; Brandsen & Pestoff, 2006; Brown & Osborne, 2013; Calabro, 2012; Cepiku & Giordano, 2014; Glynos & Speed, 2012; Jakobsen, 2013; Marschall, 2006; Mitlin, 2008; Moore, 1995; Osborne et al., 2016; Ostrom, 1996; Pestoff, 2011; Radnor et al., 2014; Sorensen & Trofing, 2011; Tuurnas, 2015;). However, as noted by J. Fledderus (2015), one of

the most important contemporary researchers of the phenomenon of co-production, not co-production as such, but the way in which co-production is organized and managed determines its effectiveness. This last statement directs research attention to those aspects that are related to public management, in particular ways to support co-production by local government. Therefore, effectiveness in relation to co-production appears in two contexts: as its goal and as a condition for its achievement.

Similarly, a two-dimensional problem in the context of co-production is trust, which is indicated both as a condition and effect for the successfully co-production. Trust is an input in building the relationships as part of the service co-production process in the sense that it is one of the basic resources of each relationship. No ongoing relationship can survive without it. It is the output in the sense that effective, joint action in the co-production relationship strengthens and develops trust between the involved parties - successful cooperation produces a deeper and more successful relationship (Osborne et al., 2010).

Trust is defined as “a bet about the future, uncertain actions of other people” (Sztompka, 2007, 310). It is not only a hope, but also an action based on this bet, making a decision that is risky. Trust, taking into account a number of exceptions and reservations, generally has beneficial effects on social relations (Sztompka, 2007). These relations apply to all areas of social life, and the problem of trust in cooperation is gaining growing interest from both practitioners and theoreticians. Many researchers emphasize that trust is an indispensable condition for effective cooperation, whether between individuals or organizations, also in the public sector (Latusek, 2008; McQuaid 2010; Osborne et al., 2010; Latusek & Cook, 2012; Czernek 2012; Kożuch i Sienkiewicz-Małyjurek 2016; Sześciło 2015), also in relation to the co-production of public services (Yang, 2006; Pestoff, 2011; Osborne & Strokosch, 2013; Fledderus et al., 2014; Fledderus, 2015). Trust favors cooperation and strengthens it, and also affects its course and effects (Czernek, 2012) because his presence facilitates social interaction and provides the basis

for risk taking (Latusek-Jurczak & Prystupa-Rządca, 2014).

The category of trust is a key factor in satisfying public needs effectively, which is also one of the main goals of implementing a co-production of public service model (Kożuch & Sienkiewicz-Małyjurek, 2016). Therefore trust should be as important to the effectiveness of the co-production process of social services. However, while many co-production researchers pointed out that the effectiveness and efficiency of public services is the goal and effect of co-production, the issue of the effectiveness of the service co-production process is much less frequently discussed and less explored.

It is not clear, as T. Brandsen and V. Pestoff (2006) argued, under which conditions co-production will most likely be effective and how important is trust in this context. This research gap was accepted as a research problem in the article. Based on the results of the systematic review of literature and using the world cloud technique, the aim of the article is to find the answer to two questions. First, what factors influence the effectiveness of the co-production of public (including social) services process? Second, what is the place and role of trust among the factors conditioning the effectiveness of the co-production process?

### **Effectiveness of public services co-production – the state of art**

The issues of effectiveness and trust in the context of co-production of public services are multidimensional and interrelated. In terms of effectiveness, co-production has the potential to increase the quantity, quality and effectiveness of public services. This is determined, however, not by the mere fact of using co-production as a model for designing, providing and/or evaluating services, but by the way in which co-production is organized and managed. Thus, we can talk both about the effectiveness of services as a result of co-production and about the effectiveness of the co-production process - the extent to which the goal of effectiveness is achieved. Many researchers draw attention to improving the efficiency and effectiveness of public services as the goal and

effect of co-production, including E. Ostrom (1996), T. Brandsen and V. Pestoff (2006), D. Mitlin (2008), J. Alford (2009), E. Sorensen and J. Trofing (2011), A. Calabro (2012), J. Glynos and E. Speed (2012), L. Brown and S.P. Osborne (2013), D. Cepiku and F. Giordano (2014), Z. Radnor et al. (2014), S. Tuurnas (2015). The literature analysis carried out so far by the author shows that the problem of the effectiveness of the service co-production process is much less frequently discussed and less explored (cf. Pestoff & Brandsen, 2009).

The current research in this area, regarding the private sector, include works by M. Etgar (2008) and J.S. Chen et al. (2011). M. Etgar (2008) in the proposed descriptive model of consumer co-production process (including, among others, co-production pre-conditions and consumers' motivation to co-produce) draws attention to the efficiency of the co-production strategy (due to the cost-benefit analysis), but does not say anything about its effectiveness. The research by J.S. Chen et al. (2011) suggest that (1) a higher degree of partner matching (the degree to which the business management style and entrepreneurial culture of the partners are similar), (2) partner experience (a combination of knowledge and skills that managers acquire and assimilate to increase their managerial and technical abilities to help partners achieve success), and (3) affective commitment (positive emotional attachment and the degree to which partners are mentally connected), significantly contribute to increasing the effectiveness of co-production practices. Nevertheless, as mentioned above, these studies concern management and co-production in the private sector.

In the context of public sector important insights on the effectiveness of co-production are provided by C. Miller and S. Stirling (2004). These authors emphasize the importance of individual and social capital for effective co-production and argue that users with less individual capital (physical and financial resources, health, skills, knowledge) must be supported in order to participate effectively in the co-creation of the service. C. Needham (2008) and S. Parker and J. Heapy (2006) also provide specific factors determining the effectiveness of co-

production. First, in order to build effective co-production relations, it is necessary, at least at the beginning, to move away from the point of service provision and to create forums where officials and citizens can talk about their experience with services, recognize common ground and negotiate service improvements (Needham, 2008). Secondly, the involvement between users and producers must take place as part of the service process and not in abstract consultation exercises. Engaging people in co-production does not take place through consultations or meetings, but must happen at the time of the service and through conversation and dialogue, not just by accident (Parker & Heapy, 2006). Similarly, K. Sienkiewicz-Małyjurek (2016) notes that: "involvement and structuring will not ensure effective co-production without the ability to cooperate with both public organizations and society" (430). In public organizations, this ability includes core business processes, organizational competences and organizational culture, and on the citizens' side - knowledge, skills and attitudes that enable achieving specific results (Kozuch, 2011).

However, these authors mention factors conditioning the effectiveness of the co-production process "by the way", not making this problem the center of their research, nor verifying them empirically. It is different in the case of studies by T. Bovaird and J. Downe (2008) and T. Brandsen and J. K. Helderma (2012).

The study of T. Brandsen and J.K. Helderma (2012) shows that several of the conditions for designing effective management of common pool resources proposed by E. Ostrom (1990) also apply to co-production. The case study of co-production in housing conducted by these researchers shows that the effectiveness of co-production is influenced by: (1) market structure and related economic dynamics; (2) institutional space; (3) clearly defined boundaries and rules; (4) adaptation of rules to local conditions; (5) enabling the actors involved to participate in decision making; (6) monitoring transparency; (7) social infrastructure for conflict resolving; and (8) unlimited community right to self-organization.

Whereas T. Bovaird and J. Downe (2008), focusing on the practices of government

administration, point out such factors influencing the effectiveness of co-production as: (1) identifying and promoting appropriate mechanisms for public involvement and co-production by the central government; (2) government promotion of examples of co-productions that could be used by local authorities in their area; (3) transformation of old institutions into permanently mobilized deliberative and democratic forms; (4) appreciating the role that users and citizens can play in making decisions; (5) empowering the community and supporting the ability of local officials to understand and respond to social needs; (6) developing new skills of both service users and suppliers; (7) realistic level of social expectations; (8) ensuring equal conditions for all types of organizations competing for the provision of local services; (9) financial aspect.

Notwithstanding, none of the indicated publications address the problem of the role and place of trust among the factors determining the effectiveness of the co-production process of public services, while many authors note that trust is the basis of relationships and a precondition for co-production (Bovaird, 2007; Brown & Osborne, 2013; Czernek 2012; McQuaid, 2010; Poochaoren & Ting, 2015; Panda 2016). Co-production is seen as a special kind of relationship (Joshi & Moore, 2004; Bovaird, 2007; Meijer, 2011; Pestoff, 2012; Roberts et al., 2012). This relationship is the result of cooperation undertaken by the service provider and users. Regardless of the types of co-production distinguished in literature, it is dependent on the presence of trust in the service relationship, because the co-production process can be risky, uncertain, time consuming and expensive for the organization providing public services (Yang, 2006; Osborne & Strokosch, 2013). However, there have been few studies directly addressing the problem of trust in the co-production of public services (Yang, 2006; Pestoff, 2011; Osborne & Strokosch, 2013; Fledderus et al., 2014; Fledderus, 2015).

J. Fledderus (2015) pays special attention to the aspect of trust as a result of co-production. As he notes, it is believed that co-production - the involvement of clients in the provision of public services - strengthens trust. However, research on

this subject is insufficient to prove what is currently only a supposition (Fledderus et al., 2014). The results of his research indicate that trust in the service provider, local authorities and general trust have significantly decreased among the surveyed co-production participants. Hence, J. Fledderus concludes that not the mere the public service co-production is important for the increase of trust, but the way in which co-production is organized and managed (Fledderus 2015). However, J. Fledderus's research is one of the few in this area and raises the only one side of the problem - trust as a result, not referring to trust as a condition for the launch and effectiveness of co-production. Hence in this article an answer to the question about the place of trust among factors conditioning the effectiveness of public service co-production was sought.

### **Research methodology and findings**

In order to identify the factors influence the effectiveness of the co-production process in public sector and the role of trust among them, the systematic literature review and the word cloud technique have been applied. The systematic literature review is based on establishing facts as a result of secondary data analysis. As a research strategy, it allows to, among others: (1) maintain the objectivity of the analysis, (2) cover the entire research area, (3) properly select sources for further research and (4) consolidate information from many sources (Colicchia & Strozzi, 2012; Sienkiewicz-Malyjurek, 2016). The word cloud technique allows to visualize the word frequency in a given text. The frequency of words appears reflects their size in the cloud. The use of this technique makes it possible to illustrate the most important components of the texts analyzed, and its quantitative nature deprives it of the disadvantages of interpretive studies (Tranfield et al., 2003; Klimas & Czakon, 2010). In the research the software available on the website <http://www.wordle.net> was used (Steele & Iliinsky, 2010).

The strategy for the systematic literature review - conducted in July 2019 - involved several steps (Table 1). An electronic search was carried out in the Ebsco, Scie Direct, Emerald Insight, ProQuest, Scopus and Web of Science databases.

Table 1.

**The systematic literature review strategy**

Stage	Selection criteria	Number of records					
		Ebsco	Science Direct	Emerald	Pro Quest	Scopus	Web of Science
1	co-production in title OR abstract OR key words	9 287	1 754	2 401	3 777	6 771	6 645
2	co-production of services in title OR abstract OR key words	561	115	2 197	564	1 170	1 036
3	co-production AND public services OR co-production AND social services in title OR abstract OR key words	70	32	169	80	240	193
4	papers written in English and published in peer-reviewed journals	61	26	60	57	103	149
5	the subject areas of management science and operations, public management and administration, public and social policy	55	11	27	57	100	115
6	elimination of duplicate publications	187					
7	verification of abstracts due to co-production as a leading subject of research	<b>134</b>					

First, publications including the word “co-production” in title or abstract or key words were sought (Stage 1). Then the results were limited to “co-production of services” (Stage 2) and next to the words “co-production” and “public services” or «co-production” and “social services” in title or abstract or key words (Stage 3). The formulations “co-production of public services” and “co-production social services” were not applied because they are rarely used even in the most important co-production publications. Afterwards the search was restricted to the papers that were written in English, published in peer-reviewed journals (Stage 4), and in the subject areas of management science and operations, public management and administration, public and social policy (Stage 5). In this way a total of 365 articles was identified. The duplicate publications have been eliminated from the sample, which reduced the number of articles to 187 (Stage 6). The last step was verification of abstracts due to

co-production as a leading subject of research (Sage 7). This process reduced the sample to 134 articles form 1998 to 2019 (actually the period of renewed, increased interest in co-production) that have been further analyzed.

The selected articles were analyzed in terms of the occurrence of factors conditioning the effectiveness of the co-production process proposed by the author. Analysis of selected articles led to the observation that as often as the term “effective” as the term “success” is used, hence the analysis has been expanded to these two concepts (which is in line with the definition of effectiveness presented above). The result of this analysis was distinction of 45 papers and 83 factors transcribed by bringing them to key words. The number of factors decreased to 30 after removal of those that appeared only once.

The factors that influence the effectiveness of the co-production of public services process are



1	2	3
Users	Willingness of the users to make the contribution	the likeliness to consider active engagement and weigh up the investments of resources (time, money, efforts, experience etc.);
Users	Users' motivation to co-produce	people are benefit maximizers who will only co-produce when benefits (material, extrinsic reward or intrinsic values) outweigh costs
Users	Active user engagement	users are not only passive recipients of public services, but their commitment is necessary in the interactive relationship between them and service professionals in the co-production process
Both	Trust	mutual relationships in which both parties are interdependent and take risks

The analysis indicates that the capability of the users to co-produce is the most important factor of the effectiveness of co-production (appeared 12 times). The capability of the professionals to co-produce is a similarly important factor which appeared 10 times in the analyzed records. The capability to co-produce means skills (Loeffler & Bovaird, 2016; Matei, 2016; Paskaleva & Cooper, 2018; Wiewiora et al., 2015; Verschuere et al., 2012), having something valuable to contribute (Loeffler & Bovaird, 2016; Sicilia et al., 2016), education and experience (Cepiku & Giordano, 2014) as well as competencies (Sicilia et al., 2016) of both citizens and service professionals engage in co-production. It is also include citizens' resources (Gao 2017; Sicilia et al. 2019) and knowledge about their role in the co-production (Lino et al., 2019; Loeffler & Bovaird, 2016; Matei, 2016; Sicilia et al., 2019). The substantial/adequate resources also affect professionals' ability to co-produce (Cepiku & Giordano, 2014; Fledderus 2015). As Sicilia et al. (2019) pointed out, public managers can increase users' capability and "help them be more effective in the co-production process by providing them with relevant information and basic resources" (p. 8). Equally, however, professionals need to be supported by the organization by providing them, among others, adequate autonomy and substantial resources (Palumbo, 2006).

The third factor because of the frequency of appear is willingness of the users to make the contribution (appeared 10 times). Both professionals and users must be willing to invest their resources (time, money, efforts, experience etc.) in the co-

production (Verschuere et al., 2012) but analysis indicates that willingness is more important on the citizens' side (Alford, 2016; Bovaird & Loeffler, 2016; Farooqi, 2015; Fledderus et al., 2015; Fleming & Osborne, 2019; Lino et al., 2019; Palumbo, 2016; Van Eijk, 2014; Van Eijk et al., 2017). The willingness of the users to contribute depends on motivation (Alford, 2016), relevance of the topic – "only when citizens argue a topic 'salient enough' they will have a willingness to consider active engagement and weigh up the investments of efforts" (Van Eijk, 2014, p. 361), compliance of user values with the values of members of a public organization (Fledderus et al., 2015) and trust in government (Van Eijk, 2014; Van Eijk et al., 2017). The relationship between people's willingness to co-produce and individual characteristics (age, gender, socio-economic status, social connectedness of people etc.) is not clear (Van Eijk et al., 2017). Furthermore, as T. Bovaird and E. Loeffler (2016, p. 268) pointed out, "co-production demands more than willingness, but also relevant knowledge about the co-production task" confirming the significance of the first identified factor and indicates that those factors are interdependent.

Next factor is the users' motivation to co-produce (appeared 8 times). The motivation of the users is considered critical for the effectiveness and sustainability of co-production initiatives (Boccacin, 2017; Farooqi, 2015; Fledderus, 2015; Gao, 2017; Lember et al., 2019; Lino et al., 2019; Van Eijk and Steen, 2014; Verschuere et al., 2012). Similar to willingness, "individual motivations are necessary, but not sufficient, for the success of co-

production” (Lino et al., 2019, p. 287) and users may need sufficient information about their role in the co-production arrangements (Lino et al., 2019) and some skills in addition to their motivation to co-produce (Verschuere et al., 2012). Moreover, related to the aspect of motivation is trust. Fledderus (2015) argued that “more users have trust in the service provider and/or government, the more likely they will cooperate” (p. 554).

