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CHAPTER 1

CURRENT TRENDS IN ECONOMIC DEVELOPMENT

DECENTRALIZATION AND ITS INFLUENCE ON LOCAL COMMUNITY DEVELOPMENT

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Abstract. *The relevance of the study is marked by the general global trend to change the role and functions of public administration. Here it goes about the introduction of the practice of delegating certain functions of public administration to the competence of local governments. Changes of public administration have taken the form of decentralization of central government and active increase in the role of public administration through local self-government.*

The purpose of the study is to analyze the theoretical concepts of the system of relations between state and local government in the period of global changes and self-identification of the Ukrainian nation and their possibility of implementation. The object of the research is the system of reforming state power in Ukraine and the development of local self-government.

The study uses methods that can assess the tendency of decentralization and local self-government in the historical and logical approach and analyze the dynamics of this process through normative and logical analysis. These methods forecast further growth of the decentralization process and its consequences for the economy and regional development.

The study identifies the main factors that necessitate the introduction of decentralization of power. Areas that activate the necessity for appropriate reform are identified and described. The historical aspects of the decentralization reforms in different European countries are analyzed. Positive changes in reforms have been noted. They relate to the priority reorientation of socialist economies to a market model of management and the transition to a new paradigm of life in the countries. The history of development of Ukrainian decentralization of power is also studied.

A solution has been found to the controversy over the reform process initiated by the population in the regions and the political government. The situation is in favor of the interests of the ruling power. The main shortcomings of decentralization in Ukraine and the lack of financial support for such reform are also noted. It is proved that decentralization should be carried out at the expense of economic development and improvement of social and economic state of regions.

The practical value of the results relates to the recommendations for adjusting government policy in the process of implementation of administrative reforms for decentralization and local government development.

Keywords: *reforming, decentralization, devolution, local self-government, institute of prefects, a united territorial community (UTC).*

JEL Classification: H10, H70, R59

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Introduction. Dynamic global changes are reflected in many social changes in any country in the world. This process is seen regardless of its economic development and its system of government. The manifestation of these changes can be clearly seen in the change in the system of public administration and the growing role of local self-government.

Literature review. Tendencies in changing the management system for this period are actively studied in scientific circles by both foreign and domestic authors. Foreign scientific opinion in this area of research has developed a huge amount of scientific material and is based on the practice of such changes. Democratic processes in these countries took place for a very long period of time without a radical replacement of the political situation in the system of public administration. C. Thibaut, S. Vyploz, R. Musgrave, W. Oates, A. Esman, T. Payne and P. Salmon are among American and European scientists.

This scientific problem is quite new for Ukraine. There is no clear and well-grounded concept. Different researches are conducted in various ways and rather spontaneously. They are made in accordance with the political slogans and appeals of the ruling political class. However, we can identify the main directions of such research. The theory of state development and its management system are considered in the researches of A.M. Kolodiy, A.Y. Oliynyk, T.O. Butyrska, Y.A. Levenets, O.G. Osaulenko, V.P. Rubtsov and L.R. Nalivayko.

The researches of such authors as V.A. Lipkan, T.O. Batanova, V.M. Campo, Y. B. Irkha, N.P. Matyukhina and O. E. Novikov are prominent groundwork of development and introduction of local self-government.

Problems of concentration of public administration in central bodies and the necessity for its decentralization are considered in the scientific works of O.V. Skrypnyuk, V.F. Pogorilka, N.R. Nyzhnyk, O.O. Moldovan, A.R. Krusyan, M.P. Orzikha, V.B. Averyanova and others.

Despite a wide range of scientific developments, the problem of forming an effective system of government at the state and local levels remains almost unresolved. It should be noted that significant government measures are introduced but they have coercive nature in most cases.

Aims. The purpose of the study is to analyze the theoretical concepts of the system of relations between state and local government in the period of global changes and self-identification of the Ukrainian nation and their possibility of implementation.

- to study the best foreign experience of public administration reform and its consequences in the socio-economic changes of the country;

- identify and solve the main problems of further decentralization of domestic public administration and development of local self-government.

Methods. The following methods were used in order to solve the purpose and objectives of the study: a systematic approach, a historical method, a formal and logical method, normative and logical analysis and forecasting. These methods made it possible to draw conclusions.

Results. The modern socio-economic system of the world is undergoing serious changes and restructuring. These processes relate to changing the system of public

administration and increasing the role of local self-government. These shifts are caused by a number of factors. It is necessary to highlight the following:

1. A radical change in the political world system.
2. A huge number of independent countries are being formed with legally undefined territorial boundaries.
3. Outbreaking of hybrid wars and conflicts.
4. Loss of national identity due to the free movement of capital and labor.
5. Increasing the dynamics of global financial and economic crises and their intensification due to force majeure (now it is the COVID-19 pandemic).
6. Rapid development and intensive implementation of IT (information technology), ICT (information and communication technology), a widely-used Internet system with 5G technology.

In general, these changes relate to the following areas from the standpoint of public administration:

1. Loss of the dominant position of a single ruling party or clan
2. Significant increase in the role of self-government
3. Loss of influence of public administration in a clearly defined area
4. Local government goes from full control of public administration and losses its territorial zoning due to demographic changes and free internal and external migration.

Discussion. Taken into consideration that the Ukrainian government has set a course for European integration, let us consider the experience of decentralization in Western Europe. So, France is considered a model country for the implementation of decentralization in the EU. Measures to decentralize power were initiated by Charles de Gaulle in the 1960s. His initiatives were aimed at reviving and accelerating the country's economic reconstruction after World War II through a change in administrative management methods. The results of such regulation were rather insignificant.

The next period of such reform was full-scale reforms in 1982 at the initiative of French President Francois Mitterrand. The first stage of reforms was characterized by significant restrictions on the rights of prefects, who were appointed from the center to the regional administration. Regions, departments and communes also received a wide range of powers. Moreover, such measures were guaranteed by appropriate funding.

The second phase of the reform was continued by Prime Minister Jean-Pierre Raffarin in the 2000s. According to these measures, local deputies received additional powers. In addition, it was envisaged that senior government officials should visit the province for at least one week a month in order to know everything about the activities and lives of local citizens. During this period, public schools and colleges were transferred to municipal maintenance.

As a result, local deputies have powers to allocate additional funds from local budgets in the form of material assistance (food, clothing, medical services, medication and etc.) after appropriate inspection and examination of pensioners to help them and guarantee an average standard of living with insufficient public pensions.

The main result of the reform was publicity and comprehensive information. It results in transparent and public provision of information concerning the formation and usage of local budgets of the tax system (the ability to obtain complete and comprehensive information concerning state expenditures of the central office and local departments) [1].

In general, the positivity of the reform in France was recognized even by critics of the government. It ensured an increase in the share of local taxes and the efficient usage of financial resources. The experience of France was adopted by such countries as Portugal, Switzerland and Greece. Decentralization has adopted the so-called concept of "fiscal autonomy" for modern Europe. Therefore, local taxes are almost entirely accumulated in regional budgets in most Western European countries and the state budget can only exceptionally provide regional support for national large-scale programs.

Decentralization in Britain really began in the late 19th century as a response to the struggle for Irish independence. So, a wide range of powers have been delegated to local authorities to manage regional affairs. Scotland, Wales and Northern Ireland have been given a number of responsibilities in agriculture, health care and housing. Law enforcement and criminal justice have been delegated to Scotland and Northern Ireland.

Therefore, this form of decentralization is called "devolution" in journalistic and scientific circles. Nowadays, this form is widely used outside the UK and means the transfer of decision-making rights in certain areas of public policy at the subnational level. In fact, such decentralized governance in the UK is based on the culture of civil society and the representation of local interests in the national government.

At the moment, the continuation of these measures is to resolve the issue of the "West Lothian question" (the issue of English votes for laws relating to the affairs of Great Britain to other regions - England, Wales and Northern Ireland) [2]. The devolution led to a rather deep distinction between the functions of local and state power, primarily in the social sphere. The functions of social financing are entirely the responsibility of local authorities and various public organizations.

Further and current directions of devolution in the UK are determined by two priorities. First, local authorities coordinate most of the individual management functions and develop a strategy for the well-being of the local community as a whole. Second, local government is the only agent that defends the interests of local communities at the central level.