The active user engagement is fifth factor with 7 appearances. The determining cause of success of co-production lies not only on the service provider but the people as well. As a result, the role of users once put as only receivers to public services is now seen as the main factor leading to co-production success (Dhirathiti, 2018; Farooqi, 2015; Fledderus, 2015; Lino et al., 2019; Phillips & Morgan, 2014; Poocharoen & Ting, 2015; Thijssen & van Dooren, 2016). The active engagement of users is required for co-production success because «co-production establishes an interactive relationship between citizens and public service providers (Thijssen & van Dooren, 2016, p. 88). To encompass the active engagement of citizens, co-production values have to be present and constantly reinforced (Lino et al., 2019).

Last but one is trust (appeared 7 times) and there is no distinction between users and professionals. Mutual trust is the currency that turns co-production relationships into a success (Boccacin, 2017; Bovaird, 2007; Ewert & Evers, 2014; Fledderus, 2015; Fledderus et al., 2015; Granier & Kudo, 2016; Van Eijk & Steen, 2016; Verschuere, et al. 2012). Trust becomes an important factor because cooperation is the precondition for successful co-production (Fledderus et al., 2015). Bovaird (2007) argued that «co-production means that service users and professionals must develop mutual relationships in which both parties take risks – the service user has to trust professional advice and support, but the professional has to be prepared to trust the decisions and behaviors of service users and the communities in which they live rather than dictate them” (856). Moreover “trust can not only be treated as a dependent variable, but also as an independent variable” (Fledderus, 2015, 554). The more users have trust in the professionals, the more likely they will cooperate but on the other hand trust is higher

among co-producers than those who do not co-produce (Fledderus, 2015). Consideration about the role of trust in co-production process are still dominated by the work of J. Fledderus and his co-researches. Few other authors take a closer look at this issue, although they recognize the importance of trust in ensuring the effectiveness of the co-production process. Presence of trust has a positive effect on users’ motivation to co-produce (Fledderus, 2015) and their willingness to contribute in the co-production process (Van Eijk, 2014; Van Eijk et al., 2017). Nevertheless, these conditions, right behind the capability of users and professionals to co-produce, are considered as more important for effectiveness of co-production process than trust.

### Conclusions

Despite increased attention, understanding of co-production is limited and we still have a lot to learn about how and why coproduction works (and does not). Therefore there is a need to improve knowledge and ability to use co-production successfully (Parrado et al., 2013; Sicilia et al., 2019). Additionally, according to J. Fledderus and M. Honingh, 2016, it is very difficult to design accessible and successful co-produced services. Already in the 1980s, shortly after the concept of co-production appeared, «recognizing the difficulty of constituting effective institutions to address the challenges associated with coordinating coproduction” L. L. Kiser (1984) came to the «disturbing conclusion that co-production is not likely to be a popular activity” (p. 506). Despite this prognosis, co-production has continued to be a significant aspect of public service provision and management, demanding attention to the specific factors that favor or constrain it in practice (Musso et al., 2018). After several decades of actual lack of much interest in the participatory role of citizens in public (and social) service production, the renewed interest in the public service co-production took place at the beginning of the 21st century when theoretical considerations and interests of practitioners in the public sector have been dominated by governance model. Therefore, this period was selected for analysis. As a result of a systematic literature review 134 articles published between 1998 and 2019 were identified. These are articles only from the areas of (1) management science and operations, (2) public

management and administration and (3) public and social policy, in which the main research problem is the co-production of public or social services.

The selected articles were analyzed in terms of the occurrence of the factors of the effectiveness which provided answers to the first research questions - what factors influence the effectiveness of the co-production of public services process? One of the identified factors was trust. Then those factors was quantitatively analyzed using the word cloud technique which resulted in the identification of six key factors for the effectiveness of co-production: (1) the capability of the users to co-produce, (2) the capability of the professionals to co-produce, (3) willingness of the users to make the contribution, (4) users' motivation to co-produce, (5) active user engagement, and (6) trust. This analysis allowed placing trust among the conditions of the effectiveness of co-production process and addressing second research question. Trust, if present, is one of the factors that positively affects effectiveness of public service co-production process. In this respect, co-production is like cooperation, and trust favors and strengthens it, and also affects its course and effects because his presence facilitates social interaction and provides the basis for risk taking. It is the sixth of the identified factors due to the frequency of appearance, but affects other important factors - users' motivation to co-produce and their willingness to co-produce.

The identified factors require empirical testing in specific contexts because, as T. Bovaird, E. Löffler and S. Parrado-Diez (2002, 414) argue, "in each country, the approach which is most likely to be effective in activating civil society will depend on its existing characteristics [...] and the specific economic, social and political circumstances of that country". The type of service and type of organization providing it are equally important and should be included in the analysis. Only then will we be able to say that we know what factors influence the effectiveness of co-production and how we can shape them, but this knowledge will only apply to a very narrow fragment of reality.

### References

1. Alford, J. (2002). *Why do public-sector clients coproduce? Toward a Contingency Theory*. *Administration & Society*, 34(1), 32–56.
2. Alford, J. (2009). *Engaging public sector clients: From service-delivery to co-production*. Palgrave Macmillan.
3. Alford, J. (2015). *Co-Production, Interdependence and Publicness: Extending public service-dominant logic*. *Public Management Review*, 18(5), 673–691. doi: 10.1080/14719037.2015.1111659
4. Boyle, D., Harris, M. (2009). *The challenge of co-production: how equal partnerships between professionals and the public are crucial to improving public services*. Discussion paper, NESTA. Retrieved from [www.nesta.org.uk/publications/challenge-co-production](http://www.nesta.org.uk/publications/challenge-co-production)
5. Bovaird, T., Löffler, E., Parrado-Diez, S. (2002). *Finding a bowling partner: The role of stakeholders in activating civil society in Germany, Spain and the United Kingdom*. *Public Management Review*, 4(3), 411–431.
6. Bovaird, T. (2007). *Beyond engagement and participation: User and community coproduction of public services*. *Public Administration Review*, 67(5), 846–860.
7. Brandsen, T., Pestoff, V. (2006). *Co-production, the third sector and the delivery of public services. An introduction*. *Public Management Review*, 8(4), 493–501.
8. Brown, L., Osborne, S.P. (2013). *Risk and Innovation. Towards a Framework for risk governance in public services*. *Public Management Review*, 15(2).
9. Bukłaha, E. (2012). *Sukces, skuteczność i efektywność w zarządzaniu projektami*, *Studia i prace Kolegium Zarządzania i Finansów*, 113, 24–35.
10. Calabro A. (2012). *Co-production: An alternative to the partial privatization processes in Italy and Norway*. In V. Pestoff, T. Brandsen, B. Verschuere (Eds.), *New public governance, the third sector and co-production* (pp. 317-360), New York: Routledge.
11. Cali, M., Ellis, K., te Velde, D. W. (2008). *The Contribution of Services to Development and the Role of Trade Liberalisation and Regulation*. Working Paper 298. Overseas Development Institute.
12. Cepiku, D., Giordano, F. (2014). *Co-production in developing countries. Insights from the community health workers experience*. *Public Management Review*, 16(3), 317–340.
13. Colicchia, C., Strozzi, F. (2012). *Supply chain risk management: a new methodology for a systematic literature review*. *Supply Chain Management: An International Journal*, 17(4), 403–418.
14. Czernek, K. (2012). *Rola zaufania we współpracy na rzecz rozwoju turystyki – przykład wybranych gmin miejskich Beskidu Śląskiego*. In T. Żabińska (ed.),

- Turystyka na obszarach miejskich. Uwarunkowania rozwoju, narzędzia promocji, Studia Ekonomiczne. Zeszyty Wydziałowe Uniwersytetu Ekonomicznego w Katowicach.*
15. Denhardt, J. V., Denhardt, R. B. (2015). *The New Public Service. Serving, Not Steering*. New York: Routledge.
  16. Drucker, P. F. (2006). *The Effective Executive: The Definitive Guide to Getting the Right Things Done*. New York: Collins.
  17. Fledderus, J., Brandsen, T., Honingh, M. (2014). Restoring trust through the co-production of public services. A theoretical elaboration. *Public Management Review*, 16(3).
  18. Fledderus J., (2015). Building trust through public service co-production. *International Journal of Public Sector Management*, 28(7), 550–565.
  19. Fledderus J., Honingh M. (2016), Why people co-produce within activation services: the necessity of motivations and trust - an investigation of selection biases in a municipal activation program in the Netherlands. *International Review of Administrative Sciences*, 82(1), 69–87.
  20. Frączkiewicz-Wronka, A., Dobrowolska, M., Arando, S., Wronka-Pośpiech, M., Tkacz, M. (2016). Koprodukcja jako warunek efektywnej deinstytucjonalizacji usług społecznych. *Humanum. Międzynarodowe Studia Społeczno-Humanistyczne*, 20(1), 67–78.
  21. Frączkiewicz-Wronka, A., Kozak, A. (2018). Identyfikacja czynników sprzyjających powstaniu koprodukcji w kreowaniu usług społecznych w środowisku lokalnym - perspektywa Rad Seniorów, *Polityka Społeczna*, 529(4), 10–17.
  22. Gao, X. (2017). Networked Co-Production of 311 Services: Investigating the Use of Twitter in Five U.S. Cities. *International Journal of Public Administration*, 41(9), 712–724. doi: 10.1080/01900692.2017.1298126
  23. Glynnos, J., Speed, E. (2012). Varieties of co-production in public services: time banks in a UK health policy context. *Critical Policy Studies*, 6(4), 402–433.
  24. Griffin, R. W. (2013). *Podstawy zarządzania organizacjami*. Warszawa: Wydawnictwo Naukowe PWN.
  25. Husner, J. (2008). *Zarządzanie publiczne*. Warszawa: Wydawnictwo Naukowe Scholar.
  26. Holmes, B. (2011), *Citizens' engagement in policymaking and the design of public services*, Research Paper No. 1 (2011-2012). Politics and Public Administration Section, Parliament of Australia, Retrieved from: [www.aph.gov.au/About\\_Parliament/Parliamentary\\_Departments/Parliamentary\\_Library/pubs/rp/rp1112/12rp01](http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp1112/12rp01) (accessed 12 September 2019).
  27. Jakobsen, M. (2013). Can Government Initiatives Increase Citizen Coproduction? Results of a Randomized Field Experiment. *Journal of Public Administration Research and Theory*, 23(1), 27–54.
  28. Joshi, A., Moore, M. (2004). Institutionalised co-production: Unorthodox public service delivery in challenging environments. *Journal of Development Studies*, 40(4), 31–49.
  29. Keating, M. (2001). *Public Management Reform and Economic and Social Development*. OECD Journal on Budgeting, 1/2, 141–212.
  30. Kiser, L. L. (1984). Toward an Institutional Theory of Citizen Coproduction. *Urban Affairs Quarterly*, 19(4), 485–510. doi:10.1177/004208168401900406.
  31. Klimas, P., Czakon, W. (2010). Sieci oraz firmy kotwice – ich znaczenie w gospodarce opartej na wiedzy, In *Zarządzanie i informatyka. Dylematy i kierunki rozwoju*, Katowice.
  32. Kondalkar, V. G. (2010). *Organization Effectiveness and Change Management*. PHI Learning Pvt. Ltd.
  33. Kotarbiński, T. (1982) *Traktat o dobrej robocie*. Wrocław-Warszawa-Kraków-Gdańsk-Lódź: Ossolineum.
  34. Kozak, A. (2017). Czy koprodukcję usług publicznych można traktować jako innowację społeczną? *Humanum. Międzynarodowe Studia Społeczno-Humanistyczne*, 26(3), 73–85.
  35. Kożuch, B. (2004). *Zarządzanie publiczne*. Warszawa: Placet.
  36. Kożuch, B. (2011). *Skuteczne współdziałanie organizacji publicznych i pozarządowych*. Monografie i Studia Instytutu Spraw Publicznych Instytutu Jagiellońskiego, Kraków.
  37. Kożuch, B., Sienkiewicz-Małyjurek, K. (2016). Key factors of inter-organisational collaboration in the public sector and their strength. *International Journal of Contemporary Management*, 15(3), 123–144.
  38. Latusek, D. (2008). Trustworthiness as an Impression. In D. Jemielniak (Ed.), *Management Practices in High-Tech Environments* (pp. 152–166). Hershey - New York: Information Science Reference.
  39. Latusek, D., Cook, K. S. (2012). *Trust in Transitions*. KYKLOS, 65(4).
  40. Latusek-Jurczak, D., Prystupa-Rządca, K. (2014). Collaboration and trust-building in open innovation community. *Jornal of Economics & Management*, University of Economics in Katowice, 17.
  41. Lewis, C., Fall, F. (2017). Enhancing public sector efficiency and effectiveness in the Czech Republic.

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- OECD Economics Department Working Papers, 1363, Paris: OECD Publishing.
42. Lino, A. F., Aquino, A. C. B. D., Azevedo, R. R. D., & Brumatti, L. M. (2019). *From rules to collaborative practice: When regulatory mechanisms drive collective co-production*. *Public Money & Management*, 39(4), 280–289. doi: 10.1080/09540962.2019.1592909
  43. Loeffler, E., & Bovaird, T. (2016). *User and Community Co-Production of Public Services: What Does the Evidence Tell Us?* *International Journal of Public Administration*, 39(13), 1006–1019. doi: 10.1080/01900692.2016.1250559
  44. Mandl, U., Dierx, A., Ilzkovitz, F. (2008). *The effectiveness and efficiency of public spending*. *European Economy. Economic Papers* 301, European Commission.
  45. Mangai, M. S., De Vries M. S. (2018), *Co-production as deep engagement. Improving and sustaining access to clean water in Ghana and Nigeria*. *International Journal of Public Sector Management*, 31(1), 81–96.
  46. Marschall, M. (2004). *Citizen participation in the neighborhood context: a new look at co-production of local public goods*. *Political Research Quarterly*, 57(2), 231–244.
  47. Matei, A. I., Antonovici, C. G., & Savulescu, C. (2016). *Fostering Co-Public Marketing and Co-Production of Public Services in Romania*. *SSRN Electronic Journal*. doi: 10.2139/ssrn.2939506
  48. McQuaid, R. W. (2010). *Theory of Organizational Partnerships: Partnership Advantages, Disadvantages and Success Factors*, In S. P. Osborne (ed.), *The New Public Governance: Emerging Perspectives on the Practice of Public Governance* (pp. 130-147). New York: Routledge.
  49. Meijer, A. (2012). *Co-Production in an Information Age: Individual and Community Engagement Supported by New Media*. *Voluntas*, 239(4), 1156–1172.
  50. Mihaiu, D. M., Opreana, A., Cristescu, M. P. (2010). *Efficiency, Effectiveness and Performance of the Public Sector*. *Journal for Economic Forecasting, Institute for Economic Forecasting*, 0(4), 132–147.
  51. Miller, C., Stirling, S. (2004). *Co-production in Children's Services*. London: Office of Public Management.
  52. Mitlin, D. (2008). *With and Beyond the State – Co-Production as a Route to Political Influence, Power, Transformation for Grassroots Organizations*. *Environment and Urbanization*, 20(2), 339–360.
  53. Moore, M. (1995). *Creating public value: Strategic management in government*. Cambridge, MA: Harvard University Press.
  54. Musso, J. A., Young, M. M., Thom, M. (2018). *Volunteerism as co-production in public service management: application to public safety in California*. *Public Management Review*, 21(4), 473–494. doi: 10.1080/14719037.2018.1487574
  55. Needham, C. (2008). *Realising the Potential of Co-production: Negotiating Improvements in Public Services*. *Social Policy & Society*, 7(2), 221–231.
  56. OECD (2011), *Together for Better Public Services. Partnering with Citizens and Civil Society*, OECD Public Governance Reviews, OECD Publishing.
  57. Osborne S., Brown K. (2005), *Managing Change and Innovation in Public Service Organizations*. London: Routledge.
  58. Osborne S.P. (ed.) (2010), *The New Public Governance? Emerging Perspectives on the Theory and Practice of Public Governance*. London/New York: Routledge.
  59. Osborne, S. P., McLaughlin, K., Chew, C. (2010). *Relationship marketing, relational capital and the governance of public services delivery*. In S. P. Osborne S. P. (ed.), *The New Public Governance: Emerging Perspectives on the Theory and Practice of Public Governance*. New York: Routledge.
  60. Osborne, S., Strokosch, K. (2013). *It takes two to tango? Understanding the co-production of public services by integrating the services management and public administration perspectives*, *British Journal of Management*, 24, 31–47.
  61. Osborne P., Radnor Z., Strokosch K. (2016), *Co-production and the co-creation of value in public services: A suitable case for treatment?* *Public Management Review*, 18(5), 639–653.
  62. Ostrom V., Ostrom E. (1977) *Public Goods and Public Choices*. In E. S. Savas (Ed.), *Alternatives for Delivering Public Services. Toward Improved Performance* (pp. 7–49). Boulder: Westview Press.
  63. Ostrom, E. (1990). *Governing the commons. The evolution of institutions for collective action*. Cambridge: Cambridge University Press.
  64. Ostrom, E. (1996), *Crossing the great divide: coproduction, synergy and development*, *World Development*, 24(6), 1073–1087.
  65. *Oxford Dictionary of English* (2010), Oxford University Press.
  66. Palumbo, R. (2016). *Contextualizing co-production of health care: a systematic literature review*. *International Journal of Public Sector Management*, 29(1), 72–90. doi: 10.1108/ijpsm-07-2015-0125
  67. Panda, D. K. (2016). *Public private partnerships and value creation: the role of relationship dynamics*, *International Journal of Organizational Analysis*, 24(1), 162–183.