The results of such reforms have enabled local communities to address specific challenges that differ from central government priorities in meeting local needs. So, 5 joint local authorities have been created during the 30 years of reform. It is also about 15 mayoral positions. Mayor is elected by direct vote of local residents and headed the local government and the metropolis (since 2017).

The Regional Growth Fund, the Growth Deals and the Growing Places Fund were formed during the implementation of the financial approach [3]. This enabled all local territories, rural and urban communities to attract financial resources to address specific issues and opportunities of their territories.

The German experience shows that public administration reform began at the initiative of local communal self-government. This can be explained by the history of Germany. The management of cities was carried out in the tradition of "free" cities (Bremen, Hamburg, Lubeck). The reform was initiated in the 1960s through the concept of enabling small and disparate communities and districts to carry out most of the state's tasks and powers [4].

Reforms continued in the 1980s, when the German central government began to transfer pension and social security functions. Therefore, nowadays local government reforms are associated with the provision of a wide range of solutions to socio-economic problems. This approach to decentralization has formed the socio-economic platform of the CDU, CSU and VDP parties.

The general result of the reform in Germany was that the division of functions of public administration and responsibility was not vertical, but in different directions and configurations. This is especially evident in the government's fiscal policy, when taxes and tax rates are clearly allocated to fill the three-tier system of budgets - federal, federations (lands) and local communities. This provided an attempt to eliminate the imbalance in the level of welfare of citizens of different administrative formations. Still, the problem of the territories of the former Germany and the GDR has not been absolutely resolved. The territory of the GDR as part of Germany remained a resource territory and a zone of minor population.

Let us consider the experience of the post-socialist state system on the example of Poland. The reform began in the late 1990s and was initiated as the formation of local gminas (village, town, several villages or districts of the city). Counties were formed on their basis, which in turn identified sixteen voivodships instead of forty-nine. This has led to a significant reduction in the state apparatus and redistribution of state and local budgets. It allows about 40% of income taxes and 7% of corporate tax revenues and 100% of real estate taxes to focus on local budgets [5].

So, the concept of cooperation of regions was formed. This resulted in the mechanism of formation of free economic zones. Moreover, this allowed covering the budget deficits of some local regions due to the surplus of other regions in the budget process. The separation of power from business was quite successful. Thus, nowadays the main financial resources are managed by territorial communities in Poland.

The practice of reforming the Baltic States is essential for Ukraine. The decentralization process has been uneven and inconsistent for this European region. The government did not establish clear principles and rules for the formation of communities, so most of the formed communities were small and unable to perform the necessary functions of self-government. Only 20 united local communities have been formed in 20 years.

In addition, the government has used incentives in the form of grants for the development of regional and local infrastructure to consolidate communities. However, local self-governments have been forced to join existing ones without any subsidies by force since 2009. No court decisions against the forced merger have been won by local communities.

In general, the experience of the Baltics indicates the necessity for forced reform without financial support. This has led to the formation of a one-tier system of local self-government. Local government functions are aimed at supporting school, primary and secondary education, special unemployment benefits, promoting entrepreneurship, guaranteeing primary health care, social housing, public transport, waste collection and disposal, water supply and sewerage, heating, lighting, spatial planning and local development [6].

Ukraine is at the initial stage of decentralization formation, despite the fact that some legislative acts on this reform have been adopted since 2012. Attempts to carry out reforms on the French model failed in 2015. There were efforts to form the institution of prefects, ie regional representatives of local authorities. Their task is to appeal against decisions of local authorities that go beyond the powers and contradict the legislation of Ukraine. The main reason is the presence of established local oligarchic clans. Here we are talking about representatives of regional administrations who are protégés of local monopoly business structures.

Legislation on local self-government in Ukraine was formed in 1997. [7]. However, real progress in the implementation of empowered local communities began after the Revolution of Dignity. So, on April 27, 2014, a constituent congress of representatives of local communities of Kyiv was planned. However, it was not fully held through the strict control of community representatives by the Security Service of Ukraine. Most of the participants in the congress were forcibly "invited for an interview" in this structure. When other participants had understood the situation, they left the event.

This event was held in accordance with the decisions of the Maidan (from 16.03.2014) as a reaction of the Ukrainian democracy to the loss of confidence of the newly formed Ukrainian government. This event was a turning point in the development of Ukrainian reform based on democracy. From this period, state reform went centrally from top to bottom, reorienting the people's initiative under full state control.

Decentralization is a forced action of the government from an economic point of view. Policies and governmental and economic initiatives did not allow restoring Ukraine's economy even to the level of 1991. Total impoverishment of the vast majority of rural population is a direct consequence of destruction of local rural production and collective farms. The proposed farming system failed to restore agricultural production.

Monopoly agricultural structures were formed in Ukraine. It is associated with criminal capital and offshore zones, which resumed production only in export industries (sunflower, corn, grain, industrial crops). This production is located in the adjacent territories of major regional centers of Ukraine. Medium and small businesses, in fact, are independent subsidiaries of these agricultural formations. Further failure to solve economic problems led to the fact that the majority of able-bodied rural population began to immigrate to earn money in neighboring countries (Russia, Poland, the Czech Republic, the Baltic countries) in order to buy flats in cities.

So, local reform really started with local communities around regional centers. Local budget revenues were formed due to the income tax of individuals in the amount of 60%. This means that local communities, territorially close to region and district centers, where the population officially worked in cities, had a significant filling of their budgets. But other remote villages and settlements lost economic power. Therefore, the government decided to introduce a forced consolidation of territorial communities. As in the Baltics, this process was not supported by appropriate fixation and encouragement, but had a centralized coercive character only with the possibility of joining the accession.

After the change of the political ruling class and the presidential and parliamentary elections in 2019, Ukraine underwent a process of rapid forced unification of territorial communities. The projects of such an association were prepared by the regional state administrations. The following criteria were met: population, area, tax index, share of local taxes and fees. In fact, the government focused on purely economic indicators, which will allow the local community to fully operate at its own expense.

Another element of decentralization of local self-government is the corruption component, which is evident in the most resource-rich areas of Ukraine and demarcation areas. These are areas with valuable minerals (amber in Polissya) and ports (Odessa, Illichivsk, Sevastopol). However, these areas are criminal and corrupt. So, Ukrainian Polissya with amber mining has so far failed to be involved in the legislative field, despite the introduction of the National Guard and police measures, which have been traced since 2014.

The role of heads of regional councils was reduced to the formation of a family clan business to control the extraction, processing and sale of amber. The situation is similar with the ports of Ukraine. The last public scandal broke out when the tanker "Delphi" sank on November 22, 2019 near the Odessa beach. It was involved in a key chain of smuggling of oil products. This process was organized since 2016 on the basis of the Odessa oil refinery with direct intervention of the President.

An important factor in the development of local communities is road transport. A significant part of communities is located outside major railway junctions in Ukraine. However, real funding for Ukrainian road construction has remained scarce for a decade, despite numerous adopted programs and plans. The financial capacity of local communities in this area of local construction is extremely insufficient. What local communities really manage to achieve is a partial overhaul of the existing street and road network of central rural settlements. Here are the main provisions that prove the impossibility of independent solution of the road and street problem of territorial communities in Ukraine.

First of all, the main road construction in Ukraine is carried out by foreign companies at the expense of foreign loans (Austria, Turkey and companies from Belarus, Poland, China and Germany are also trying to take this construction sector). At the same time, these foreign companies attract domestic road workers to perform labor-intensive complex work. Revenues from subcontractors are too small compared to the "clean business" of foreign general contractors.

Secondly, the extremely high politicization of public administration leads to the necessity for the government to enlist the support of majority deputies to promote certain bills. Therefore, the main contracts for road repairs are received by these deputies as a fee for guaranteeing votes.

Third thing is that China's global development experience notes the need for a clear national government strategy with full concentration and control of relevant resources. It goes about financial resources that are necessary for large-scale road construction. Strategies in Ukraine remain dead letter. Funding acts as political advertising and propaganda for a particular ruling party.

So, the government reform in the direction of decentralization of the state central government cannot automatically ensure the development of the road economy of territorial communities. Local road construction is transferred by the government to the responsibility of local government and local governments.

In addition, the forced economic unification of the UTCs (united territorial communities) did not change the lives of the residents. Well-being of the areas far from the community center was lost. Their pre-unification budgets were rather small, and after the unification only one village council was left to cope with a big number of questions. Accordingly, the distribution of the budget to the newly formed territories is carried out on a residual basis, which is implemented to show that something is being done, but not to solve problems indeed. Even roads and welfare of the territories are not maintained. In fact, the budgets of the united communities work to maintain the administrative apparatus of the renewed central governing body.

On July 17, 2020, the Verkhovna Rada adopted a resolution "On the formation and liquidation of districts" [9]. It indicated the completion of the first stage of decentralization of power and the beginning of a new stage in administrative reform. According to this decision, elections of deputies to the councils of liquidated districts will not be held and the powers of deputies of district councils in liquidated districts will automatically be terminated after the elections to the new district councils.

Such a new zoning from the point of view of the demographic system is quite necessary. This is so because only 5 thousand people live in some areas and in others - more than 180 thousand people. Such a new distribution should solve the problem of economic coverage of the entire territory of Ukraine through financially viable territorial communities. It is well seen from the point of view of administration. However, taking into account the decline of Ukraine's economy and the Covid-19 pandemic, the real situation is quite dramatic. Salaries are received only by employees of state organizations and institutions that are the center of tax revenues. Small and medium-sized businesses ask employees to have forced vocation at their own expense.

Meanwhile, a hidden system of increasing defaults is being formed in Ukraine. Incomes are lost at the expense of wages at all levels and at the expense of state reform. Prices and basic tariffs tend to increase. Accordingly, such reforms are not perceived by the population. Hence, this is an explanation for the sharp decline in the rating of the President and the Parliament.

Conclusions. In general, such reforms of the administrative system and local self-government are caused by the government's attempt to reduce government

expenditures through their liquidation and reorganization. At the same time, it is carried out without real funding and specific programs to improve the socio-economic situation of both certain regions and the country as a whole. Taking into account the history of development of economic zones of Ukraine, it should be noted that economic reforms have not taken place. Therefore, the processes of state administrative reform are a forced reaction of the government to the economic and social situation and an attempt to at least somehow keep it by reducing direct central spending.

In general, the population does not accept or support such a reform. Only the political indifference of citizens and self-awareness, which is focused on survival, allows the government to carry out such reforms. In the long run, such reforms can be addressed through high-tech innovative modernization of Ukraine's existing industry.

It is a situation when the domestic economy will really work on the principles of modern IT and ICT and the state budget will start to flow and appropriate funds for real development will be formed in order to stimulate local self-government, infrastructure in the regions, especially road and social reconstruction of the remote periphery. Otherwise, there will be a continuation of non-implementation of reforms, which lead to the outflow of human potential and loss of economic security.

Such a reform is necessary for the Ukrainian ruling authorities in terms of demographics. It will allow closing the problems of demographic extinction of hopelessly backward and remote territories without serious effort.

To sum up we have to admit that such directions and measures to implement the Ukrainian version of decentralization indicate the inability of the authorities to solve the country's pressing socio-economic problems and the unwillingness of the economy to accept such an additional burden on the state budget.

Author contributions. The authors contributed equally.

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EXPERIENCE OF THE UNITED TERRITORIAL COMMUNITIES OF THE WESTERN REGION OF UKRAINE: SOCIO-ECONOMIC ASPECT

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Abstract. *The relevance of the study is marked by the general global trend of reorientation of the public administration system, namely through the introduction of a viable institution of local self-government in order to build the socio-economic environment of the newly formed united territorial communities. Forms of change in the Ukrainian model of public administration have become irreversible in the decentralization of central government and have entered the stage of a new active increase in the practical experience of territorial self-government of newly created communities. The purpose of the study is to analyze the consequences of the reform of local self-government and primarily in the socio-economic aspect and the real perception of such changes at the level of ordinary Ukrainians in the western regions of Ukraine.*

The object of the research is the dynamic and long-term process of decentralization of state power in Ukraine and the development of an effective and self-sufficient institution of people's democracy of local self-government.

The study uses methods to assess the trend of decentralization of power in Ukraine and the process of deployment of local government in the historical-logical approach and analyze the socio-economic consequences of this dynamic process through economic analysis and predict the end result for both domestic economy and joint development. territories of local communities.

The study notes the main stages of this reform, proves the existence of customers of such large-scale transformations of the Ukrainian original territorial ethnic group and calculates the role and assessment of these changes by ordinary Ukrainians. A comprehensive socio - economic assessment of the initial consequences of the introduction of a new institutional model of territorial governance is also presented and the further course of realization of such shifts of the Ukrainian society is forecasted.

Keywords: *united territorial community, local government reform, local budgets, basic and reverse grants, reform indicators, image projects, united territorial community consolidation, public services, profitable united territorial community of Administrative Services Center, administrative fee.*

JEL Classification: H70, B55

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Introduction. The development of local self-government in Ukraine was started in 1997 by the relevant law “on local self-government”. For almost thirty years of development of Ukrainian democracy, extremely significant reforms have taken place both in the economy itself and in the consciousness of Ukrainians. Dynamic government reforms have affected all aspects of the country's life. The development of the territorial structure of Ukraine with the participation of local communities is noted by all experts and government officials as one of the most important achievements of Ukrainian democracy. However, such outstanding democratic changes did not lead to a corresponding socio-economic regional development.

Literature review. Domestic scientific opinion on the unification of territorial communities and the decentralization of state power in general were divided in the following areas of research, including:

- financial direction, when new patterns and possibilities of financing both the financing itself and the current united territorial community system are researched and determined (Y.O. Redelitsky, M. Troshke);
- elaboration of economic and legal aspects in carrying out the reform (O.V. Zaychuk, O.A. Burbelo, S.M. Seryogina, Y.P. Sharova, A. Savchenko);
- study of socio-economic changes in the regions at the expense of a united territorial community (Y.S. Rogozyan, I.V. Zablocka), specifically in the western region - V.A. Pustimenko, A. Maksymenko, Sirnyk Z., Levitska O., Patytska H.);
- study of domestic reform processes through the prism of EU criteria and requirements (Shtapf J., Lawrence Mayer, Senchenko A.E.).

Among foreign authors who have studied the socio-economic aspects of the united territorial communities of Europe should be noted Wollmann H, Andre C., Garcia C. and others.

The issue of forming an effective system of local self-government for this period remains in the circle of scientific and social research. However, the emphasis of these studies has shifted towards the need and feasibility of a new administrative zoning. No specific assessment of the reform in economic and social dimensions has been provided.

Aims. The purpose of the study is to analyze the consequences of the reform of local government in socio-economic terms and the real perception of such changes at the level of ordinary Ukrainians in the western regions of Ukraine. Therefore, the following tasks are set:

- study the perception of the population of the western regions of Ukraine of the reform of local self-government;
- identify and outline the main problems of further decentralization of domestic public administration and development of local self-government;
- quantify the socio-economic consequences of the development of territorial communities through the formation of an effective mechanism of self-government of territorial communities in the western region of Ukraine.

Methods. The following methods were used to solve the purpose and objectives of the study:

- historical method - to identify the conditions and start the process of reforming public administration and local self-government;
- formal-logical method - in order to understand the logical relationship with the goals and consequences of reform;
- systematic approach that allowed for analysis and assessment of the consequences of long-term and incomplete reform.

Results. Despite all social scientific theories, real changes in society are marked by the living conditions and activities of people before and after the reform process. Therefore, we will conduct research from the standpoint of changes caused by reform in various aspects of society.

According to the economic and financial situation of Ukraine, the decentralization reform was initiated as a need to change inter-budgetary relations. In 2012, 90% of all Ukrainian budgets were financially equalized through government subsidies. Local budgets did not have sufficient financial resources. Almost all regions of Ukraine received subsidies, the share of which in local budget revenues amounted to 46.3% in 2008 and increased to 48.8% in 2010 and to 52.3% in 2011. In the regional context, the subsidy of local budgets has become not only heterogeneous, but has become critical. The worst situation is in the Western Ukrainian region. The largest increase in the share of subsidies in 2010-2011 was observed in Zakarpattia, Ternopil and Volyn regions - 72.3% (78%), 71.9% (84.9%) and 71.1% (75.8%), respectively. In 2010 the share of transfers was 60-70% in only nine regions of Ukraine, in a year it has become eleven. The local budgets of Volyn, Zakarpattia and Ternopil oblasts became the most dependent, while only the local budgets of Kyiv and Dnipropetrovsk oblasts remained self-sufficient. The share of transfers was 25.2% and 37.1% in 2010-2011, respectively. During 2010-2011, the share of own revenues in the general fund of local budgets decreased by more than 5%. The ratio of tax fees to transfers of local budgets is a factor of 0.59 for Ivano-Frankivsk region and was lower than in Vinnytsia and Volyn regions. In fact, the western regions of Ukraine have traditionally been considered recipients of financial aid in contrast to Kyiv, Dnipropetrovsk, Sumy and Poltava regions. However, in 2012 there was a decrease in tax revenues in sufficiently industrial regions - Zaporizhia and Luhansk [1].