68. Paskaleva, K., & Cooper, I. (2018). *Open innovation and the evaluation of internet-enabled public services in smart cities*. *Technovation*, 78, 4–14. doi: 10.1016/j.technovation.2018.07.003
69. Pestoff, V., Osborne, S. P., Brandsen, T. (2006). *Patterns of co-production in public services. Some concluding thoughts*. *Public Management Review*, 8(4), 591–595.
70. Pestoff, V. (2011). *Co-production, new public governance and third sector social services in Europe*, *Ciências Sociais Unisinos*, 47(1), 15–24.
71. Pestoff, V. (2012). *Co-production and Third Sector Social Services in Europe: Some Concepts and Evidence*. *Voluntas*, 23, 1102–1118.
72. Pestoff, V., Brandsen, T., Verschuere, B. (2012). *New public governance, the third sector and co-production*. New York/London: Routledge.
73. Pollitt, Ch., Bouckaert, G. (2004). *Public Management Reform. A Comparative Analysis, Second Edition*. New York: Oxford University Press Inc.
74. Poochaoren, O., Ting, B. (2015). *Collaboration, Coproduction, Networks – Convergence of Theories*, *Public Management Review*, 17(4), 587–614.
75. Przywojska, J. (2014). *Nowe zarządzanie i governance w pracy socjalnej*. Warszawa: Nowa Praca Socjalna, Centrum Rozwoju Zasobów Ludzkich.
76. Radnor, Z., Osborne, S. P., Kinder, T., Mutton, J. (2014). *Operationalizing co-production in public service delivery. The contribution of service blueprinting*. *Public Management Review*, 16(3).
77. Sicilia M. Guarini E., Sancino A., Andreani M. (2016), Ruffini R., *Public services management and co-production in multi-level governance settings*, «*International Review of Administrative Science*, Vol. 82(1), p. 8–27.
78. Sicilia, M., Guarini, E., Sancino, A., Andreani, M., & Ruffini, R. (2015). *Public services management and co-production in multi-level governance settings*. *International Review of Administrative Sciences*, 82(1), 8–27. doi: 10.1177/0020852314566008
79. Sienkiewicz-Małyjurek K., (2016). *Innowacyjność koprodukcji w zarządzaniu publicznym na poziomie lokalnym*. *Organizacja i Zarządzanie. Zeszyty Naukowe Politechniki Śląskiej*, 89, 421–435.
80. Sorensen, E., Trofing, J. (2011). *Enhancing Collaborative Innovation in the Public Sector*, *Administration & Society*, 43(8), 842–868.
- Steele, J., Iliinsky, N. (2010). *Beautiful Visualization. Looking at Data through the Eyes of Experts (Chapter 3: Wordle)*. O'Reilly Media.
82. Stewart, J. (2009). *The dilemmas of engagement: the role of consultation in governance*. Canberra: ANU E-Press. Retrieved from <http://press-files.anu.edu.au/downloads/press/p102721/pdf/book.pdf?referer=176>
83. Sztompka, P. (2007). *Zaufanie. Fundament społeczeństwa*. Kraków: Znak.
84. Roberts, A., et al. *Treat Me Right, Treat Me Equal: Using National Policy and Legislation to Create Positive Changes in Local Health Services for People with Intellectual Disabilities*. *Journal of Applied Research in Intellectual Disabilities*, 26(1), 14–25., doi:10.1111/jar.12009.
85. Tranfield, D., Denyer, D., and Smart, P. (2003). *Towards a methodology for developing evidence-informed management knowledge by means of systematic review*. *British Journal of Management*, 14, 3, p. 207.
86. Tuurnas, S. (2015). *Learning to co-produce? The perspective of public service professionals*. *International Journal of Public Sector Management*, 28(7), 583–598.
87. Wiewiora, A., Keast, R., & Brown, K. (2015). *Opportunities and Challenges in Engaging Citizens in the Co-Production of Infrastructure-Based Public Services in Australia*. *Public Management Review*, 18(4), 483–507. doi: 10.1080/14719037.2014.999820
88. Wilkin, J. (2013). *Kategoria jakości rządzenia w naukach społecznych – zagadnienia metodologiczne*. In J. Wilkin (ed.) *Jakość rządzenia w Polsce. Jak ją badać, monitorować i poprawiać?* Warszawa: Wydawnictwo Naukowe Scholar.
89. Wolfl A. (2005). *The service economy in OECD country*. In *OECD, Enhancing the Performance of the Services Sector* (pp. 27–61). OECD Publishing.
90. Van de Walle S.G.J, Scott Z. (2009), *The role of public services in state- and nation building: Exploring lessons from European history for fragile states*. *Governance and Social Development Resource Centre, University of Birmingham*.
91. Verschuere, B., Brandsen, T., & Pestoff, V. (2012). *Co-production: The State of the Art in Research and the Future Agenda*. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 23(4), 1083–1101. doi: 10.1007/s11266-012-9307-8
92. Yang, K. (2006). *Trust and citizen involvement decisions. Trust in citizens, trust in institutions, and propensity to trust*. *Administration & Society*, 38(5).
93. Zakrzewska-Bielawska, A. (2016). *Ambidexterity – światowe trendy eksploracji w naukach o zarządzaniu*. *Przegląd Organizacji*, 1, 16-23.
94. Zieleniewski, J. (1969). *Organizacja i zarządzanie*. Warszawa: PWN.

**UDC 657.42**

**Jel Classification Code M41**

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## **METHODOLOGICAL APPROACHES TO EVALUATION AND REVALUATION OF FIXED ASSETS IN THE CONTEXT OF IMPLEMENTING INTERNATIONAL ACCOUNTING STANDARDS**

**Annotation.** It has been established that the issues of methodological nature are of key importance in ensuring the reproduction process of the elements of material and technical resources, among which the issues of applied significance should be emphasized, such as justification of criteria and indices which can be indicators of the reproduction process state; developing algorithm of the latter at its various stages; modeling reproduction processes at the enterprise. Considering the issues of developing objective criteria and indices for the evaluation of the reproduction process of the elements of material and technical resources at the agricultural enterprises, the first thing to be noted is an unresolved issue of fair value, which creates the situation wherein book value of fixed assets and other assets minimizes the investors' possibilities to protect their interests. This is due to the fact that accounting in Ukraine serves for tax control rather than management and investment. Evaluation of fixed assets, being the components of material and technical resources (MTR), at fair value makes it possible to characterize the reproduction process objectively, define the property status of the economic entity more precisely. However, it distorts financial result. We believe that simultaneous use of several indices for fair value measurement may lead to different fair values of the fixed asset. An agricultural enterprise is obliged to analyze the reasons for inconsistencies in

calculations and choose the most precise estimation of the fair value. Fair value of the assets must reflect variability of money flows, which are taken into consideration during price negotiation by independent, knowledgeable buyers and sellers interested in making such a deal. There is no unified approach due to the fact that most of the assets do not have market value, and their fair value estimated by the expert is conditional and fair only as of the estimation date. Nevertheless, fair value is necessary for the potential investors and indispensable to financial assets. Evaluation methods of fixed assets at their fair value require development, adjustment of evaluation model, which will make it possible to ensure equivalency of exchange between the independent parties on the active market.

**Key words:** evaluation, revaluation, fixed assets, agricultural enterprise, international accounting standards, national accounting standards.

### **Problem statement**

Reproduction process is considered as a purposeful influence of various institutions, representing the management entity, and a total of production relations during production, exchange and consumption, which are characterized by repetitiveness. First of all, what is meant here is the

influence of organized social entities on the reproduction process: company's management teams, state and other institutions, as well as natural factors. On the other hand, reproduction is an objective process, though it does not mean that it cannot be influenced by organized entities and institutions. Besides, it also does not mean that there is no inverse relationship when changes in the reproduction process also influence the institutions and their interconnection with the reproduction process. This entails only proportions between factors and conditions of reproduction, but also direct implementation of this process. It is possible not only to speed up or slow down reproduction by means of and with the help of combination of various elements and structures of reproduction process organization, but also to change its architectonics by introducing certain innovations. These peculiarities are foreseen by the reproduction process in agriculture.

It should be noted that an important place in ensuring the process of reproduction of the elements of material and technical resources is allocated to the questions of methodological issues, among which the issues of applied significance should also be emphasized, particularly justification of criteria and indices which can be indicators of the reproduction process state; developing algorithm of the latter at its various stages; modeling reproduction processes at the enterprise.

Considering the issues of developing objective criteria and indices for the evaluation of the reproduction process of the elements of material and technical resources at the agricultural enterprises, the first thing to be noted is an unresolved issue of fair value, which creates the situation wherein book value of fixed assets and other assets minimizes the investors' possibilities to protect their interests. This is due to the fact that accounting in Ukraine serves for tax control rather than management and investment.

#### **Analysis of recent research and publications**

A lot of national scientists (economists) have dedicated their scientific research to theoretical and practical aspects of fixed assets accounting as well as analysis of their application, in particular O. S. Borodkin, F. F. Butynets, S. F. Holov,

M. I. Kuter, N. M. Maliuha, V. F. Palii, V. V. Sopko, Y. V. Sokolov, Z. S. Tuiakova.

Works of foreign scientists (economists) are also of large interest in the investigated field, particularly K. Anderson, A. Gilbo, J. Coldwell, E. Leote, K. Marks, G. S. Mill, and B. Needles. However, discussions on the questions of fixed assets accounting as well as their application still continue. This fact gives evidence of various approaches of scientists towards the problem being investigated, in particular towards the economic substance of fixed assets (in particular, towards the definition of the following terms: "fixed assets", "fixed funds" and "fixed capital"); initial value formation; evaluation upon which fixed assets must be listed in the balance sheet of the organization; expediency of further revaluations; documentary disclosure of fixed assets accounting; issues of their receipt, application, disposal, as well as disclosure of information about them in accounting (financial) statements.

#### **Research objective**

The goal of the research is the development of theoretical, methodological provisions and practical guidelines regarding evaluation and revaluation of fixed assets.

#### **Presentation of the basic material**

Efficiency of fixed assets application has major influence on the enterprise performance results, namely: productive capacity, production costs, profit and financial stability. Thus, the solution to the problem of evaluation of efficiency of fixed assets application is urgent at this stage of economic development.

The goal of fixed assets analysis is state assessment and enhancement of efficiency of their application, confirmation of the necessity to invest into the enterprise technological infrastructure as well as investigation of depreciation methods with a view of ensuring the enterprise financial stability.

Therefore, analysis results may provide an answer to the question which significant ways of enhancing the efficiency of fixed assets application may help at the given stage of its activity.

Methods of economic analysis may be highlighted out of a great number of methods for the analysis of the efficiency of fixed assets application,

and they may have an impact on efficiency enhancement of the enterprise fixed assets application as well as show how to decrease the cost of production and increase labour efficiency. The given method is based on the understanding that fixed assets management is connected with the improvement in the quality of production.

Under the conditions of constant market competition, high-quality products are sold faster and are in great demand.

An economic entity, irrespective of its industry classification, owns fixed assets that characterize its material resources and define technical level of production. In other words, every enterprise that has property is trying to increase it. Efficient application of business property potential implies the result of its application [1, p. 17].

Fixed funds (assets) are the part of production assets involved in the production process for a long time, while keeping their in kind form; their value is transferred to the manufactured product gradually, by installments, considering their application [2, p. 11].

The dominant feature of defining fixed assets is the way of transfer of value on the product: gradually, during a number of production cycles, by installments, with respect to depreciation.

Fixed assets depreciation accounting is carried out at the established depreciation rates, the amount of which is included into the production cost. In the course of selling the production, accumulated depreciation is accrued in the depreciation fund intended for new capital investments. Therefore, the cost of fixed assets depreciation transferred to the authorized capital (fund) of the enterprise as part of the fixed capital while selling production performs constant circulation, changing from monetary to in kind, commodity and again monetary form. Therein lies economic substance of fixed assets [3, p. 72].

In order to manage fixed capital at all levels it is necessary to group fixed assets according to function and type classification. It allows obtaining information about all the changes related to the enterprise fixed assets.

The system of monetary indicators is used in economy. Fixed assets accounting in monetary form is used to plan extended reproduction of fixed assets, determine degree of depreciation as well as amount

of depreciation expenses. There is a differentiated system of monetary values, which is determined by target objective of measuring the value of fixed capital, for internal activities and performance measurement, for accrual of depreciation and tax calculation, for sales and rent, pledge operations.

Nowadays, the majority of agricultural enterprises carry out fixed assets revaluation. The enterprise fixed assets revaluation aims at: creating conditions for accumulation of savings, renewal of fixed assets; developing a base for property valuation during privatization; indexation of depreciation rates for complete recovery.

According to p. 30 of the International Financial Reporting Standard 16 "Fixed assets», after initial recognition as assets, an article of fixed assets must be recognized at its original cost less accumulated depreciation and impairment loss. According to p. 31, after initial recognition as assets, an article of fixed assets must be recognized at revalued cost that is its fair value as of the date of revaluation net of depreciation and impairment loss, accumulated thereafter. Revaluations shall be carried out regularly enough so as balance sheet value is not substantially different from the fair value as of reporting date [4, p. 168].

It is worth noting here that in some countries (Spain, Italy) revaluation can be carried out only in cases provided for in the legislation. In Great Britain frequency of revaluations is determined by the company itself. In France the legislation allows recording revaluation of non-current assets and investments, though recognition of profit from increase of asset value is accompanied by tax on income from the emerging revenue. In Switzerland fixed assets must be evaluated at the initial cost less depreciation without the right of current revaluation. The exception is provided by the enterprises accumulated loss of which exceeds half of its capital and obligatory reserves. In this case it is allowed to revalue property and ownership interest to current cost [5, p. 369].

It is worth noting that revaluation of fixed assets is completely voluntary. This particular conclusion is drawn from p. 16 of the Accounting Regulations (Standards) 7: "The enterprise can revalue an article of fixed assets if depreciated value of this article is distinctly different from its fair value as of the balance sheet date." [6] According to

the recommendations of the Ministry of Finance, materiality qualifier may be set at the amount equal to 1 percent of net income (loss) of the enterprise (p. 34 of Methodological recommendations № 561 (2003), sp. 2.20.1 of Methodological recommendations № 635 (2013)) [7; 8], or at the amount equal to 10 percent deviation of depreciated value of fixed assets from their fair value (p.34 of Methodological recommendations № 561 (2003)) [7]. However, these recommendations are not mandatory, so the enterprise can ignore them and set materiality qualifier on its own.

First of all, the given operation is carried out with the help of professional appraiser. The necessity to involve an expert is clearly pointed out in part 2 of the article 7 of the Law of Ukraine “On Appraisal of Property, Property Rights and Professional Appraisal Activity in Ukraine” as of 12.07.2001 №2658-III [9]. Thus, during revaluation of fixed assets for accounting purposes property appraisal is compulsory.

According to paragraph 2 of p. 17 of the Accounting Regulations (Standards) 7, if depreciated value of the article of fixed assets equals to zero, then its revaluated depreciated value is determined by adding fair value of this article to its initial (revaluated) cost without change of the article depreciation amount. Besides, disposal value is necessarily determined for the assets that continue to be used.

Secondly, it will be necessary to make a revaluation of the whole group of fixed assets (par. 1 of p.16 of the Accounting Regulations (Standards) 7). Moreover, it will be necessary to make a revaluation regularly in the future, because according to par. 2 of p. 16 of the Accounting Regulations (Standards) 7, revaluation of fixed assets of the group, the articles of which have already been revaluated, shall thereafter be made with certain regularity in order to ensure that their depreciated value as of the balance sheet date is not significantly different from the fair value. After revaluation accrual of depreciation on such asset continues, based upon its new value subject to depreciation: revaluated value less disposal value.

Differences in the content of financial accounting elements, prepared according to IFRS provisions, and national accounting system as well as in the context of their recognition and appraisal,

are predetermined historically by the difference in final goals of financial information application. As it is known, the main users of financial reporting, made in compliance with the requirements of IFRS, are investors, other enterprises and financial institutions. Reports prepared according to the rules of national accounting system first of all interest state administrative and statistical authorities. However, these user groups have different interests and information needs. Due to the lack of beneficial owners, there is a paradoxical situation when economy has no need for objective disclosure of its real state. A great deal of prospective entity owners in agro-business seek to receive economic benefit over a short period of time, so they have no interest in presenting true information on their activity results. Therefore, transition of the country’s enterprises to accounting based upon the IFRS requirements is a compulsory condition for market transformations.

In the theory of accounting two approaches towards evaluation have been developed: unity and actuality. They ensure objectivity of evaluation of the enterprise business activity. Thus, the principle of evaluation unity presupposes uniformity of applied methods at all the enterprises and their permanency over a long time period. To ensure actuality of evaluation it is necessary to achieve objective correspondence of accounting item monetary value to the value of living and materialized labour. Solution to the assigned task is possible if there is precise measurement of asset value.

The evaluative notion “market value” and the term “fair value”, which are used in the standards of financial accounting, are generally compatible, though not always equivalent. Fair value in an accounting notion defined in the International Financial Reporting Standards (IFRS) as the sum of money that would be received to sell an asset or paid to settle the liability in the commercial transaction between the interested parties. Fair value is usually used in financial reports as an indicator of market value and nonmarket types of value. If it is possible to set market value of the asset, it will be equivalent to its fair value (p. 8.1. of General concepts and principles of evaluation).

Nowadays, the development of accounting practice in Ukraine aims at the highest possible

approximation towards the requirements of international financial reporting standards, which implies not only implementation of audit functions, but also renewal, extension and priority of informational and analytical functions of accounting. Fixed assets are one of the most important objects of accounting, and their accounting procedure at the international scale is governed by IFRS (IAS) 16 "Fixed assets".

Although accounting provides a source of information for economic analysis and managerial decision-making, the notion of "fixed assets" in accounting and in the economy are not the same. As scientists reasonably claim, one and the same object may be recognized as a fixed asset and as the other asset or inactive at all, though formally it belongs to the objects of fixed assets and is treated by practicing accountants as a fixed asset [10]. This fact often results in inaccuracies in the definition of depreciation, and thus, overstatement or understatement of production cost.

A necessary condition for fixed assets accounting is a unified principle of their evaluation at all the enterprises regardless of the form of property ownership. Realistic evaluation of fixed assets is a key factor in organizing their accounting and analysis as well as in preparation of accounting statements of the economic entity.

According to paragraph 3 sp. 39.2.1.8 sp. 39.2.1 p. 39.2 of the Article 39 of the Tax Code, if in the course of business transaction it is compulsory to make an evaluation, then the value of the appraisal object will be the grounds for proving that these operations comply with the "arm's-length principle" for tax purposes [11].

Article 3 of the Law of Ukraine "On Appraisal of Property, Property Rights and Professional Appraisal Activity in Ukraine" as of 12.07.2001 № 2658-III defines that appraisal of property and property rights is a process of determining their value on the date of evaluation procedure, established by normative and legal acts indicated in Article 9 of this Law, and is the result of the practical activity of the subject of the assessment activity [12].

According to regulatory documents, evaluation is the process of determining monetary

value of property and enterprise liabilities for their disclosure in the financial accounting and reporting. According to IFRS, evaluation is the process of determining monetary amounts upon which the elements of financial accounting must be reflected in the balance sheet and the statement of income and expenses.

According to IFRS 16, assets are included into the balance at their fair value on the grounds of the following rules: fair value of land and buildings is usually determined by the evidence based on market data; the approach towards the process of evaluation that is carried out by professionally trained appraisers. Fair value of production, machinery and equipment is usually their market value determined by means of evaluation (IFRS 16, p.32).

"If due to the special-purpose nature of the objects of fixed assets or property, they are sold not otherwise than as part of operating business, and there are no certificates of the fair value of such objects based on market data, then the organization may need to determine their fair value applying income approach or approach based on depreciated replacement costs" (IFRS 16, p. 33) [13].

Taking into consideration the above listed peculiarities, International Valuation standards define the following methods of assets evaluation for financial accounting: all unspecialized property must be evaluated based upon market value; specialized property is evaluated based upon DRC (depreciated replacement costs). Depreciated replacement costs of asset reproduction or replacement net physical depreciation and inherent forms of aging and optimization.

However, if an asset is classified as specialized, it does not automatically lead to the conclusion that its evaluation must be carried out on the basis of depreciated replacement costs. Even if an asset turns out to be specialized, in certain instances it may be possible to evaluate specialized property employing an approach based upon market comparisons or capitalization of income [14].

It is necessary to point out that the norms of IAS 16 and Accounting Regulations (Standards) 7 foresee evaluation of fixed assets at their fair value along with their actual value. The given type of

evaluation is required in order to determine the actual value of the enterprise assets. Accounting standards provide the following fair value measurements:

- in IAS 16 fair value is defined as the amount of money that would be received to exchange an asset or settle indebtedness in the transaction between knowledgeable, concerned and independent parties (§ 6);

- in Accounting Regulations (Standard) 7 fair value is defined as the amount of money that would be received to exchange an asset or settle liabilities as a result of transaction between knowledgeable, concerned and independent parties (p. 4).

Appendix for Accounting Regulations (Standard) 19 defines that fair value for fixed assets is the following: for buildings, land and machinery – their market value. If there is no information on market value – replacement value (current production cost of acquisition) less the amount of depreciation as of the evaluation date [15].

Evaluation after initial recognition depends on the way of asset acquisition by the organization. In case of purchase, fixed assets are recognized at their initial cost that includes: purchase price including duties on import and non-recoverable tax on purchases net of purchase discounts and repayments; any expenses associated with asset delivery to its location area or bringing it into condition ensuring its functioning in a way determined by the organization management; initial valuation of disassembly expenses, relocation of the fixed assets object and restoration of natural resources of its location, an obligation that the organization undertakes either at the moment of acquisition of the given object or following its operation within a certain time period for the purposes unrelated to the production of stock during this period.

Deferred expenses for disassembly of the object of fixed assets and restoration of natural resources must be assessed and discounted for a period of operation life of the object.

Evaluation of fixed assets at their fair value makes it possible to characterize property status of the economic entity more precisely, though it slightly distorts financial result. Therefore, both assessment at actual value and assessment at fair value correspond to the actual state of business at the

enterprise: adjusting one figure of accounting statements, they automatically distort the other one.

We support the view of scientists who believe that the objective characteristic feature of fair value is current value on the active market for analogous property, which has an analogous location and state or is an object of analogous leasing or other agreements [16].

If there is no information about current prices on the active market for such property, the company may consider other sources of information, which include: current prices on the active market for the property that is of different nature, state or location (or that is a subject of leasing or other agreements), adjusting these data to the existing differences; prices under the transactions with analogous property on less active market, with adjustments that must reflect all the economic changes on or after the date of such transactions; discounted estimated cash flows prediction of which is based upon reliable estimates of prospective cash flows evidenced by the conditions of current leasing or other agreements, or, if possible, other external evidence, using discount rate, reflecting current market estimates of uncertainties connected with size and time of these cash flows.

Therefore, application of comparative approach while estimating fair value of assets is preferred in IFRS. Peculiarities of its application for different types of property are recorder in International Valuation standards (IVS).

Both IAS and IFRS 16 standards recognize that there are certain categories of assets for which, taking into account their specialized pattern of use, there is no comparative market data. This fact generates a need to apply income approach or approach based on depreciated replacement costs (DRC) towards evaluation of these assets.

It should be noted that one of the principles inherent in the IFRS Conception is the principle of prudence, according to which making decisions under uncertainty should not lead to overstatement of assets, meaning that under the same degree of reliability of various fair value measurements, the application of the principle of prudence involves selecting the lowest possible value.

Enterprises always face a difficult problem of choosing a revaluation method. In the context of transition to market economy enterprises may be

interested to increase the value of fixed assets while they are being revaluated, because the bigger fixed assets value is, the higher loan limit is. If we consider the issue of fixed assets evaluation in terms of state interests, the state, particularly during the process of privatization, is interested in actual value of funds, which can be obtained only by applying market-based approach towards evaluation.

V. Y. Vankevych points out that there are three main approaches for overcoming the effect of inflation on the value of fixed assets in countries with advanced market economy. The first one lies in the fact that fixed assets evaluation is carried out in monetary units of the same buying capacity. This approach is based on considering the fixed assets to be investable funds taking into account buying capacity of the monetary unit. The second approach is based on revaluation of property into the current value at the prices of analogues as of the moment of revaluation at the sales prices. The third approach is based on the fact that the value of fixed assets lies not in the asset value of the available buildings and equipment, but in the ability to produce competitive and profitable production. Thus, market value of fixed assets depends on profit margin [17, p. 40].

A lot of researchers believe that replacement value of one and the same object which is being revaluated is defined not by the actual monetary depreciation, but by the selected revaluation method. That is why they suggest adjusting revaluation coefficient considering not only monetary depreciation [18, p. 42–50]. Against this background, authors suggest various methods for fixed assets revaluation improving. For example, V. Y. Vankevych for the purpose of this drawback elimination suggests adjusting the coefficient for fixed assets revaluation considering economic life of objects too.

From our point of view, it is not enough to use only the object's effective life in the use for proper fixed assets revaluation. It is also necessary to take into consideration useful life of the fixed asset object.

O. V. Yefimova in her researches suggests the procedure of adjusting revaluation coefficient taking into account the degree of accrued depreciation.

It should be emphasized that the application of such a method for revaluation of new buildings and constructions will overrate their market value to

a great extent. And since passive part of funds takes a large percentage in the business property, the value of fixed assets will be overestimated.

It should be noted that IAS 16 gives an enterprise the right to choose one out of two fixed assets pricing models for accounting recognition: production cost model or revaluation model.

The first one assumes that after fixed asset recognition it should be measured at production cost less any accumulated depreciation and impairment loss (§ 30 IAS 16 "Fixed assets").

On the other hand, revaluation model measures the fixed assets object at fair value that can be reliably measured and recognized at revaluated cost. According to IAS 16, revaluated cost is fair value of fixed assets as of the date of revaluation less any further accumulated depreciation and further accumulated impairment loss.

It is stated in Accounting Regulations (Standard) 7 that the enterprise can revalue fixed assets object, which is to say that the standard specifies only one model.

The procedure of recording revaluation of accumulated depreciation of the object during its revaluation differs fundamentally from the existing one. IAS 16 suggests two methods of accumulated depreciation revaluation: the amount of accumulated depreciation is recounted proportionally to the change of gross asset value; depreciation amount is excluded from the gross asset value.

In Accounting Regulations (Standard) 7 there is no second method: only the first (proportional) method of adjusting accumulated depreciation is meant to be used. After adoption of the Tax Code of Ukraine, certain amendments have been introduced into the Accounting Regulations (Standard) 7. In particular, it has been allowed to use "indexation" of fixed assets value depending on the official inflation rate.

The above-noted norm deals only with taxation and is not applied in IFRS. As it is known, IFRS 16 "Fixed assets" allows using two models for fixed assets recognition: cost model (at historical cost) and revaluation model. Cost model is a traditional value model used for fixed assets accounting within all national accounting systems.

Choosing the second value model, fixed assets must be recognized at a revaluated amount, being its fair value at the date of revaluation. Revaluations shall be made with sufficient regularity to ensure that the carrying amount of the object at any specific time does not differ too much from its fair value. This value model has logical justification that can be found in the Basis for conclusions on the IFRS 16 standard.

It is evident that yearly inflation rate in advanced countries is insignificant, so its influence on the asset value may be neglected. However, as far as fixed assets with long useful life are concerned, the impact of inflation accrues being influenced by the time of their utilization. Reflection of such fixed assets at their historical cost shall result in (and actually results in) the fact that the balance will be “a collection of heterogeneous values”. Regular revaluation of fixed assets with long useful life will make it possible to reduce their balance sheet value to a common denominator, and therefore, the disclosure of assets in financial reporting is thought to be more accurate.

Revaluation model of fixed assets objects comes down to comparison of their balance sheet value to fair value. In actual practice, fair value is usually the market value of the asset.

At the same time, according to IAS 16, fair value is the sum of money that would be received to sell an asset or paid to transfer the liability in an ordinary transaction as of the evaluation date, referring to specialized IFRS 13 “Fair value measurement”.

International auditors point to the fact that IAS 16 in this case does not assume obligations to invite professional appraisers: “The Standard does not call for professional evaluation made by an independent organization, or for involving professional appraiser for such goals, though in actual practice, those who draft financial reporting often make use of professional services on evaluation.”

Another important point to be pointed out is that the chosen evaluation model should be applied for the whole class of assets. Thus, if an object of fixed assets is being revaluated, then the whole group of relevant asset must be revaluated (§ 36 IAS 16).

Thus, fixed assets revaluation may influence the information on the economic entity financial state disclosed in financial statements. Consequently, the choice of procedure (model, according to IFRS) of fixed assets evaluation accounting after their recognition is an important constituent of the enterprise accounting policy. In this context, a group is a set of assets of the same content and nature of application in the transactions of the organization (structures, equipment, motor vehicles, furniture, construction in progress, etc.).

If revaluation model has been chosen in accounting policy, then the fixed assets recognized in the enterprise accounting and belonging to certain class of the first or second order of the Plan of accounts for bookkeeping shall be accounted at revaluated cost equal to their fair value as of the revaluation date net of depreciation and impairment loss.

As far as the decision on choosing the pricing model is made regarding the class of fixed assets in general, then according to IAS 16 (International Accounting Standard), if a separate fixed asset is being revaluated, then the whole class of fixed assets to which that separate asset belongs shall be revaluated. As it is noted in IAS 16, revaluation of objects within one class of fixed assets must be carried out simultaneously in order to avoid selective asset revaluation or including the amounts reflecting expenses and values inconsistent in time into financial statements.

It should be noted that the international standard IAS 16 is consistent with IAS principles, and defines fair value of the fixed asset as the amount of money that would be received to exchange an asset in the transaction between knowledgeable, concerned and independent parties. The Standard determines that revaluations shall be carried out regularly enough so as to avoid substantial difference of the balance sheet value from the one measured by using the fair value as of reporting date. It should be noted that IAS 16 mentions only “sufficient regularity”, though does not determine clear periodicity of revaluation. Revaluation intervals are chosen according to accountant’s professional views.

Periodicity of revaluations should depend on changes in the fair value of fixed assets. If fair value

of revaluated asset differs fundamentally from its balance sheet value, then the additional revaluation is required. Fair value of certain fixed assets may be the subject of sizeable and random fluctuations, so they require annual revaluation. Such frequent revaluations are not required for the fixed assets the fair value of which has been subject to minor alterations. The necessity to revalue such objects may arise once every 3–5 years.

The International Standard 16 makes it possible to revalue fixed assets using two methods: index method and method of making depreciation allowances.

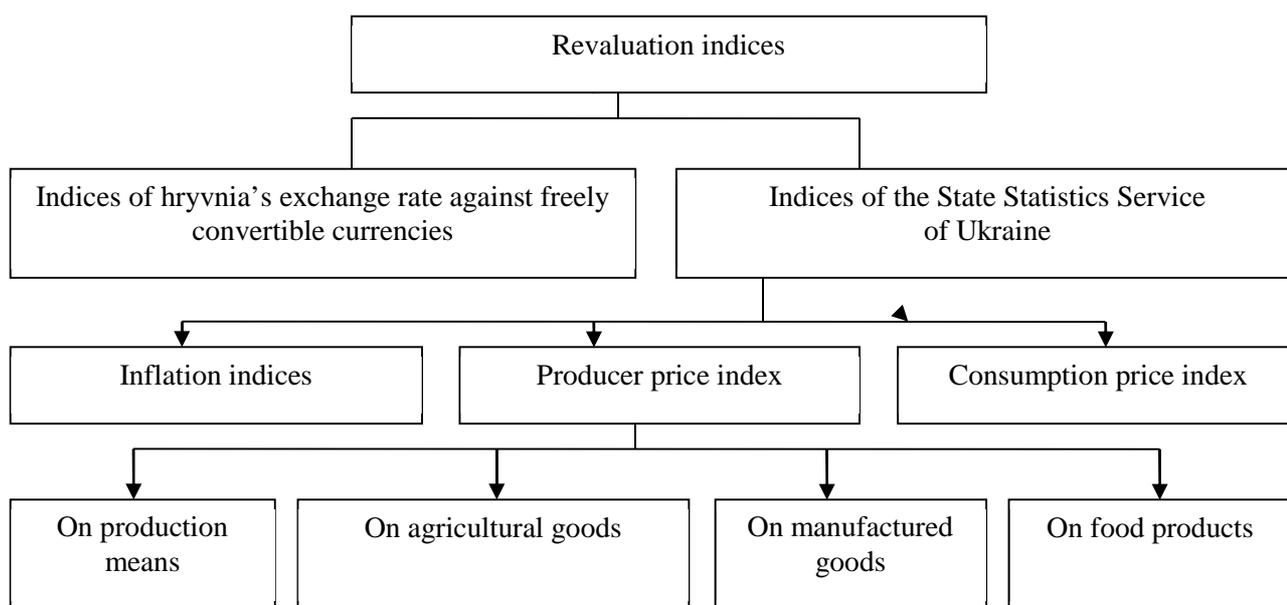
According to the index method, the amount of accumulated depreciation is transferred proportionally to the change of the asset gross carrying amount. This method is often applied when the asset is revaluated with the help of index in order to determine its value being its depreciated replacement costs.