In fact, in Ukraine there is a peculiar situation when most oblasts (recipient oblasts) began to receive subsidy transfers from donor oblasts, and the share of donor oblasts began to decrease steadily. Structural changes in Ukraine's economy have not provided economic growth, resulting in clearly underdeveloped areas in which basic socio-economic indicators have become significantly different even from the national average. It should also be noted that a number of such depressed regions include those regions that have long had a high level of industrial development and infrastructure.

From 1997 to 2012, Ukraine underwent the first stage of administrative reform, in which the priority was only to outline the need for reform, or to declare it at the highest level of government.

This transformation of the country's economy has led to the loss of its own financial resources to local budgets, and thus the potential for territorial development has been blocked. Therefore, an imbalance began in the socio-economic system of Ukraine, which quickly grew into a form of protest and resulted in a revolution of dignity on the square in Kyiv. However, a coup d'etat was carried out in Ukraine under the guise of popular dissent.

Having lost confidence in the newly formed Ukrainian government, the Ukrainian government, in accordance with the decision of the Maidan (March 16, 2014), announced the holding of a constituent congress of representatives of Kyiv local communities. However, this event did not fully take place. Most community representatives were sent to the Security service of Ukraine for a "preventive

interview”, and all others refused to participate without registration. Therefore, April 27, 2014 became the day of the end of Ukrainian democracy and the beginning of a period of full governmental control over all socio-political processes in Ukraine.

From 2012 to 2014, the second stage of reform took place. At the same time, the inefficiency of the transformed and market model of the Ukrainian economy became clearly visible and especially noticeable due to the financial distribution of transfers. This period formed a comprehensive protest against the current government and the government.

Since 2014, real reform of local self-government has begun under the full control of the government, and this is the third stage of reform. Such reform was forced into government and was marked by the need for the authorities not only to declare their democratic intentions, but also to witness real steps in its implementation. With the total economic downturn, the government only managed to redistribute financial flows in favor of local self-government (when more than half of taxes remained in local budgets). Legally, this period began with the adoption of the Concept of reform of local self-government and territorial organization of power (01.04.2014), the Laws “On cooperation of territorial communities” (17.06.2014), “On voluntary association of territorial communities” (05.02 .2015) and amendments to the Budget and Tax Codes. Therefore, since 2014, the largest and long-term decentralization reform has been underway in Ukraine. As a result of its implementation, more than 800 united territorial communities (United Territorial Communities) were created at the initial stage, which covered a third of the territory of Ukraine, and by the beginning of 2019 there were already 876 United Territorial Communities in Ukraine. According to the legal regime, only 806 UTCs officially functioned, as the legal condition for the start of functioning of the United Territorial Communities is the election of governing bodies of the United Territorial Communities [2].

The fourth stage of reform in Ukraine began in 2020, when the Verkhovna Rada adopted and began implementing the resolution “On the formation and liquidation of districts”. According to this decision, elections of deputies to the new district councils were held and the powers of deputies of district councils in the liquidated districts were automatically terminated.

It was the elections and the public's perception of them that indicated the commitment of all these government reforms. Thus, the 2019 presidential election in Ukraine as a whole marked a relatively high turnout, voter turnout in the country was 63.52%. In comparison, this figure was lower than in the 1999 election, when voter turnout was 73.8%, and in the re-run of the February 7, 2010 presidential election, turnout was 69.15%. In the Western region, the highest turnout (in Ukraine) was shown by voters in Lviv region - 67.34%, Volyn region - 64.25%, Ivano-Frankivsk region - 59.86%, and in Rivne region - 60.71% and Ternopil region - 63.90 % [3].

In fact, these indicators indicate a partial loss of confidence in the Ukrainian government by a third of Ukraine's population. At the same time, the western regions, more than any other region, support the government and relatively trust it.

Table 1. Assessment of Ukrainian reform through the criterion of voting in the Presidential elections

Regions of Ukraine	Voter turnout, %
Volyn region	41,89
Ivano-Frankivsk region	41,18
Lviv region	43,82
Rivne region	39,34
Ternopil region	44,68
Average value for the Western Region	42,18
Mykolaiv region	32,02
Odessa region	35,46
Poltava region	37,74
Sumy region	35,58
Kharkiv region	32,33
Kherson region	32,39
Khmelnytsky region	40,71
Cherkasy region	35,76
Chernivtsi region	34,84
Chernihiv region	41,64
Vinnitsia region	39,39
Dnipropetrovsk region	34,16
Donetsk region	31,67
Zhytomyr region	37,47
Transcarpathian region	41,25
Kyiv region	36,66
Kirovograd region	35,29
Luhansk region	38,12
Zaporozhye region	33,93
Total in Ukraine	36,88

Source: developed by the author on the basis [4]

The local elections have already fully noted the attitude of the population to both the local elite and recognized the rating of power reform of local self-government.

Table 2. Assessment of decentralization reforms through the criterion of the number of voters who voted in 2019 in the regions of the Western region of Ukraine

Regions of Ukraine	Number of voters who received a ballot	Absence of voters, %	Number of able UTC	Percentage of votes per 1 UTC, %	Number of people who voted for one UTC, persons
Ivano-Frankivsk region	429025	41,18	33	1,25	13001
Volyn region	316202	41,89	51	0,82	6200
Rivne region	331616	39,34	35	1,12	9475
Lviv region	829945	43,82	40	1,10	20749
Ternopil region	357787	44,68	49	0,91	7302
Total in the Western region	2264575	42,182	208	0,20	10887

Source: developed by the author on the basis [5]

The percentage of votes for those who support the new Ukrainian model of self-government is rather meager. And it can't be otherwise - two thirds of the population of Ukraine protested to all the authorities by not voting. And this was their choice against such a deployment of reform.

Therefore, Valentina Poltavets, Executive Director of the UTC Association, noted that the statistics system itself needs to be reformed [6]. Ihor Abramyuk, Director of Development, Deputy Head of the Executive Directorate of the All-Ukrainian Association of Communities, pointed out quite clearly and unequivocally the Ukrainians' perception of such a reform: Objective - means given its format and in accordance with the financial and managerial capacity. This is not an assessment of the effectiveness of governance, which is also extremely important. The effectiveness of governance is corrected by elections, not by changing the format of the community" [6].

Former Ambassador of Canada Roman Vashchuk pointed out the reality not only of Ukrainian reforms, but also of the role and self-consciousness of Ukrainians in this process: "Ukrainians are the absolute majority of Ukraine. Residents of villages, smaller towns and district centers, which have long suffered from economic decline, felt forgotten in the period from 2014 to 2019. They were among those who volunteered to go to war, but they felt that Kyiv, and even more so abroad, did not care... people in villages and small towns felt forgotten and how angry they really are for life, for Kyiv, for people, for politicians... And while the IMF cared about macrofinance, while we cared about other marginalized groups, these 50% or more of Ukrainians, whom no one cared about, just became the electorate that last year rubbed the noses of all these reformers and their Western partners. Let us add that they pointed out the filthiness of all these and similar reforms, which are not based on the real values of ordinary people in these regional territories of Ukraine" [7].

Another fact that expresses the population's distrust of the government and its reform is the creation of an independent polling station independent of the CEC in the village of Sosnivka, Konotop district, Sumy region. The inhabitants of this village thus expressed their right to freely define the UTC and against forcible joining the Popovska UTC. This is the first such open case in a Ukrainian election institution and a complete disregard for government laws. The authorities managed to curb such a public challenge by nominating a member of this commission under Article 3 353 - arbitrary appropriation of power or the title of official - members of the commissions and № 110 - encroachment on the territorial integrity and inviolability of Ukraine [8].