The method of making depreciation allowances involves allowance of all the accumulated depreciation. The obtained asset value is revaluated to make it equal to the fair value. This method is mainly used to revalue buildings.

It should be noted that IFRS 29 “Financial Reporting in Hyperinflationary Economies”

recommends using fixed assets indexation based upon price index. Assets and liabilities are periodically reassessed taking into account the alterations in the monetary unit buying capacity. Furthermore, IFRS recommends using one price index which should take into account the change of the general purchasing capacity of money in order to compare reported data of different enterprises. When using adjustments for changes in the general price index, non-current assets are recognized at their acquisition cost, and afterwards it is adjusted with the help of the above mentioned index [19].

Price index may be defined by various methods (Fig. 1). The easiest method is revaluation of non-current assets and organization supplies in compliance with changes of hryvnia rates against more stable currency (or a set of the most stable currencies). The advantages of this method are simplicity of use, absence of difficult calculations, and applicability without supporting information. However, it cannot provide accurate results because currency ratio of hryvnia (dollar or euro) does not correspond to their real purchasing power. This leads to inaccuracy of the obtained evaluation due to matching of non-current assets value to hryvnia’s or any other currency exchange rate.



*Fig. 1. Classification of property revaluation indices*

*Source: Author's development.*

Therefore, adjustment of non-current assets value may be carried out using direct method when revaluation of initial cost allows identifying different degree of changes in the value of non-current assets as a result of their value change in certain currency or group of currencies.

Certain regulations of IAS 16 standard concern the issues of depreciation accounting of fixed assets that are regularly revaluated. According to the Standard, after revaluation of the object of fixed assets, its depreciation amount may be either revaluated proportionally to the change of the fixed asset balance sheet value or written off to decrease of initial cost, and as a result, the amount of depreciated value is transferred to the revaluated amount of fixed asset.

IFRS novelty is the fact that nowadays, the enterprises are allowed to use fair value less accumulated depreciation and impairment loss as revaluated value only if fair value may be assessed "with sufficient reliability level". According to IAS 16, fixed assets on the balance sheet are recognized at balance (accounting) value less the amount of accumulated depreciation and accumulated impairment loss, which forms if the book value of an asset exceeds its replacement value. The anticipated recovery amount according to the IAS 36 standard is the largest of two values: discounted value and net sales price of asset. According to the requirements of IAS 36 standard "Impairment of assets", an enterprise is obliged to check impairment of their assets regularly and determine impairment loss [20].

### Conclusion

Evaluation of fixed assets, being the components of material and technical resources (MTR), at fair value makes it possible to characterize the reproduction process objectively, define the property status of the economic entity more precisely. However, it distorts financial result.

We believe that simultaneous use of several indices for fair value measurement may lead to different fair values of the fixed asset. An agricultural enterprise is obliged to analyze the reasons for inconsistencies in calculations and choose the most precise estimation of the fair value. Fair value of the assets must reflect variability of money flows, which are taken into consideration

during price negotiation by independent, knowledgeable buyers and sellers interested in making such a deal. There is no unified approach due to the fact that most of the assets do not have market value, and their fair value estimated by the expert is conditional and fair only as of the estimation date. Nevertheless, fair value is necessary for the potential investors and indispensable to financial assets.

Evaluation methods of fixed assets at their fair value require development, adjustment of evaluation model, which will make it possible to ensure equivalency of exchange between the independent parties on the active market.

We believe that after the enterprise has adopted IFRS, an "impairment test" may be applied to the assets recognized at revaluated fair value if the enterprise has reasons to believe that the value of its assets reported in the IFRS balance sheet does not correspond to the value of these assets estimated by applying the method of cash flow discounting. This means that fair value of the enterprise assets does not correspond to the cash flows generated in the context of this particular enterprise activity.

The study of international accounting norms and rules as well as principles of fixed assets reporting is necessary in order to make the reporting of national enterprises understandable to foreign companies, because fixed assets are one of the most complex accounting items. Therefore, it is important to study international approaches towards fixed assets accounting and consider the possibility of their application in national accounting for the purpose of the most optimal application in the practical activity of the Ukrainian agricultural enterprises.

### References

1. Dmitruk E. F. (2002). *Metodika vyyavleniya potentsialnyh konkurentnyh preimuschestv firmy s uchetom vneshney i vnutrenney sredy [Methods of revealing potential competitive strengths of the enterprise taking into consideration external and internal environment]. Marketing i marketingovyye issledovaniya v Rossii – Marketing and marketing research in Russia, 2, 15–20 [in Russian]*
2. Berdnikova T. B. (2002) *Analiz i diagnostika finansovo-hozyaystvennoy deyatel'nosti predpriyatiya [Analysis and diagnostics of the enterprise financial*

- and economic activity]. Moscow: INFRA-M [in Russian].
3. Karaseva I. M., Revyakina M. A. (2007). *Finansovyy menedzhment [Financial management]*. Y. P. Aniskina (Ed.). Moscow: Omega-L [in Russian].
  4. *Mezhdunarodnye standarty finansovoy otchetnosti [International accounting standards]*. (2008). Moscow: AskeriASSA [in Russian].
  5. Sokolov Y. V. (2005). *Buhgalterskiy uchet v zarubezhnykh stranah [Accounting in foreign countries]* Moscow: Prospekt Velbi [in Russian].
  6. *Osnovni zasoby: Polozhennia (standart) bukhgalterskoho obliku 7 [Fixed assets: Regulation (standard) of accounting 7]*. (2000, April 27). Nakaz Ministerstva finansiv Ukrainy № 92 – The order of the Ministry of Finance of Ukraine №92. Retrieved from <http://zakon3.rada.gov.ua/laws/show/z0288-00> [in Ukrainian].
  7. *Metodychni rekomendatsii shchodo oblikovoi polityky pidpriemstva [Methodological recommendations on the enterprise accounting policy]*. (2013, June 27). Nakaz Ministerstva finansiv Ukrainy № 635 – The order of the Ministry of Finance of Ukraine №635 Retrieved from [http://buhgalter911.com/Res/Zakoni/MetodRek/metod\\_uchet\\_polit.aspx](http://buhgalter911.com/Res/Zakoni/MetodRek/metod_uchet_polit.aspx) [in Ukrainian].
  8. *Metodychni rekomendatsii z bukhgalterskoho obliku osnovnykh zasobiv [Methodological recommendations on the enterprise accounting policy]*. (2003, September 30). Nakaz Ministerstva finansiv Ukrainy № 561 – The order of the Ministry of Finance of Ukraine №561. Retrieved from <http://buhgalter911.com/Res/Zakoni/MetodRek/osnsredstva.aspx> [in Ukrainian].
  9. *Zakon Ukrainy pro otsinku maina, mainovykh prav ta profesiinu otsinochnu diialnist v Ukraini [Law of Ukraine on appraisal of property, property rights and professional appraisal activity in Ukraine]*. (2001, July 12). Vidomosti Verkhovnoi Rady Ukrainy – Bulletin of the Verkhovna Rada of Ukraine. Kyiv: Parlam. vyd-vo [in Ukrainian].
  10. Endovitskiy D.A., Mokshina K.N. (2013). *Suschnost osnovnykh sredstv kak obyekt bukhgalterskogo ucheta v kontekste problem ucheta kapitala [The essence of fixed assets as an object of accounting within the framework of the problems of capital accounting. International accounting] Mezhdunarodnyy bukhgalterskiy uchet - International accounting*, 25(271), 31–38 [in Russian].
  11. *Podatkovyi kodeks Ukrainy [Tax Code of Ukraine]* (2010, December 02). Retrieved from <http://zakon3.rada.gov.ua/laws/show/2755-17> [in Ukrainian].
  12. *Zakon Ukrainy pro otsinku maina, mainovykh prav ta profesiinu otsinochnu diialnist v Ukraini [Law of Ukraine on appraisal of property, property rights and professional appraisal activity in Ukraine]*. (2001, July 12). Vidomosti Verkhovnoi Rady Ukrainy – Bulletin of the Verkhovna Rada of Ukraine. Kyiv: Parlam. vyd-vo [in Ukrainian].
  13. *Osnovni zasoby: Mizhнародnyi standart bukhgalterskoho obliku 16 [Property, Plant and Equipment: International Accounting Standard 16]*. (2012). Retrieved from [https://zakon.rada.gov.ua/laws/show/929\\_014](https://zakon.rada.gov.ua/laws/show/929_014) [in Ukrainian].
  14. *Oblikovi polityky, zminy v oblikovykh otsinkakh ta pomylyky: Mizhнародnyi standart bukhgalterskoho obliku 8 [Accounting policies, changes in accounting valuations and mistakes: International Accounting Standard 8]*. (2012). Retrieved from [https://zakon.rada.gov.ua/laws/show/929\\_020#n2](https://zakon.rada.gov.ua/laws/show/929_020#n2)
  15. *Obiednannia pidpriemstv: Polozhennia (standart) bukhgalterskoho obliku 19 [Business combinations: Accounting Regulation (Standard) 19]*. (1999, July 07). Nakaz Ministerstva finansiv Ukrainy № 163 – The order of the Ministry of Finance of Ukraine № 163. Retrieved from: <https://zakon.help/law/163/>.
  16. Popovych V.I. (2012). *Oblik osnovnykh zasobiv: porivnialnyi analiz MSBO ta P(S)BO. Fixed assets accounting: comparative analysis of IAS and Accounting Regulations (Standards)*. Visnyk Natsionalnoho universytetu «Lvivska politehnika» - Bulletin of Lviv Polytechnic National University, 721, 216–219.
  17. Vankevich V.E. (2005). *Sovershenstvovaniye pereotsenki osnovnykh sredstv i metodiki ucheta ucheta [Developing fixed assets revaluation and procedure for its accounting]*. *Finansy. Uchet. Audit.* – Finance. Accounting. Audit, 5, 40–45.
  18. Efimova O. (2004). *Sovershenstvovaniye mekhanizma otsenki i ucheta vosstanovitelnoy stoimosti obyektov osnovnykh sredstv. [Improving the mechanism of evaluation and accounting of replacement cost value of the objects of fixed assets]*. *Natsionalnyy bukhgalterskiy uchet - National Accounting*, 12, 42–50.
  19. *Finansova zvitnist v umovakh hiperinflatsii: Mizhнародnyi standart bukhgalterskoho obliku 29 [Financial reporting in hyperinflationary economies: International Accounting standard 29]*. (2012). Retrieved from [https://zakon0.rada.gov.ua/laws/show/929\\_048](https://zakon0.rada.gov.ua/laws/show/929_048).
  20. *Zmshennia korysnosti aktiviv: Mizhнародnyi standart bukhgalterskoho obliku 36 [Impairment of assets: International Financial Reporting Standard 36]*. (2012). Retrived from [https://zakon.rada.gov.ua/laws/show/929\\_047](https://zakon.rada.gov.ua/laws/show/929_047).

**UDC 657.471**

**JEL Classification Code M41**

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## **DECOMMISSIONING OF FIXED ASSETS AND LAND RECOVERY: ACCOUNTING AND ASSESSMENT**

**Abstract.** The existing provisions and regulations for the accounting of the written-off objects of the fixed assets and the working balances creation to cover the expenses of land restoration were investigated. Taking into consideration the peculiarities of the Ukrainian enterprises activity in the field of oil and gas industry, the problematic aspects within the accounting of the fixed assets and other non-circulating assets were investigated. The structure of the expected expenses for decommissioning of fixed assets and land restoration, that are the specific objects of the oil and gas industry enterprises, was determined. Based on the reasoning for structural expenses, the conceptual basis for the creation of accounting methodology with the emphasis on the contents of operations for funds creation for the provision of expenditure for the subsequent periods to finance economic operations for decommissioning of fixed assets and the restoration of land in the oil and gas industry. It has been proven in this article that creation of amounts of securities for such aims of the enterprise, should be identified in accordance with such criteria as the planned level of changes of the possible stock for oil and gas mining. It is argued that at each of the following stages of the mineral wealth exploitation, to recognize such liabilities in the accounting system are necessary, taking into account the risks, associated with the decommissioning

of such assets. For the objective results provision, the general scientific methods of scientific knowledge, the specific methods of accounting and risk management methods were used.

**Key words:** costs for decommissioning, provision, obligations, accounting, fixed assets, assessment.

### **Formulation of the problem**

At the moment, there are a number of uncoordinated issues in accounting for the deduction of individual costs for the non-current tangible assets of the original value. In particular, this applies to provisions National Accounting Standard 7 “Fixed assets” [1] and IAS 16 “Property, Plant and Equipment” [2], according to which the initial value of fixed assets increases with the simultaneous creation of collateral at the amount of the obligation that arises at the dismantling, relocation of the facility and bringing the land on which it is located into a condition suitable for further use (in particular, for the land reclamation provided for by law), i.e. the possibility and conditions for capitalization of costs.

### **Relevance of the chosen topic**

In connection with the peculiarities of the enterprises of the oil and gas industry, in the part of non-negotiable tangible assets a significant share is occupied by those who require considerable expenses for decommissioning and carrying out works for the restoration of land due to significant technological influence and contamination of natural complexes during normal operation of structures and systems of oil and gas assets. This fact actualizes the issue of expense financing sources creation in the system of accounting, taking into account the scientifically-grounded methodology of estimating the value of these processes provision. The existing debating provisions of modern accounting standardization in the sphere of assets assessment, the alternative methods of accounting statement of the initial costs and decommissioning of its consumed part constitute the problems raised in the article, and, accordingly, its aims.

### **Analysis of recent research and publications**

In modern economic conditions, the correctness of the reflection in accounting for operations with non-negotiable tangible assets of the enterprise remains a difficult part of accounting. The main problematic issues arise in the formation of the initial value of non-negotiable tangible assets, on which they will be registered, put into operation, the determination and assessment of future costs for them, the accumulation of depreciation, expansion of its function as its own source of financing of the enterprise.

Such scientists and economists as A. P. Grinko [3, p. 110], Z.-M. V. Zadorozhny [4, p. 163], I. K. Kizo, D. J. Weigant, T. D. Warfield [5, p. 395-398], S. A. Kuznetsova [6], Y. D. Krupka [7, p. 544-549], B. Nedels, H. Anderson, D. Caldwell [8] devoted considerable attention to the study of the problems of accounting for non-negotiable tangible assets in their works. The results obtained by them are a significant contribution to improving the management of non-negotiable tangible assets based on the organic interconnection of accounting functions with other management functions. However, there remain a number of unresolved and debatable issues regarding the assessment and features of capitalization of costs associated with the decommissioning of fixed assets in the oil and gas industry and the restoration of land after the completion of the processes of subsoil use, which updates this study.

This fact actualizes the contents of the theme researches taking into account the national conditions of oil and gas industry enterprises' operation, in other words, forming the adaptive type of accounting methodology for the Ukrainian practice.

### **Purpose and tasks**

The purpose of the article is to study the peculiarities of the formation of the initial cost of fixed assets and its reflection in the accounts of oil and gas industry enterprises in the conditions of the necessity of restoration of land plots and other expenses for the decommissioning of such means..

Accordingly, the tasks set out in the study are: to identify how the characteristics of the enterprises of the oil and gas industry affect the accounting of fixed assets and other non-negotiable tangible assets; determine the composition of expenses necessary for the decommissioning of fixed assets and the restoration of land plots; to elaborate schemes of accounting of operations for forming the provision of expenses for the decommissioning of fixed assets and the restoration of land plots; determine how changing of expected value estimates will affect the accuracy of accounting information to manage them..

### **Description of the main study material and the results**

The main features of the oil and gas companies that influence the methodology and organization of accounting for non-current assets include: dependence on natural factors, heterogeneous composition of well drilling works, development of minerals, real estate mining process, long-term extraction, technological process of simultaneously producing several types of products, lack of work in progress, consistent implementation, continuity of the main production processes, the presence of specific components of non-tangible assets and others.

In accordance with the requirements of the current legislation [9] the decommissioning of wells, oil extraction equipment and the primary preparation of oil for transportation, other fixed assets there is an obligation to restore land. Such works include isolation and liquidation, rehabilitation of land regeneration, preservation of the estuaries and trunks of liquidated wells, periodicity of their inspection and restoration of land areas where extraction was carried out.

The obligation to liquidate the wells occurs at the time of commissioning of the well and is recognized as a security, since this obligation arose as a result of past events, namely the construction of a well. The term of the obligation to liquidate the well associated with the period of obtaining economic benefits from the use of wells, and comes after the decision to eliminate the well. At the initial recognition of the provision, the amount of current expenses for the elimination of wells for each individual well is calculated, which takes into account the costs of performing such works on the basis of the cost estimates for the elimination of the well and the restoration of the land plot prepared by the technical services of the enterprise, taking into account the long-term inflation rate and discount rate.

Such costs are accounted for and measured in accordance with IAS 37 "Provisions, Contingent Liabilities and Contingent Assets" [10] and National Accounting Standard 11 "Liabilities" [11] and are included in the historical cost of property, plant and equipment in accordance with IFRS 16 "Property, Plant and Equipment" [2] and National Accounting Standard 7 "Fixed assets" [1], that is, capitalization of such costs is assumed.

The amount of pre-estimated expenses for the liquidation of non-current tangible assets is a component of their initial value and is amortized over the useful life of the asset. At the same time, provisions are recognized as a liability with an indefinite term or an indefinite amount. As noted by T. I. Dolishnya, as a rule, companies in the oil and gas industry expect such obligations, based on the estimation of oil and gas reserves and the planned level of their production per year [12, p. 155].

The basis for determining the reserve for the decommissioning of fixed assets in the practice of accounting for oil and gas enterprises is dependent on the volumes of hydrocarbon production. However, there is a need for further research on the question of capitalization of costs and stages of the subsoil process, in which it is expedient, since it is not possible to estimate oil and gas reserves before the beginning of the industrial development of mineral deposits of mineral resources, their assessment is specified in the process of exploitation of deposits.

Recognition of provisions for the decommissioning or liquidation of fixed assets from

the moment of exploration of mineral deposits is not permissible, since the obligation to dismantle industrial structures arises later in the course of their construction, and some additional obligations are already in the process of extraction. Provision for the disposal and liquidation of fixed assets should be recognized and capitalized, at least during the development or construction of wells, that is, before the start of the extraction process. Therefore, the recognition of provisions in the amount estimated on the basis of oil and gas reserves and the planned level of their extraction is appropriate in the process of oil and gas production.

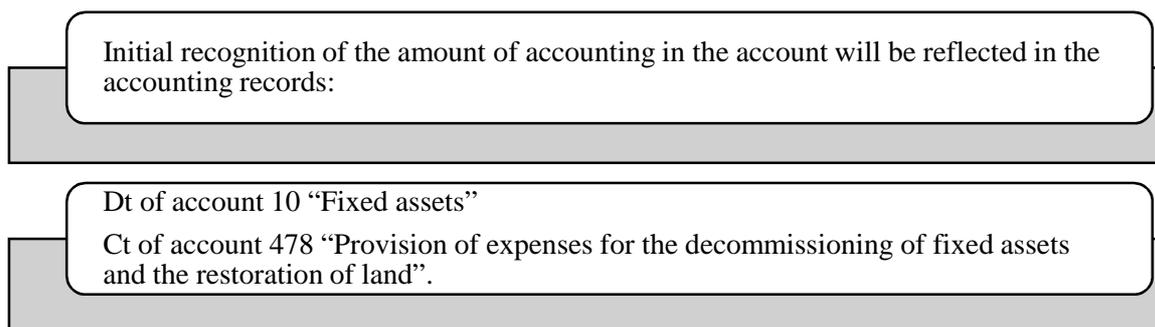
At other stages of the process of subsoil use, the obligation to decommission non-current tangible assets should be recognized in the light of changes in previous estimates of resource gains and risks arising from the decommissioning of such assets and are characteristic of such an obligation. In total, the obligation should be the best estimate of future costs associated with the cessation of the use of such assets or the restoration of land plots.

Such an estimate is based on the calculations made by the technical experts, which take into account the technological indicators of the development of such oil and gas deposits, since the costs of the cessation of exploitation of fixed assets will vary depending on the location of the deposit, extraction technologies and other factors that affect the production process.

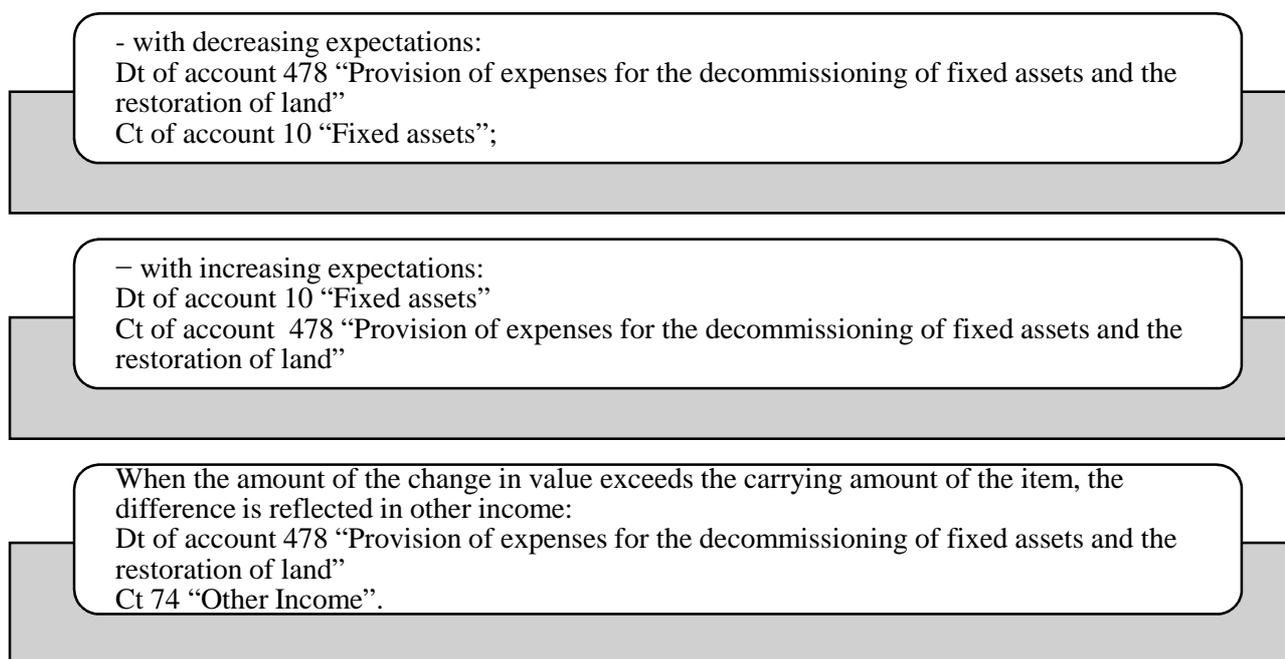
Provision of expenses for the decommissioning of fixed assets and the restoration of land plots is proposed to account for a separate subaccount 478 to the account 47 "Provision of future costs and payments", with the change of its name to "Provision of costs for decommissioning fixed assets and restoration of land". In the account of the reflection of such security, it is suggested to carry out the events, which are illustrated in Fig. 1

This amount is capitalized on the cost of property, plant and equipment and amortized over the useful life of the relevant method in accordance with the accounting policies of the oil and gas company.

If the reason for the change in the valuation is to change the amount of expected liabilities or to change the discount rate, then the amount of the change should be attributed to the initial value of fixed assets, as evidenced by the records illustrated in Fig. 2.



*Fig. 1. The accounting of operations for forming the provision of expenses for the decommissioning of fixed assets and the restoration of land plots*



*Fig. 2. Accounting for transactions arising from a change in the estimation of the provision of expenses for the decommissioning of fixed assets and the restoration of land plots*

In the event that the change leads to an excess of the asset over its recoverable amount, that excess should be recognized as an impairment of the asset (impairment) in accordance with IAS 36, "Impairment of assets", at the time of the debit of the account 972 "Impairment losses on assets" and a credit of the account 10 "Fixed assets".

In order to realize the qualitative characteristics of financial reporting, in the part of information on the formation of provision for the decommissioning of fixed assets from the operation and restoration of land in the oil and gas industry, it is proposed to form them in the amount estimated on the basis of oil and gas reserves and the planned level of mineral extraction. At other stages of the subsoil process, it is recommended to take into account changes in previous estimates of

the amount of resources embodying economic benefits and that are necessary to repay such an obligation, taking into account the risks of such processes. At initial recognition, the provision is capitalized into future expenses in the amount of discounted value of collateral and is shown in terms of the value of oil and gas assets. Subsequently, the asset created is amortized, and changes in the provision for provisioning are recognized as financial expenses of the current period.

### **Conclusions and perspectives of further research in this direction**

1. Recognition of provisions in the amount calculated on the basis of oil and gas reserves and the planned level of their extraction, it is expedient to carry

out in the process of oil and gas production. At other stages of the process of subsoil use of recognition of commitments for the decommissioning of fixed assets should be made taking into account changes in estimates of volumes of extracted resources that embody the economic benefits necessary to repay this obligation and taking into account risks.

2. In the financial statements, provision should be made at current cost. At initial recognition, the provision is capitalized into future expenses in the amount of discounted value and is shown in terms of the value of oil and gas assets.

3. The asset created subsequently is depreciated, and changes in the provision for provisioning should be reflected in financial expenses.

4. As a result, the formation of the provision of costs for the decommissioning of fixed assets from the operation and restoration of land will contribute to the implementation of qualitative characteristics of financial reporting for management purposes.

### References

1. *Osnovni zasoby: Polozhennia (standart) bukhgalterskoho obliku 7 [Fixed assets: Regulation (standard) of accounting 7].* (2000, April 27). *Nakaz Ministerstva finansiv Ukrainy № 92 – The order of the Ministry of Finance of Ukraine №92.* Retrieved from [http://www.minfin.gov.ua/control/uk/publish/article?art\\_id=340510&cat\\_id=293533](http://www.minfin.gov.ua/control/uk/publish/article?art_id=340510&cat_id=293533) [in Ukrainian].
2. *Osnovni zasoby: Mizhnarodnyi standart bukhgalterskoho obliku 16 [Property, Plant and Equipment: International Accounting Standard 16].* (2012). Retrieved from [https://zakon.rada.gov.ua/laws/show/929\\_014](https://zakon.rada.gov.ua/laws/show/929_014) [in Ukrainian].
3. Hrinko, A. P. (2015). *Teoretyko-metodolohichni zasady bukhgalterskoho obliku vidtvorennia osnovnoho kapitalu v umovakh novoi upravlinskoi paradyhmy [Theoretical and methodological principles of accounting of reproduction of fixed capital in the conditions of the new administrative paradigm].* Kharkiv: KhDUKhT. [in Ukrainian].
4. Zadorozhnyi, Z. V. (2009). *Problemni aspekty obliku osnovnykh zasobiv [Problem aspects of accounting of fixed assets].* Proceedings from XIV Mizhnarodna naukovo-praktychna konferentsiia «Perspektyvy rozvytku ekonomiky Ukrainy: teoriia, metodolohiia, praktyka» – 6th International Conference “Prospects for the development of the Ukrainian economy: theory, methodology, practice”. (pp.346-347). Lutsk: Volyn. nats. un-t im. Lesi Ukrainky [in Ukrainian].
5. Kizo, D. I., Veygant, D. Z., & Uorfild, T. D. (2001). *Finansovyy uchet [Financial Accounting] (9th ed.).* N'yu-York: John Wiley&Sons, Inc. [in Russian].
6. Kuznetsova, S. A., & Kuznetsov, A. A. (2018). *Transformatsiia metodolohii ta orhanizatsii bukhgalterskoho obliku y upravlinskoho kontroliu neoborotnykh materialnykh aktyviv v umovakh informatsiinoi asyemetrii ta virtualizatsii [Transformation of the methodology and organization of accounting and management control of non-negotiable tangible assets under conditions of information asymmetry and virtualization].* *Efektivna ekonomika - Effective economy*, 8. Retrieved from [http://www.economy.nayka.com.ua/pdf/8\\_2018/7.pdf](http://www.economy.nayka.com.ua/pdf/8_2018/7.pdf) [in Ukrainian].
7. Krupka, Y. D. (2017). *Kapitalizatsiia vytrat v obliku pidpriemstv z vydobuvannia ta pererobky pryrodnykh resursiv [Capitalization of expenses in accounting of enterprises on extraction and processing of natural resources].* *Hlobalni ta natsionalni problemy ekonomiky - Global and national problems of the economy*, 18, 544-549. Retrieved from <http://global-national.in.ua/archive/18-2017/103.pdf> [in Ukrainian].
8. Nidlz, B., Anderson, X., & Kolduell, D. (1993). *Printsipy bukhgalterskogo ucheta [Principles of accounting].* Moscow: Finansy i statistika. [in Russian].
9. *Polozhennia pro poriadok likvidatsii naftovykh, hazovykh ta inshykh sverdlodyn i spysannia vytrat na yikh sporudzhenia pryiniaty 27 hrudnia 1989 roku [Regulations on the procedure for the elimination of oil, gas and other wells and the write-off of costs for their construction from December 27 1989].* Retrieved from: <http://zakon5.rada.gov.ua/laws/show/v0019400-89> [in Ukrainian].
10. *Zabezpechennia, umovni zoboviazannia y umovni aktyvy: Mizhnarodnyi standart bukhgalterskoho obliku 37 [Provisions, Contingent Liabilities and Contingent Assets: International Accounting Standard 37].* (2012). Retrieved from [http://zakon.rada.gov.ua/laws/show/929\\_051](http://zakon.rada.gov.ua/laws/show/929_051) [in Ukrainian].
11. *Zoboviazannia: Polozhennia (standart) bukhgalterskoho obliku 11 [Obligations: Regulation (standard) of accounting 11].* (2000, January 31). *Nakaz Ministerstva finansiv Ukrainy № 20 – The order of the Ministry of Finance of Ukraine №20* Retrieved from: <http://zakon.help/article/polozhennya-standart-buhgalterskogo-obliku-11> [in Ukrainian].
12. Dolishnia, T. I. (2013). *Oblik zabezpechennia vytrat na vyvedennia z ekspluatatsii osnovnykh zasobiv ta vidnovlennia zemelnykh dilianok: mizhnarodnyi i natsionalnyi aspekty [Accounting for the provision of expenses for the decommissioning of fixed assets and the restoration of land: international and national aspects].* *Visnyk Khmelnytskoho natsionalnoho universytetu - Herald of Khmelnytskyi national university*, 3, 1(200), 154-159 [in Ukrainian].

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**THEORETICAL-CONCEPTUAL BACKGROUND,  
METHODICAL APPROACHES AND CRITERIA FOR ESTABLISHING  
BUSINESS RESULTS IN ACCOUNTING AND FINANCIAL  
AND ECONOMIC THOUGHT OF GALICIA (SECOND HALF  
OF THE XIX - FIRST HALF OF THE XX CENTURY)**

**Abstract.** The objective establishment of the level of efficiency (effectiveness) of the functioning of economic entities with the complexity of the architectonics of the economy becomes more problematic, and the system of criteria of efficiency becomes more complex and more debatable. In today's financial and accounting theories and, as a consequence, the practice of financial management, there are a number of debating questions about the system of performance indicators, methods of formalization. This actualizes multi-vector studies both in the accounting field and in the system of interdisciplinary research. The accounting methodology and the specific methodology for calculating performance indicators throughout the evolution of this science have always been based on one or the other financial doctrine. In the article are analyzed some aspects of contemporary financial doctrines and regulatory norms of different institutions that influenced the development of conceptual frameworks and methods of calculating performance indicators in accounting development of scientists of Galicia. The scientific validity of the approaches proposed in this article to improve the current basis of enterprise performance criteria is based on the justification of the use of historically formed ideas in the past in the designated territory and is based on the following postulates: accounting tools are the basic information system of any paradigm of financial results management; the process of forming a system of indicators of real and expected profits should be based on the principle of accounting - the assumption of continuity of the enterprise, which is also embodied

in modern concepts of financial management of sustainable development. Using general scientific and interdisciplinary methods of cognition, historical-retrospective and historical-comparative methods, theoretical generalizations of basic principles of accounting practice were conducted and the content of Galicia's accounting opinion regarding the indicators of efficiency in relation to the provisions of the current financial and economic concepts was evaluated. The principles and content of reflecting the profitability of the enterprise in the writings of Western Ukrainian scientists are revealed and analyzed. On the basis of this historical and economic intelligence, an argument is made about the possibility of using some of the workings of Galician theorists in the field of finance and accounting to improve the modern system of performance indicators in accounting, financial-analytical and management theory and practice. In particular, it is proposed to take into account the provisions formulated at the time for evaluating the results of the enterprise based on changes in the capital due to economic factors, approaches to accounting for one-time (occasional) income or losses, and methods for the productive impact of the intangible component of capital on the evaluation of the enterprise efficiency. The proposed is in line with modern concepts of cost-oriented management, criteria for market-based tools for evaluating the effectiveness of companies.