Although there have been no violations of constitutional law. This is evidenced by the following articles of the Constitution of Ukraine: 5, 7, 8, 19, 22, 24, 34, 38. Article 140 of the amendments to the Constitution provides: "Local self-government is exercised by the territorial community both directly and through local governments through independent regulation of public affairs local significance and their management within the Constitution and laws of Ukraine" [9]. Only the forceful pressure of the current system of power suppressed this expression of the will of the people (not the inhabitants, but the self-conscious people) of a particular settlement.

Table 3 shows the nature of the reorganization of local government in three important stages, namely:

- Period of 2012 -2018, during which the bulk of UTC was created.
- Period of 2019, when UTCs were completed at a rapid pace and the processes of consolidation of existing UTCs for future administrative zoning took place.
- Period from 2020, when the reformatting of communities and the consolidation of the full legal status of these communities was completed.

Table 3. Dynamics of the process of local self-government reform in Ukraine during 2015-2020

No.	Name of the area	Total (gr.5 + gr.6 + gr.9 + gr.14)	Capable in total (gr.5 + gr.6 + gr.9-gr.12)	Formed in 2015-2018				Formed in 2019				Formed in 2020		Elections are expected	
				elections were held in 2015-2018	by joining cities of regional importance	total	share in the able	Total	elections were held in 2019	by joining cities of regional importance	of them did not gain authority	share in the able	by joining cities of regional importance		share in the able
1	Ivano-Frankivsk	39	33	29	1	30	91	9	7	2	6	27		0	1
2	Lviv	41	40	40		40	100	1	1		1	3		0	3
3	Ternopil	54	49	47	2	49	100	5	4	1	5	10		0	1
4	Rivne	45	35	31	1	32	91	13	12	1	10	37		0	2
5	Volyn	54	51	50		50	98	4	3	1	3	8		0	
Western region		233	208	197	4	201	97	32	27	5	25	15	0	0	7
6	Vinnytsia	46	42	35	2	37	88	9	8	1	4	21		0	3
4	Dnipropetrovsk	71	62	60	2	62	100	9	8	1	9	15		0	3
7	Donetsk	13	12	10		10	83	3	1	2	1	25		0	6
6	Zhytomyr	56	53	51	2	53	100	3	3		3	6		0	3
8	Transcarpathian	17	7	6		6	86	10	9	1	9	143	1	14	3
9	Zaporizhia	56	48	43	1	44	92	12	12		8	25		0	5
10	Kyiv	24	18	13	3	16	89	8	7	1	6	44		0	9
11	Kirovograd	27	21	20		20	95	7	7		6	33		0	
12	Luhansk	18	17	9		9	53	9	9		1	53		0	6
13	Mykolayivska	42	41	28	1	29	71	13	13		1	32		0	1
14	Odessa	37	31	28		28	90	9	9		6	29		0	1
15	Poltava	53	47	44	1	45	96	8	7	1	6	17		0	4
16	Sumy	38	37	29	1	30	81	8	5	3	1	22		0	
17	Kharkiv	23	18	16		16	89	7	5	2	5	39		0	1
18	Kherson	33	31	27	1	28	90	5	4	1	2	16		0	4
19	Khmelnysky	51	47	44	1	45	96	6	5	1	4	13		0	2
20	Cherkasy	57	55	53	1	54	98	3	3		2	5		0	3
21	Chernivtsi	37	33	32	1	33	100	4	4		4	12		0	2
22	Chernihiv	50	44	37	2	39	89	11	11		6	25		0	
Total		982	872	782	23	805	92	176	157	19	109	20	1	0	63

Source: calculated by the author

The period of 2012-2018 was characterized by the centralized nature of propaganda (through the creation of UTC unions, training, conferences, round tables, training, seminars and various consultations) the need and feasibility of UTC formation and, accordingly, an intensive form of UTC. Thus, for the Western region in this period, Volyn, Ternopil and Lviv regions are distinguished by quantitative indicators. And in Ukraine, Dnipropetrovsk, Cherkasy, Zhytomyr, Khmelnytsky, Poltava and Zaporizhia regions became leaders in reducing the number of UTCs created.

The period of 2019 defines the vast majority of compulsory-voluntary sign consolidation of UTC under the defined new administrative zoning. In fact, pulling certain areas in line with the already directed reform process. In the western region it concerned Rivne and Ternopil regions, and in Ukraine primarily the territory of Luhansk and Donetsk regions in the so-called frontier borders, as well as Zaporizhia, Mykolaiv, Chernihiv regions, where dozens of UTCs were formed.

Accordingly, 2020 already fully and definitively enshrines all these changes and the newly created UTCs by the current legal mechanism. Respectively, there are 7 units in the western region, and in Ukraine it is the center - Kyiv region and the territories of Luhansk and Donetsk regions. Thus, the model of the new territorial structure of "independent" Ukraine programmed by foreign experts was completely consolidated.

The International Center for Policy Studies clearly states that the purpose of local government reform is, first of all, to ensure its ability to independently address local issues at its own expense. It is about endowing territorial communities with more resources and mobilizing their internal reserves [10].

The government has repeatedly stated that the main goal of reforming the system of public administration and territorial organization of power is to ensure effective local self-government, building institutions of direct democracy in the regions, creating comfortable living and working conditions for Ukrainians, and involving all residents in high quality and affordable public services. At the same time, it was clarified that this is possible provided that the appropriate level of economic development of the territories, their financial support and sufficient sources of local budgets [11].

In fact, this means that the priority is the formation of independent UTCs, and in the future they will deal with the economic component of regional development of their territories. This would be possible in the implementation if there was an economic situation of economic growth. At the same time, it would be possible to direct surplus funds to these programs.

But when the state is in complete economic chaos due to external governance and even simple reproduction is stopped, which is greatly complicated by ill-conceived and unconstitutional measures to combat the pandemic, such reforms are purely populist and will not ensure full economic development of the regional economy.

An example of this thesis is the territory of the western region of Ukrainian Polissya for amber mining. These are districts that have a strong resource potential,

but all governments have failed to reorganize these areas economically and establish an economic center for the development of Ukrainian Polissya. In the future, the formed community will only ensure the rise of the social sphere (education, medicine, partly roads). After all, nothing has fundamentally changed. The amber business has remained shady and corrupt with a well-defined scheme of financial and material flows, and capital will not change its flows.

Confirmation of this thesis is a public discussion of the new zoning of Ukraine from 20.07.2020. In particular, the People's Deputy, Chairman of the Subcommittee on Administrative Services and Procedures, L. Bilozir, said that they are working on a draft law "On Amendments to Certain Legislative Acts of Ukraine on Optimizing the Network and Functioning of Administrative Service Centers and Improving Access to Administrative Services" in electronic form. The aim of the project is to ensure the establishment of Administrative Service Centers in each of the 1,470 communities. During the year it is planned to transform 390 Centers for the provision of administrative services, which are located in the administrative district centers. In addition, funding in the amount of UAH 2-4 billion is planned for two years. It is also envisaged that by January 1, 2022, Administrative Service Centers located in administrative district centers will be transformed into UTC Administrative Service Centers and create Administrative Service Centers in communities with a population of over 10,000 people, and by January 1, 2024, communities less than 10,000 also require the establishment of Administrative Service Centers.

In fact, MP Bilozir pointed out that this task is set by external management, as the Centers for Administrative Services are image projects of international assistance, and in particular the program "U-LEAD with Europe". She also notes that although the Centers for Administrative Services are very prestigious for communities, they are unprofitable and must be self-sustaining to begin with. As a result, a new tax levy, the administrative levy, should be introduced.

This means that foreign entities have invested currency in this infrastructure and are already making a profit from it - about 200-300 thousand UAH per month, but this is not enough because the costs are about 1 million UAH. The introduction of an administrative fee will mainly ensure the full return of the invested currency and will form the receipt of excess profits without production costs for decades due to tax levies on local residents. Therefore, it becomes clear that the success of the functioning of the united territorial communities largely depends solely on funding.

Discussion. According to the criteria for the effectiveness of UTC, there is no single balanced method. Both foreign experts and Ukrainian government officials are working on this. The Ministry of Development of Communities and Territories of Ukraine submits official reports on 14 indicators, which reflect the progress of the democratization process in a predominantly quantitative context and the quantitative reflection of changes in local budgets [13].