**Key words:** financial results, accounting, financial and economic doctrines, institutional environment, Galicia territory, conceptual and methodological developments of Western Ukrainian scientists.

### **Introduction**

The correct establishment of the economic entity's effective performance has been extremely important in all periods of the evolution of financial and economic sciences and accounting. The high significance threshold is associated with the broad operation of indicators of this type in management and regulation processes based on a system of criteria that reveal the efficiency of enterprise functioning. On the basis of one or another system of criteria indicators, for a long historical period, a demonstration of sound financial and economic management of the invested capital was carried out. The objective reflection of a business entity's effective performance in the accounting system has been the primary purpose of this applied discipline throughout its evolution. During the period of accounting thought, many theorists and practitioners have proposed various improvements in conceptual and methodological principles, principles and approaches to accounting for financial results. The work of world-renowned scholars and accounting schools is comprehensively and sufficiently analyzed and evaluated in historiographic sources. In contrast, the development of the theorists and practitioners of Galicia, including and with regard to the object under study, remain almost unexplored, although the individual ideas they formulate may objectively be relevant to improving the modern accounting of financial results and certain provisions of financial, economic and management concepts.

### **Formulation of the problem**

Financial result as an economic category in all historical periods of financial and accounting science and processes of financial management has been and still remains one of the most important and, at the same time, the most difficult in its content. In general perception, it characterizes a certain kind of positive or negative result of the economic entity, on the basis of which the level of efficiency (inefficiency) of invested (involved) capital, assets and a number of other performance indicators are determined. At present, a considerable amount of research on an international scale confirms dissatisfaction with the relevance and usefulness of information in public financial statements, first and foremost performance indicators – “profit

information does not reflect the objective performance of modern companies.” Well-known specialist in financial reporting, accounting and finance professor at Stern Business School at New York University, Baruch Lev sees as “the failure of accounting standards developers to adopt the traditional model of income statement (compliance) in favor of the balance model (asset valuation)” [ 1], that is, one that was formulated in the past and used for a long historical period in practice. Absence in the modern accounting system of specific methods for formalization of financial results and the presence of many significant achievements in financial theories and accounting concepts during their evolutionary development substantiate the relevance of the article. In the declared period of this study, the works of Galician theorists emphasized on the practical importance of reliable calculation of indicators of effective functioning and development of an objective methodology on the basis of which it was possible to “compare the results of activity of an enterprise for two equal periods in order to establish a developing enterprise or falls” [2 , p. 9].

The justification of the relevance of this article is based on the results of the analysis of studies and publications, in which scientists discuss the positioning of financial results and capital in modern accounting and reporting them. At the same time, the results of historiographical sources prove the fact that in the past the development of sufficiently deep ideas of the theoretical and conceptual plan and methodological provisions on the formation of information about profits and losses in the context of accounting for “capital”. In both modern and past developments, the problem is that profit is generated by the operation of capital - capital both invested in current operations and as a result of growth or loss due to, for example, environmental factors. In the researched developments of the Galician theorists in the declared period the problems of this kind were also solved: “Comparison of balance sheets at the end and the beginning of the year shows an increase in the amount of property growth. This part of the capital is called the net claim [3, p. 64]; “Profit consists of an increase in both property and capital, that is, profit is not only profit of capital, but at the same time, and even first, profit of property ... a separate group is formed by not realized profits,

which should be called capital reserves for their allocation from realized profit.” [4, p. 32, 49]. It is from the point of view of contemporary problems that the conceptual content and methodological orientation of accounting thought in the writings of Galicia's scholars in the period from the second half of the XIX to the middle of the XX century were evaluated.

### **Methodological approach.**

The methodology of the article is based on general scientific and special methods of scientific knowledge. The choice of research methods is driven by the nature, subject matter and purpose of this historical and economic exploration. The established methodology covers, in addition to the main object, related and interrelated components of research, providing a wide range of disclosure of scientific and applied developments of scientists of Galicia. In order to evaluate the past financial and accounting developments, from the point of view of the present, an analysis of publications concerning the existing problem in the financial concepts and reporting of financial results was carried out. Scientific sources of historiographic character are summarized in which rational aspects of theoretical and methodological plan are revealed and new results of previously unexplored developments of theorists and practitioners of Galicia are presented. On this basis, we obtained a larger information base on financial and economic and accounting opinions during the period under review. The determined spectrum and coordinates of the study determine the use of a systematic methodological arsenal, in which the historical-system method is the basic toolkit.

The process of discovering, analyzing and evaluating conceptual foundations in the researched developments of Western Ukrainian scientists was ensured by the use of retrospective method, formal logic methods and the use of interdisciplinary methods. Taking into account the complexity of isolation of regional studies, the study used scientific and cognitive methods of abstraction and concretization, which provided the opportunity to borrow experience of conducting historical and economic studies of this type. The method of historiographic analysis and the historical-comparative method have been used for the theoretical and methodological clarification of the

processes of formation and evolution of categorical concepts of the time, the content of results in accounting and the impact of financial doctrines on its methodology.

Through the comprehensive use of these methods, a comprehensive study of the various aspects of the content was conducted in accordance with the principles and approaches defined by the JEL Code Classification in the field of scientific and economic research with a focus on the historical tilt of intelligence. The methods selected provide for the processing of material relating to the blocks: M41 - Accounting, which is part of the general section M - Business Administration and Business Economics (Marketing; Accounting); B 26 - Financial economics from block B2 of the Economic Thought. The chosen methodology is based on the principles of historical and economic research, which made it possible to rationally process the materials in accordance with the provisions of block B - History of Economic Thought, Methodology, and Heterodox Approaches. The approaches used to process materials are consistent with the principles outlined in N9 - Regional and Urban History, in particular section B25 - Historical; Institutional; Evolutionary; Austrian from Unit B1 - History of Economy Thought though 1925, B15 - Historical; Institutional; Evolutionary from the History of Economy Thought block. The proposed, like other studies of historical and economic trends, is based on historiography and source, and therefore selected methods provide the block N01 - Development of the Discipline: Historiographical; Sources and Methods from Group N - Economic History.

### **The purpose of the article**

The problem that has not been solved to date is the lack of systematic and professionally oriented research of the scientific achievements of Galicia's theorists in the historical past, the introduction of the results obtained in the scientific circulation and the assessment of the possibility of using individual ideas in the modern subject area of knowledge.

### **An analysis of the latest publication**

Existing problems in trusting the calculated results of the enterprise with the modern accounting system are related to the pressure on the accounting

methodology of the latest concepts of financial management, in particular the key performance criteria used in them. Many of these criteria are qualitative, difficult to formalize in the system of evaluating the effective functioning of market economy entities: “general economic categories such as profit (loss) are an abstraction and for their practical application their interpretation is required by accounting” [5, p. 124]. Such issues are not new to the accounting and reporting system. For example, given the dominance of certain regional financial doctrines developed within the Austrian School of Economics, the formation of accounting knowledge and the development of theoretical accounting principles by Galicia emphasized the methodological comparison of performance indicators for the comparable periods “during which its activity was equally revealed” [2, p. 9]. The expediency of analyzing the evolution of methods of formalizing indicators of the performance of the enterprise, the assessment of the historical methodological bases of their reflection in different accounting systems produced in the past is noted in many domestic and foreign publications and studies. In particular, the publication [6] argued that “for the development of perfect methods of accounting for financial results, it is necessary to systematize their development in time ... studying the past, you can find solutions for the future” [6, with. 283]. In another paper [7], scholars have taken a similar stance, stating that “the study of the genesis of accounting profit makes it possible to understand the reasons for the need for continuous improvement of accounting to determine the directions of its further development” [7, p. 4].

The importance of using past experience (theoretical development and applied methodology to improve the entire system of modern accounting based on the object of financial results “will allow to reveal the dynamics of the transformation of practical activity in the system of scientific knowledge about methods, principles and methods of determining financial results, to track the change of general concepts and, on this basis, to master the technique of scientific prediction” [8, p. 5]. The feasibility of resorting to development in the territory of Galicia is substantiated in many studies: “in Western Ukraine, which was part of Austria-Hungary, and then Poland, economic science was

significantly influenced by European thought, and therefore requires further study” [9]; “Today there is no comprehensive picture of economic thought in Western Ukraine, in particular in the sphere of finance, which at that time was based on the world's assets” [10].

### **Presentation of basic material of the research**

#### ***Overview: a panorama of the basis for accounting thinking.***

In Galicia (a separate province - the crown region of Galicia and Lodomeria in the Austro-Hungarian times and the corresponding territory in the time of the Second Commonwealth) the basic principles of the German accounting school were used, which were nevertheless adjusted to the content of the doctrines of the Austrian School of Economics and were influenced by development and Krakow schools in Polish economic and financial thought. The dominance of certain basic conventions of business schools in a certain period permanently caused (sometimes significant) influence on methods of calculating financial results in practical accounting (calculation on the basis of assets (change in cost of capital) or comparison by a certain method of income and expenses).

The methodology for calculating financial results in the accounting system and disclosed in public reporting has always been based on the tenets of financial doctrines that have dominated particular government entities in a particular historical period. The financial and economic doctrines have historically formed different notions of profit that, in one way or another, have influenced the methodology of accounting systems: profit as a result of the activity of an economic entity, including changes in the situation; profit as a result of the use of capital; profit as a financial expression of the economic result of an activity (excess of income over expenses). The Impact on conceptual and methodological content of accounting had the personal doctrine (financial results form part of the profit that is calculated at cost of spent funds) and approaches to institutional direction (financial results are a consequence of estimating changes in invested capital at cost) (historical prices)).

In formulating their developments for the Galician theorists in the field of accounting, both the legislative prescriptions and the basic provisions of

European theories and practices were relevant. First of all, note the work "Balance and tax" [11], which was the basic guide for the organization of practical accounting in the enterprises of the western territory of Ukraine. The basis was the Encyclopedia of Accounting, which, like previous work, was used in Galicia. In these works, the basic basis for the economic expression of productive activity was the definition: "the net profit is the existing property fund, which exceeds the initial contribution, discovered through the balance sheet [12].

The fundamental balance theories have had a significant impact on accounting methodology (theory and practice). From the point of view of the modern economy, the most important can be recognized organic balance theory [13], which generally focuses on the objective calculation of the property status of the enterprise (establishing the reproductive value of the enterprise). At that time, it was believed that this concept provides information management performance, conditional on the principles of the physical concept of capital conservation (the postulates of static balance theory) and financial (basic principles of dynamic theory). According to this theory, it is believed that the formulated property approach with the evaluation of assets at revaluation allows to truly assess the level of performance of the enterprise. The cost criteria of this concept is based on, and the indicators of the Profit and Loss Statement are considered through the calculation of the result of the relative change taken into account (on the balance sheet) of the value of assets [13, p. 5].

In static balance theory [14], the main purpose of accounting was aimed at generating information about the possibility of repayment by the enterprise of its debts. It maintains that the financial results are capital gains of the enterprise during the reporting period. According to this theory, the indicator of effective management of an enterprise is derived, and priority is given to the indicator "net asset value", which is considered as equity.

The financial result in the concept of dynamic balance theory [15] is the basis for it, and therefore the objective repIn the dynamic accounting accounting paradigms developed on its basis, the calculation of financial result lies in the field of extended income recognition, including, in

addition to the actual sales, potential sales.resentation of this indicator in the financial statements is the main purpose of the accounting system. The concept of dynamic accounting is aimed at measuring (establishing) the efficiency of the enterprise, where the financial result is a change over a certain period of the amount of capital invested in the enterprise, which can be caused only by the financial and economic activity of the enterprise).

An important source is the source of activity of the Galician Regional Finance Directorate (Galizische Finanz - Direktion in Lemberg, Galacyjska Krajowa Dyrekcja Skarbu we Lwowie), the documents of which are kept for the period 1773 to 1928 in the Central State Historical Archives of Ukraine in Lviv (fund 160, sp. 7908). In the name given, this directorate was created in 1850 instead of the liquidated Office of State Revenue. Therefore, the instructions in the Ministry of Finance and the Governorate's instructions on matters within the competence of the Directorate are important. From the point of view of the topics discussed in this study, the content and nature of the indicators that were recognized as the main ones in determining the results of the activities of the state and commercial economic entities of that time are important. These are set out in the Activity Reports and Financial Statements of State Property and Various Enterprises.

Another important source for the study of this subject is the documents of the State Accounting (K.k. Staatsbuchhaltung in Lemberg; C.K. Ksigowons panstwowa we Lwowie). This public accounting was created as early as 1773 to account for income from the estates of state, religious and public funds, state salt pans, etc. Its function included controlling the payment of taxes of all kinds, county taxes, state duties, as well as auditing the financial accounts of enterprises, institutions and institutions. Replacing the public accounting department with the newly created Financial Department of the Office of the State did not essentially change its functions. In the funds of the Central State Historical Archive (f. 187, ref. 4737) numerous documents for the period 1774 to 1866 are stored, on the basis of which it is possible to draw conclusions about the existing regulated regulations to determine the results of activity of economic

entities of different kinds of activity and their taxation.

The formation of methodology in the system of accounting for determining financial results was strongly influenced by the activities of the District Chamber of State Control, founded in the Polish period in Lviv (1920) (Okrgowa Izba Kontroli Pacstworzej we Lwowie). Its functions included auditing the state (accrual, payment) of state revenues in the territories of Lviv, Stanislavsky, and Ternopil voivodeship. Given that in different spheres of economic and economic activity accounting methodology had its specificity in determining the size of profits, then the group of controllers (auditors) of this institution were different. One of the departments carried out checks (audits) of the accrual of income and the payment of taxes from institutions belonging to the ministries of railway, industry and trade. The second department audited the correctness of accounting and monitored the payment of income taxes by institutions under the jurisdiction of the Ministries of Finance, Post, Broadcasting and Agriculture, ie enterprises with the organization of accounting "budgetary institutions". A similar function was the Finance House (Izba Skarbowa we Lwowie), which operated from 1919 to 1939. She was responsible for overseeing the activities of financial institutions, executing the state budget, and making decisions in tax matters (establishing the reliability of turnover and income taxes, etc.). The acts of financial audits conducted by this state institution, as well as balances and financial reports and materials on the collection of property and income taxes, preserved in the archival funds (f.161, spr.79091), testify to the sufficiently strong influence of this institution on the method of calculating the financial results of budgetary institutions.

The documentary acts on the control of financial and economic activities with the access to confirm the accuracy of the calculated financial results, saved in the funds of the Central State Historical Archives of Ukraine in Lviv (Fund 803, p. 17112), allow for a wide analysis of the methodology of calculating the effective activity at the enterprises of different spheres economic activity, and to conclude on the state regulation of accounting. The importance of objective accounting by the accounting of the results of business activity

is confirmed by the materials of the audits and audits of that time. According to state regulations, such audits were conducted by Audit Unions (public associations), which were delegated to the functions of state control. The object of financial results (definition and distribution) was essential in the processes of conducting both external audits and internal audit services (control commissions), which were a mandatory structure of the supervisory boards of cooperative associations.