Qualitative indicators of regional development (number of established enterprises, employment, level of personal income, etc.) are not even taken into account. If quality indicators are indicated, they are exclusively reduced to the

provision of high quality administrative services, although the criterion of high quality itself is not explained, or is reduced to an indicator of success [14].

Another approach in assessing the effectiveness of UTC is the assessment of seven indicators, which generally characterize the financial aspects of the activities of the united territorial communities [15]. This approach is more economical, as it reflects the ratio of expenditures and revenues. Therefore, based on these indicators, we note the effectiveness of the UTC of the Western region (Table 4).

Let's compare the efficiency of UTC in the western region with the most economically developed Dnipropetrovsk region. First of all, in Dnipropetrovsk oblast 8 UTCs are self-financed, while only Lviv oblast contains the maximum number of self-financed UTCs - 3. In terms of the share of salaries with accruals in general fund expenditures, Western UTCs exceed UTCs of Dnipropetrovsk oblast. This is due to the fact that in general the level of average wages in industrial regions has always been higher. In addition, wages exceed all UTC expenditures, which indicates an unfavorable socio-economic environment for the population, namely the lack of income from industrial and economic activities of UTC residents. The Volyn region stands out from this trend. This is due to entrepreneurial activity and cross-border location of the region, which provides additional income opportunities, it is tracked by the highest reverse subsidy and the largest number of self-funded UTCs. Almost all UTCs are subsidized from the state budget, which covers a third of local budgets. Realization of investments is the largest in Lviv UTC (almost a third of the budget), which exceeds the indicator of Dnipropetrovsk region, and the lowest in Ternopil region, which does not reach 10%.

Table 4. Efficiency of UTC in the Western region of Ukraine

Indicators	Share of the amount of wages with accruals in general fund expenses, (%)	Average value of the level of budget subsidization (the share of basic (+)/reverse (-) subsidies in income), (%) and the number of UTC on self-sufficiency	Share of capital expenditures in the total amount of expenditures (general and special funds), (%)
Ivano-Frankivsk region	75,85	+33,65 / -8,86 (2)	16,7
Volyn region	66,25	+ 34,55 / -24,4 (3)	15,9
Rivne region	78,45	+ 33,7 / -8,45 (2)	14,6
Lviv region	76,6	+ 32,65 / -12,5 (2)	31,8
Ternopil region	67,15	+ 28,5 / -11,3 (1)	8,65
Total for the Western Region	63,90	+ 31,57 / -13,11 (2)	17,53
Dnipropetrovsk region	65,70	+ 23,75 / -16,6 (8)	29

Source: calculated by the author based [13]

Ivano-Frankivsk and Rivne regions pay the least for subsidies. This is explained by the shadow amber flows in the Rivne region by a significant share of the mining and processing industry in the Ivano-Frankivsk region, which potentially creates the possibility of establishing legal and semi-legal schemes of commodity-money flows.

Conclusions. After conducting the analysis, we can indicate the following conclusions:

1. The reform of decentralization of power in Ukraine and the introduction of an effective institution of self-government was initiated and implemented through relevant programs of foreign experts and consultants and accordingly funded their launch for foreign financial assistance.

2. The economic goal of the reform is to ensure a profit for decades through the introduction of administrative fees for public services provided to the population by foreign ideologues of these programs.

3. Changes in the socio - economic environment should not be expected from reforms in Ukraine. Investment in the development of the territorial economy is virtually absent, and if it happens then it is a source of the shadow sector of the local economy.

4. The country's budget will benefit only by reducing the labor costs of the UTC management staff by reducing the number of UTCs and reducing the staff of district administrations.

5. The assessment and attitude of the population of Ukraine to the reform of local self-government took place as a result of the refusal to vote and attempts to implement democracy without administrative resources. As for the local elections, it is the share of the population that did not take part in this vote that has determined complete disregard for all reforms and specifically for the implementation of this self-government reform, and these are two thirds of Ukrainian voters.

6. No such reforms are able to change the stable decline of socio - economic development of Ukraine without the use of the mechanism of real investment in the regions and the country as a whole. Private investment is connected to the next step after the implementation of public investment, when the initial return is already visible. Western UTCs practically do not implement the investment mechanism.

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CHAPTER 2

DEVELOPMENT OF FINANCE, ACCOUNTING AND AUDITING

STATE FISCAL SUPPORT FOR SECURITY ENVIRONMENT OF ACTIVITIES OF SPATIALLY LOCALIZED SYSTEMS IN NATURAL-AND-RESOURCE AND AGRARIAN SECTORS OF NATIONAL ECONOMY

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Abstract. The article systematizes key typologies of collecting resource-oriented taxes in developed countries within the framework of establishing and evolving a national model of fiscal support for the security environment of activities of spatially localized systems in natural-and-resource and agrarian sectors of the national economy subject to globalization processes, their penetration into the Ukraine's economy and a degree of the COVID-19 coronavirus infection world pandemic spread in its territory. Key directions and methods of developed countries' accumulation of revenues (rent) extraction and exploitation of natural-and-land resources by spatially localized systems are systematized and typologized. An impact of invariance of forms and types of resource taxes on a behavioral model of activities of spatially localized systems in natural-and-resource and agrarian sectors of the economy in the framework of features of the national architecturing of the system of state support (assistance) is studied, in particular, for entities of natural-and-resource and agrarian sectors of the national economy (formal and informal institutional rules, normative, budgetary, fiscal and other institutional restrictions). Recommendations are grounded, for the selection of the efficient system of special taxation of spatially localized systems in the natural-and-resource sector subject to the general author's 3-D model of recommendations for countering and overcoming the consequences of the corona crisis in the national economy, in general, and its natural-and-resource and agrarian sectors. Features are established for national informal rules of the functioning and development of spatially localized systems in the natural-and-resource sector expressed through mechanisms of illegal amber mining as well as the analysis is made for the prospective regulatory environment of activities of spatially localized systems in natural-and-resource and agrarian sectors of the national economy resulted from the actualization of the regulatory-and-legal basis of the subsoil use.

Keywords: state regulation, fiscal stimulation and administration, security environment, corporations, spatially localized systems, natural-and-resource and agrarian sector, resource rent, state assistance (support), corona crisis, COVID-19.

JET Classification: H54, O13, Q14, Q18, Q28

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Introduction. Implementing economic reforms in Ukraine characterized by the inconsistency and misestimate of capabilities of the functioning of the domestic market model of development has led to quite negative results – destruction of the natural-and-resource, agrarian and production potential of the country, deformation of social-economic processes flowing in rural areas or mineral resource concentration areas. The established situation has adversely affected, first of all, the functioning of natural-and-resource and agrarian sectors of the economy, which are characterized by breaking and weakening economic ties, an insufficient level of social and ecological responsibility and state regulation to achieve global and national indicators provided by the Sustainable Development Goals by 2030 [1–2], implement natural-and-resource and agricultural directives in the respective Decree of the President [3]. The problem was further exacerbated by the turbulence in the system of state stimulation of economic entities caused by revolutionary changes in the state assistance provision system, resulted from the adoption of the Law of Ukraine “On State Assistance to Economic Entities” [4], modification of poles in the structure of the system of state regulation and control between the state and on-the-ground (local) level as a feedback of the state structure system to standards of public relations and coordinated development of natural-and-resource and agrarian sectors of the economy with a new gene type of national priorities and public needs, penetrated by the European Charter of Local Self-Government. Decentralization of power and financial authorities of the state in favor of local self-government is one of the most important reforms from the times of Ukraine’s independence, but the powers received as a result of changes in the Tax [5] and Budget [6] Codes have not been sufficiently reflected in increasing in regulating, economic and financial solvency of local authorities in order to straight things out in natural-and-resource and agrarian sectors of the economy.

In the whole world, public finance and fiscal policy are one of the major macroeconomic regulation tools [7–9], determine stability of the national economy, an extent of its orientation on implementing the UN Sustainable Development Goals, in general, and the New Green Deal [10], in particular. As of today, the efficient functioning of the whole economic system depends on properness of conducting a budgetary-and-tax policy. Applying not sufficiently grounded fiscal incentives causes creating negative trends in the national economy, prerequisites for destabilizing the public finance management system including threats to increasing in a state budget deficit. These facts confirm the topicality of the chosen subject for research. So, through a fiscal policy, the state affects the formation of centralized and decentralized monetary funds, accumulation and consumption funds using taxes, state budget expenditures, lending facilities, tax and budgetary policy therefor. In each country, they are different, however, a feature of the modern period is that fiscal actions of the Governments of foreign countries may affect the economy forming the other countries’ behavioral model acceptable to them.

Literature review. Studying mechanisms and processes of reforming spatially localized systems in natural-and-resource and agrarian sectors of the national economy, factors determining their further development is, in its essence, a difficult and large-scale task as, concurrently and synchronously, the matters of interaction

and coordination of systems of territorial, industrial management, food security at various levels must be addressed, subject to changing a paradigm of their fiscal stimulation. All this is extremely important also by the reason that the interests of systems under consideration, mainly, often conflict and are inconsistent that is a cause of a notable decline in the efficiency of fiscal stimulation of spatially localized systems in natural-and-resource and agrarian sectors of the economy, shadowing of the employed resource potential, slowing down rural area development dynamics, enrooting the inertia of a fiscal risk and, as a consequence, of the financial potential of amalgamated territorial communities.

Problems of formation and strategic development of state regulating institutions, budgetary incentives and respective fiscal aspects of support for spatially localized systems in natural-and-resource and agrarian sectors of the economy, security of forming and deepening value-added chains within the framework of the inclusion theory in rural development have been reflected in works of leading domestic scientists: Yu. O. Lupenko, M. I. Puhachov, O. H. Shpykuliak, I. I. Lukinov, O. M. Onyshchenko, V. V. Yurchychyn, P. I. Haidutskyi, M. Ya. Demianenko, V. Ya. Mesel-Veseliak, P. T. Sabluk, O. M. Shpychak, O. M. Borodina, O. V. Shubravska, L. V. Moldavan et al. Studying transformation of financial institutions, the system of management of public finance and harmonization of state fiscal support for sectors of the national economy, in general, and natural-and-resource and agrarian sectors, in particular, under the conditions of strengthening of the European vector of development of Ukraine and changing of the conjuncture of the world market of natural raw material and agrarian products was devoted in works by V. V. Zymovets, A. I. Danylenko, Yu. B. Ivanov, S. O. Korablin, N. M. Sheludko, A. M. Sokolovska, M. I. Skrypnychenko, V. M. Heets, A. A. Hrytsenko, O. O. Tereshchenko, M. A. KhveXbsyk, A. M. Shubalyi, A. M. Sunduk, L. V. Levkovska, H. O. Obykhod.

Among foreign scientists, the above problematics, from the viewpoint of strategy, tactics, formation and adjustment of corresponding resulting-and-qualitative indicators of the fiscal policy of transformation of nature management institutions including agriculture was successfully addressed by: F. Balassone, C. Vyplosz, A. Ghosh, D. Aimery, M. Cangiano, G. Kopitz, M. Lasar, D. Last, M. Moore, D. Ostry, M. Petry, L. Rice, F. Roser, B. Fabian, A. Fedelino, D. Franco, D. Harris, R. Hamming et al.

Nevertheless, a number of the most important aspects of fiscal stimulation of spatially localized systems in natural-and-resource and agrarian sectors of the national economy, especially, in the context of linking the prospects of sectoral "green" modernization and transformation of the public finance management system, intensification of the local finance institution resulted from fiscal decentralization are understudied because they have not been studied in a holistic and system manner.

Aims. Creating new fiscal stimulation methods requires large-scale research of patters and trends in activities of natural-and-resource and agrarian sector of the national economy within the framework of amalgamated territorial communities, which not only gain in their own financial autonomy but also adjust their regulating

activities, as well as requires theoretical rethinking of earlier applied, quite general assessments and provisions in fiscal stimulation of relevant sectors. As a result, a need arises for system and holistic research of factors forming a trajectory of transformation in natural-and-resource and agrarian sectors of the national economy as well as for elaboration of efficient fiscal stimulation tools regulating their development, ensuring a sustainable and sufficient level of raw material providing.

Methods. A theoretical and methodological foundation for this research was works of domestic and foreign academic economists on problems of development of natural-and-resource and agrarian sectors of the economy, structure and modernization of the public finance system, in general, and a fiscal policy, in particular, respective legislative acts, program documents, regulating development of natural-and-resource and agrarian sectors of the economy as well as a combination of various methods – economic-and-statistical, computational-and-constructive methods, expert evaluations etc.

Results. In a practice of taxation of spatially localized systems (of corporations (institutional units established specially for the purpose of the market production of goods and services and are a source of profit or other financial benefit for their owners [11]) including state-owned) functioning in the natural-and-resource sector, various kinds of special taxes apply.

As known, natural wealth is non-uniformly distributed in a space. Therefore, choosing between its national or on-the-ground (local) taxation inevitably affects a matter of tax equity. If you proceed from the equal right of citizens to natural wealth of the country, then it is obvious that resource taxation must be national because, only in this case, there is an opportunity to neutralize differences in the natural and agricultural potential and, hence, in financial capacity of various amalgamated territorial communities. In addition, it gives a potentiality to create, from the beginning, equal tax conditions for the competition of individual jurisdictions in labor and capital supply – the Tiebout hypothesis [12].

Among economists, in particular [13–15], quite popular is a point of view, according to which the availability of rich natural resources is an obstacle to development. There is a “resource curse”, which brakes economies developing in the segments with low value-added and low growth rates.

Widespread was an opinion, according to which a high dependence on resource tax payments especially from activities of foreign transnational companies cuts ties between the national state and broad public electorate weakening, therefore, state institutions as well [16].

A resource country's place on the global consumption curve affects the competitiveness of the country, the amount of the received rent and revenues on the basis of tax receipts and requirements for the production localization. The country's dependence on natural resources proves to be an important circumstance as well. A resource rent can be the largest component of country's gross national product like in Angola and Equatorial Guinea but can turn out to be a supplemented revenue to a diversified economy like in Norway.

A discussion around a financial policy on resource sectors often ignores a matter of the optimal ratio between tax receipts and the competitiveness of spatially localized systems in natural-and-resource and agrarian sectors of the economy. There is no doubt that high tax rates can reduce in and even bring investments in a raw-material component of the functioning of spatially localized systems in natural-and-resource and agrarian sectors of the economy to naught. So, in the Canadian province of Alberta, after increasing in the royalty amounts by the local government, the investments in extraction reduced by 41 % [17].

A tax policy, using which the state establishes the amount of the received resource rent is an important mechanism affecting the competitiveness of natural-and-resource and agrarian sector sectors of the economy. Resource extraction taxation drastically differs from ordinary entrepreneurial activity taxation. In addition to standard capital gain tax, a resource tax system must include an exemption of the resource rent (i.e., a difference between the price, for which the volume of extracted resources can be sold and respective productive expenses) including adequate (subject to risks) profit for the operator.

There are the three most widespread methods of obtaining revenues from resource extraction and exploitation by countries [18]:

- first, royalties and taxes are paid in exchange for receiving concessions based on common taxation or through special taxes for the natural-and-resource sector of the economy. The latter are charged on gross output, income (royalty), profit or as a bonus paid after signing an agreement or concession;

- second, a state may enter into a production sharing agreement providing a partial state ownership and obtaining a portion of revenues or profit. Sometimes, a state compensates an investor for their share of the project or receives a so called freecarry (income from ownership of any asset), when such compensation is not paid. For example, Ghana National Petroleum Corporation has a 10-percentage freecarry share of all oil assets of Ghana as well as an option for purchasing additional 20 % at a reasonable market price [19];

- third, in some countries, a state reserves full control over assets by receiving the total revenue from selling resources and offers only service contracts, in which a service provider receives a fixed payment – for example, Iran and Mexico use such a model in developing their oil and gas fields.

As, along with the above methods of obtaining revenues from resource extraction and exploitation by countries, various general taxes are also applied, identifying their integral impact is an important task as well. It is explained by the fact that in the case of the concurrent application of several various taxes, their distorting effects can be mutually compensated for or, inversely, mutually strengthened.

For example, in the concurrent use of a profit tax with a discount for subsoil depletion and an extraction tax subject to quality, the distortions introduced by these two taxes are mutually compensated for. The same effect is observed by the concurrent use of an extraction tax subject to quality and ad valorem property tax. The concurrent use of a profit tax with a discount for subsoil depletion and ad

valorem property tax mutually increases in distortion stimulating earlier withdrawal of floating funds.