### **Conceptual and methodological landscape of accounting concepts in architectonics of financial and economic doctrines**

The content and the functional orientation of the theoretical and methodological foundations in the field of accounting knowledge of Galicia has been inextricably linked to the imperatives in the financial sphere and influenced by the dominant economic doctrines over the studied historical period. A retrospective analysis of the evolution of accounting thought (theoretical concepts of accounting science) of Galicia also shows that the focus of scientific development of the scientists of the region was in the parameter of architecture of the then doctrines of the Austrian School of Economics and the German School of Accounting. Given the high importance of the criteria for the effective functioning of economic systems, the relationship and interplay of accounting conventions and financial and economic doctrines is the most obvious object of financial results. European acquisitions directly in the field of accounting were also taken into account by Galicia's theorists in their developments, widely introduced into the scientific turnover. For example, the concept of "dummy (fictitious) profit (Scheingewinn)" produced within the German school of accounting, that is, profit is obtained through the galloping rise in prices, the danger of which is its taxation [15]. Based on the use of interdisciplinary expertise, economists of the region justified, for example, the higher objectivity of reflecting only the current consequences of economic activity on the main accounting performance accounts, and the incidental income was proposed to be attributed to capital accounts. In general, it can be noted that in the system of various types of financial and economic doctrines for establishing the efficiency of economic entities, an

important place was given to accounting science: "determining the consequences of a particular economic activity is the task of accounting science" [2, p.1].

At the level of contemporary (recent) development of financial and economic and accounting profile was the Polish Economic Society in Lviv (Polskie towarzystwo ekonomiczne we Lwowie). Its purpose was to develop economic, financial and accounting sciences, to promote and bring into the circulation of the leading European and world economic assets. The territorial branches of this society were the Krakow and Lviv scientific schools, whose members made significant contributions to the development of accounting thought. In this context, we briefly indicate the contribution of members of these schools, natives of Galicia. An example is the development of Głabiński Stanisław, one of the founders of the Lviv Science School in Polish economic and financial thought. This scholar (Professor of Political Economy, University of Lviv, Assistant Professor of Public Economics, Economic Policy and Statistics at the District Department of arable schools in Dublianu) has formulated a number of provisions on taxation, statistics and the principles of social value in his scientific work. At the heart of his concept was the concept of economic self-sufficiency, where accounting approaches to information support performance indicators played a significant role in managing the economy. The main provisions of his scientific works (*Wykład nauki skarbowej* (1894), *Wykład ekonomiki społecznej* (1913), *Nauka skarbowosci* (1925)) are found in the formulated works on accounting.

The representative of the Lviv School in Polish Economic and Philosophical Thought was Professor of the Department of Political Economy and Administrative Law, Dunajewski Julian Antoni of the University of Lviv. This scholar, as an adherent of classical political economy, in his writings relied on the basic principles of historical and Viennese schools. On the basis of some provisions of these schools, he introduced into the economic literature of the Galician scientific environment the concept of "principle of economy", the essence of which was to obtain the highest possible result from the standpoint of the theory of marginal utility (source of profit justified the

difference between present and future value). The conceptual-categorical apparatus formulated in the scientific works of the scientist (*Ziemia i kredyt* (1864–1869). *Wykład ekonomii politycznej* (1935)) found a place in the development of accounting (for example, 2, 3, 4, 17, 18). The same can be said about use in the field of accounting of scientific provisions Czerkawski Włodzisław Aleksander, the founder of the Krakow School of Polish Economic and Financial Thought. From the point of view of the subject of our study, we will show that the scientific views and provisions of the theoretical and methodological positions of the Austrian (Viennese) school in economic theory, this scientist outlined in the works "The theory of pure land income" (*Teoria czystego dochodu z ziemi*, 1893) the importance of large farms in social economy "(O znaczeniu większych gospodarstw w ekonomii społecznej, 1896)," The initial foundations of the organization of public economy "(Naczelne zasady organizacji gospodarstwa społecznego, 1898). His scientific theory of value, marginal utility, and capital income was the basis for formulating some of the conventions of Galician economists.

Regarding Bukovina as a constituent of Galicia, let us point out that the departments of political economy and statistics functioned at the Classic University of this territory (Chernivtsi University). Famous scientists taught at these departments - Friedrich Kleivehter, Joseph Aloise Schumpeter, S. Smal-Stotsky. The scientific direction of Professor of Political Economy F. Kleinwehter (since 1932. Lecturer at Harvard University) was to study the peculiarities of the organization of production and the development of fundamental approaches to measuring its effectiveness. His research papers "On Social Insurance with Particular Consideration on Its Relationship with Trade and Financial Policy", "Fundamentals of Agricultural Training", and his study (course) study "Analysis of the Bém-Beverkémian Economic Resources" also had an impact on improving the accounting methodology for establishing the results of enterprises (primarily through the development of costing systems).

S. Smal-Stotsky's scientific activity and the applied application of the provisions obtained therein had a direct impact on the content of practical accounting in credit-cooperative

cooperative associations, in particular on the procedural and technical methodology of establishing the effective activity of credit unions and the distribution of profits therein (within unions “Russian Checkout” and “Peasant Checkout”). It should be noted that in the same context, the well-known scientist of the German accounting school IF Cher in the above-mentioned work “Accounting and Balance” argued that a rational and sound methodology for “organization of accounting at the enterprise can affect its profitability and development as much as any innovation in technical equipment and enterprises” [16].

In the territory of Western Ukrainian lands the scientific activity of J. Schumpeter, which is considered one of the most prominent scientists-economists, was formed. The theoretical heritage of this scholar is extremely wide and varied, and in various contexts described in numerous historiographical sources. According to our study, we briefly state his view as an Austrian School of Economics representative in accounting, including the relationship between the provisions on financial performance in financial and economic doctrines and accounting opinion. He articulated accounting science as an “elevated monument”, in particular with respect to an object he called “cost-profit calculus”. Recognizing this system as an effective tool through which the economy “powerfully drives the logic of the enterprise.” A number of provisions in J. Schumpeter's writings indicate that he had a good understanding of the conceptual and methodological foundations of the accounting system and considered it an integral part of economic science: “how many entangled disputes would have been avoided had economists adhered to the accounting values of term and capital.” His works, *The Essence and Basic Content of Theoretical Economics*, and *The History of Economic Analysis*, had a significant influence on the formation of accounting thought.

On the basis of the newest financial and economic doctrines for this time that the accounting scientists of Galicia challenged the basic principles of accounting methodology of calculating financial results, developed in the world of accounting science: “all the views and definitions presented cannot meet economic principles. The profit and loss account is not an intermediary but a capital

account and not a property account; it is also not a profit account but a net stock account. Net income is the balance of the capital gains in the balance sheet” [4, p.121]. It should also be noted that the approach used in this theory is most consistent with the modern concept of value-oriented accounting.

The personal content of the resultant account is quite clearly expressed in [11], on the basis of which in many cases theoretical provisions have been formulated to improve the practice of accounting and in the enterprises of the western territory of Ukraine: “The profit and loss account is the intermediary between the stock performance accounts and the net performance account, which transfers the balance, that is, the net profit, to the capital account” [11, p. 110]. In an accounting encyclopedia [12], similar to previous work used by Galicia's enterprises at the time, the authoritative scholar in accounting R. Stern positions “the profit and loss account, as well as the income and expense accounts, with respect to changes in property accounts” [12, with. 224]. Therefore, the account, which determined the financial result of the enterprise, occupied a different disposition in the scientific development of Galician scientists. To confirm the relationship between conceptual principles of accounting and economic theories, we point to the content of a scientific textbook [17], which in section 1 “Principles of social economy related to the study of accounting” (Rozdział I. Zasady ekonomii społecznej, pozostajzku w wwi z nauka rachunekowosci), shows the effect of losses on assets (Wplywy ubytków należyłości on the flat majątku).

The extension of the “accounting thought” of Galician scholars was influenced by the position of the French accounting school (economic slope). Distinctive aspects in the method of calculating financial results (profits in their traditional sense - income minus expenses) took place in the accounting system of the Concern of the French oil industrial and trading companies “Maiópolaska”, (“Maiópolaska”. Lwowie). This concern extended its “general accounting policy” and, above all, the method of calculating financial results (income, profits and expenses) in the practical accounting of its mining and oil companies and companies (“Alfa”, “Basta”, “Gopio”, “D” Browa, Eqivalent, Petrolea, Premier, etc.). The purely accounting

documents (the Fund 225, Case 5389 for 1885-1940 of the Central State Historical Archives of Ukraine in Lviv) make it possible to conclude that some of the features of the French School of Accounting have been used at the enterprises of the oil industry of this concern. The French oil company Putroles de Potok (Fund 258, right) followed a similar approach to accounting for the results of operations from 1909 to 1926.

The influence of the French accounting school in particular refers to the method of separation in the accounting system by enterprises of the contingent and incidental income (profits). The following also applies to the methods of profit sharing, which, according to customary traditions for business entities in Galicia, have been more widely used to create different types of reserve capital than is the case in French accounting. The financial statements and balance sheets of the companies testify to the wide information spectrum of disclosure of sources of income. The development [17] against the background of the general certificate of turnover and income (in the original statement "Zeznania o obrocie i dochodzie") gives an example of the closing of shares and distribution of net profit in a joint venture (in the original statement "Przykład: zamknięcie r-kowe i podział i podział i podział i podział zysku w spółce jawnej").

In the econometric balance theory, formulated in the Lviv scientific environment, the account of financial results by economic content and structure is represented by a stock account: "the account of profits and losses is not an intermediary (the author's note: here it is meant - it is not calculated because of the difference of purchase and sale value values), and directly to a capital account, it is also not a net account but a net stock account. The net profit shown in the balance sheet reflects the growth of capital assets" [4, p. 121]. In this theory, the profit and loss account, which accumulates information about the results of the enterprise, is considered in the group of capital accounts. At the same time, on the basis of econometric equations (econometric quadriga, econometric octagon), transformation and accommodation (adjustment - equilibrium of values) of property and capital are ensured. That is, this balance theory holds the trunk position that the presentation of the result of

working capital, although reflected in the income statement, but by the method of transferring profits or losses to this account from other accounts.

Determination of the resultant activity of economic entities due to the change of property status was dominant in the works of Galician theorists at that time: "Comparison of balance sheets at the end and the beginning of the year shows an increase in the amount of property growth. This part of the capital is called the net claim [3, p.64]. This position and the corresponding methodology regarding the theoretical and conceptual foundations of the accounting system of the results of the activity of the enterprise is also observed in educational and theoretical work [17], where it is justified in such a way that provides budgeting and economic plan ("Plan gospodarczy czyli budżet"). Data on changes in the state of property ("Ó zapisywaniu zmian majątkowych w porządku chronologicznym według metody kameralistycznej, czyli o certziebie prowadzenia dzienników") are considered as informational tools for external users, ie, they are in the nature of reconciliation with the agreement.

The methodological arsenal of analysis of the income statement (in the original statement "Analysis of rachunku strat i zysków") is proposed in development [18] with guided practical examples analytical processing rezultatnyh accounts (in the original statement "Praktyczne wzory analitycznego opracowania zamknięć rachunkowych") to objectively calculating the annual income to be taxed ("Obliczenie dochodu rocznego, podlegającego opodatkowaniu").

In developing [4] the results of the activity of the company are disclosed in a very wide range, in particular formulated and substantiated in the author's editorial Scheme eines Vermögenskontos in relation to the proposed structure of the capital account (Schema eines Kapitalkontos). In their development, a more favorable income statement (Das Gewinn- und Verlustkonto) has been developed for the national economy. This report proposes substantially new principles for the calculation of net income or loss, which were argued to be more relevant to current practice (Die Berechnung des Reingewinnes oder Verlustes in der Praxis) On the basis of the tools of econometric science proposed "Correct calculation of net profit" (Eine richtige Berechnung des Reingewinnes).

### Conclusions

In modern accounting science, the view is that its development should be based on an interdisciplinary basis. The soundness of the basics of such development can also be ensured by gaining knowledge of accounting history, in particular the principles of harmonization of accounting conventions and the provisions of financial and economic doctrines that have taken place in the Galician economic environment during the period under review.

### References

1. Baruch, Lev, (2018). *The deterioration usefulness of financial report information and how to reverse it. Accounting and Business Research*, 48 (5), 465-493.
2. Moralevych, Ya. (1924). *Osnovy rakhunkoznavstva (leksii na kooperatyvnykh kursakh ukrainskoi selospilky). Fundamentals of Accountancy (lectures on cooperative courses of the Ukrainian village-union). Terezyn: Pod zaradom upravy kursiv Ukrainskoi selianskoi spilky v Ch. – S. – R., 12s.*
3. Bezкровnyi, K. (1932-1933). *Torhovelne rakhivnytstvo: (kurs leksii). Podiebrady: Ukrainyskyi Tekhnichno-Hospodarskyi instytut pozaochnoho navchannia v Podiebradakh (Chekhiia). Trade accounting: (course of lectures). Poděbrady: Ukrainian Techno-Economic Institute for Extraordinary Studies in Poděbrady (Czech Republic). 201c.*
4. Ciompa, P. (1910). *Grundrisse einer ökonometrie und die auf der Nationalökonomie aufgebaute natürliche theorie der buchhaltung; ein auf Grund neuer ökonomischer Gleichungen erbrachter Beweis, dass alle heutigen Bilanzen falsch dargestellt werden Verlag des Handelsschulvereines in Lemberg. Lemberg: Druck von Artur Goldman in Lemberg,*
5. Maliuha, N.M. (2004). *Prybutok yak ekonomichna kategoriya ta object buchalterskogo obliku [Profit as an economic category and an object accounting] Visnyk Zhytomyrskoho derzhavnoho tekhnolohichnoho universytetu - The Journal of Zhytomyr State Technological University*, 2, 119-129 [in Ukrainian].
6. Berdnikova, T.M. (2011). *Evolutsia rozvytku i analizu finansovykh rezultativ. [Evolution of the development of accounting and analysis of financial results]. Naukovi pratsi Kirovohradskoho natsionalnoho tekhnichnoho universytetu. Ekonomichni nauky - The Collection of Scientific Works of Kirovohrad National Technical University. Economic Sciences*, 20(1), 283-290 [in Ukrainian].
7. Yancheva, L.M., Chernikova, I.B. & Kuznetsova, S.O. (2012). *Oblikovo-informatsijna systema upravlinnia prybutkom tovgovelykh pidpriemstv [Accounting and information system of profit managements of trad enterprises]. Kharkiv: Kharkivskiy derzhavnyi universytet kharchuvannia ta torhivli [in Ukrainian].*
8. Pushkar, M.S., Havryshko, N. V. & Romaniv, R. V. (2003). *Istoria obliku ta kontrolyu hospodarskoi dialnosti [History of accounting and control of economic activity]. Ternopil: Ternopil: Kart-blansh [in Ukrainian].*
9. Shayner H. I. (2012). *Rozvytok komertsii noi osvity na Zakhidnoukrainskykh zemliakh (druga polovyna XIX – persha tretyna XX stolittia) [Development of commercial education on West Ukrainian lands (the end of the XIXth and the first third of the XXth century)]. Extended abstract of candidate's thesis. Ternopil: Ternopil national V. Hnatiuk pedagogical university [in Ukrainian].*
10. Shafranska I. B. (2015). *Ekonomichna dumka Zakhidnoi Ukrainy ostannoii tretyny KhIKh – pershoi tretyny Khkh stolittia [Economic thought of Western Ukraine in the last third of the XIX - the first third of the XX century]. Extended abstract of candidate's thesis. Kyiv: SHEE «Kyiv National Economic University named after Vadym Hetman» [in Ukrainian].*
11. Reish R., Kraibih, K. (1907). *Balance and tax Viden*
12. R Stern (1902) *Encyclopedia of Accounting, Viden i Leiptsih*
13. Schmidt F., 1922. *Die organische Bilanz im Rahmen der Wirtschaft (zweite, durchgesehene und erweiterte Auflage). Verlagsbuchhaltung in Leipzig: G.A. Gloeckner.*
14. Simon G., 1899. *Die Bilanzen der Uftigenfellitafeln. German Veit Simon. Berlin.*
15. Schmalenbach E., 1931. *Dynamische Bilanz-Funfte Auflage. G.A. Gloeckner, Verlagsbuchhandlung in Leipzig.*
16. Sherr I. (1925). *Buhgalteriya i balans [Accounting and balance] (2nd ed.). (S.I. Cederbaum, Trans). N.S. Lunskoy (Ed.). Moscow: Publishing House "Economic Life" [in Russian].*
17. Sciborski A. *Podręcznik do nauki rachunkowości ogólnej i państwowej / Aleksandr Sciborski; opracowany według wykładów radcy Dworu Tadeusza Klusik-Orzechowskiego na c.k Uniwersytecie we Lwowie, część I. – Lwów: nakładem wydawcy: z drukarni szczęsnego bednarskiego we lwowie, 1912. – 500*
18. Góra W. *Bilanse. Studja ekonomiki prywatnej / Witold Góra. – Lwów – Warszawa: Książnica t-wa Nauczycieli szkół wyższych, 1920. – 215 s.*