According to the optimal taxation theory, two small taxes can introduce less distortion than one large tax. However, in practice, this principle should be applied carefully. Firstly, when the number of collected taxes increases, administrative expenses can considerably increase. Secondly, corporations don't care of the number and size of distortions and, if a tax burden in general is higher, it may result in decreasing in investments and labor offers.

Taking into consideration the territorial belonging of natural resources, their taxation is closely associated with problems of the fiscal federalism, i.e., distribution of rights to receive revenues and regulate expenses between the various state management levels – from the central government to local authorities. However, there are also weighty arguments in favor of local resource taxation. First of all, this is associated with the fact that it is very difficult to organize a centralized redistribution of revenues from resource taxes in a way that it allows for, to the full extent, both general fiscal federalism principles and specific features of individual territories including those tied to the extraction in the natural-and-resource sector. If, for example, a system of inter-territorial financial alignment in force in a country does not sufficiently accounts for territories' problems arising in connection with extraction and enrichment of mineral resources, their needs for accelerated development of individual directions of economic activities (a need to invest funds in the so called "growth points"), then local resource taxation can assist in addressing these problems. For example, if ecological taxes are not sufficient to compensate for ecological losses caused by extraction of useful minerals and arise within a region or are, mainly, being centralized, then local authorities may reasonably pretend to collect and use resource taxes by themselves.

Some financial systems increase a state's propensity for price volatility. For example, a royalty charged on a profit allows a state to receive a benefit from rising prices but lowers the income when they fall. Negotiations under any resource contract must account for a volatility risk and the parties must be aware that rising prices may generate excessive expectations for contribution of natural-and-resource and agrarian sectors to the economic growth. A state choosing such option of financial policy and oriented on maximizing revenues under the price rise conditions must be armed with efficient stabilizing mechanisms.

Some financial systems are able to distort market investments incentives. For example, in gold extraction, a rock quality cutoff level (minimum gold to rock waste ratio, at which extraction remains profitable) will be higher when the income tax is used that decreases in investments and production. A profit royalty collection system minimizes such distortions and maximizes potential revenues of the natural-and-resource sector of the economy.

Any financial system provides the existence of overhead expenses of the state and spatially localized systems in natural-and-resource and agrarian sectors of the economy. Minimizing such expenses increases in their competitiveness. For example, a production sharing model in the oil industry usually requires establishing a national

oil company and selling, by the state, a portion of its oil in the international market that leads to a considerable rise in administrative expenses as compared to alternative financial mechanisms such as the ordinary corporate tax.

A state needs to have a broader view on the competitiveness including production expenses associated with geology, infrastructure and regulation but also risks associated with eventual expropriation, capital flow restrictions, arbitrary contract and concession changing.

A bright example is the experience of Chile, which used a financial policy promoting investment raising. The country had refused to collect royalty up to the mid-2000s and decreased taxes on profit invested within the country. Later, Chile started to increase taxes when the country's production efficiency grew and risk declined, as a result of which Chile managed to raise direct investments in the resource sector in the amount of USD 12 B [20], and the mining industry has become a driving force of the economy of the country.

Structural degradation of the national economy, to a large extent, is a consequence of a differentiated state regulation policy, in general, and a fiscal policy, in particular, according to which a priority was given to export-oriented sectors of the economy: agrarian, metallurgical, chemical and mineral raw material extraction sectors, which shares in the last years are nearly 70 % [21] of total export. Because of the lack of effectual mechanisms of inter-sectoral capital transfusion (inter alia not only between the natural-and-resource and agrarian sector but also inside the spatially localized systems combining corresponding types of economic activities) and stimulation of investing profits by spatially localized systems with additional funds received by export sectors thanks to high world prices, were not quite efficiently used. Therefore, concentrating a state fiscal policy on said industries has not promoted required modernization of relevant spatially localized systems, building of its science-intensive, high-technological types, which, at the modern development level, are key factors of ensuring the economic growth.

In the World Mining Data 2020 Report [22], which was prepared by the International Organizing Committee for the World Mining Congresses, Ukraine took 28th place in global ranking of extracting countries, its extraction output was estimated at 88.6 M t, or US\$10.6 B. Based on the Report data, we will rank Ukraine by the established division of commodity-and-nomenclature groups in the natural-and-resource sector [22–23]:

1) metal useful minerals: 7th place in the world (behind Australia, China, Brazil, India, Russia and RSA) in iron extraction – 39 M t, or 2.4 % of the global level; 8th place in the world (behind RSA, Australia, China, Gabon, Brazil, Ghana and India) in manganese extraction – 651 T t, or 3.6 % of the global level; 6th place in the world (behind China, RSA, Australia, Canada and Mozambique) in titan extraction – 431 T t, or 6.3 % of the global level; 2nd place in the world (behind China) in gallium extraction – 9 t, or 2.9 % of the global level; 5th place in the world (behind China, Russia, USA and Japan) in germanium extraction – 1 t, or 1 % of the global level;

2) nonmetal useful minerals: 6th place in the world (behind China, USA, Germany, India and Czechia) in kaolin extraction – 2.4 M t, or 5.9 % of the global

level; 10th place in the world (behind Australia, RSA, China, Mozambique, Senegal, USA, Kenya, India and Indonesia) in zircon extraction – 26 T t, or 1.9 % of the global level; 8th place in the world (behind China, Brazil, North Korea, India, Russia, Canada and Madagascar) in graphite extraction – 13 T t, or 1.3 % of the global level;

3) combustible (solid) useful minerals: 13th place in the world (behind China, India, USA, Indonesia, Australia, RSA, Russia, Columbia, Kazakhstan, Poland, Vietnam and Canada) in energy coal extraction – 18.9 M t, or 0.4 % of the global level; 12th place in the world (behind China, Australia, Russia, USA, India, Canada, Mongolia, Kazakhstan, Poland, Mozambique and Columbia) in coke coal extraction – 5 t, or 0.5 % of the global level; 10th place in the world (behind Kazakhstan, Canada, Australia, Namibia, Niger, Uzbekistan, Russia, China and USA) in uranium extraction – 1 T, or 1.4 % of the global level.

For the last ten years, the agrarian sector's share of Ukraine's GDP increased, on the average, by 3 %, the natural-and-resource sector's share including the extracting industry was remaining almost at the same level – nearly 5 %, and the processing industry's share decreased, on the average, by 2.3 % [24]. A considerable reduction is also observed in the industry of transport (-2.4 %), finance and insurance (-2.6 %), real estate (-2.06 %). Such trends are in general in line with a situation, which established in the world countries with developing economies when for the last decade the agriculture's share has increased up to the level of nearly 10 %, the production's share – from 40 % to 50 %, and the services' share – from 50 % to 70 % [25–26]. Accordingly, considerable changes are observed in the export structure towards a rapid drop in a share of the extracting, metallurgical, chemical industry and the transport sector against the background of growing in export of agricultural, food and wood-working products that allows to state reorienting the state policy from the natural-and-resource sector to the agrarian sector as a major export-oriented industry of Ukraine. It is worth noting that the most considerable changes in the agrarian sector's share (now provides 9 % of GDP, 18 % of employment of economic entities and 6 % of tax receipts [27]) in GDP and/or export are observed in the years of economic crises that means its relative resilience to crisis phenomena as compared to the natural-and-resource sector, transport, finance, insurance and real estate industries (under the conditions of the economic recession, the agrarian sector stagnates much less than the other sectors [28–29]).

Almost from the beginning of 2020, the Ukrainian economy has been placed in a new system of risks associated with the global economic recession that has laid a basis for the economic dynamics slowdown. An abrupt stop of a considerable portion of enterprises in various spheres of economic activities has significantly worsened a situation in the economy. During March-April, the measures were carried out to mitigate the adverse effects of the quarantine on the Ukrainian economy and society. The three “packages” of legislative changes provided fiscal support for business, first of all – tax reliefs for small business and individual entrepreneurs, regulatory load reduction as well as additional support for employees who lost jobs, and vulnerable population categories. However, in January-April of the current year, the industrial production was 8.7 % lower than a year ago having provided reorienting the overall

industrial depression onto an industrial drop with clear signs of the recession (Figure 1).

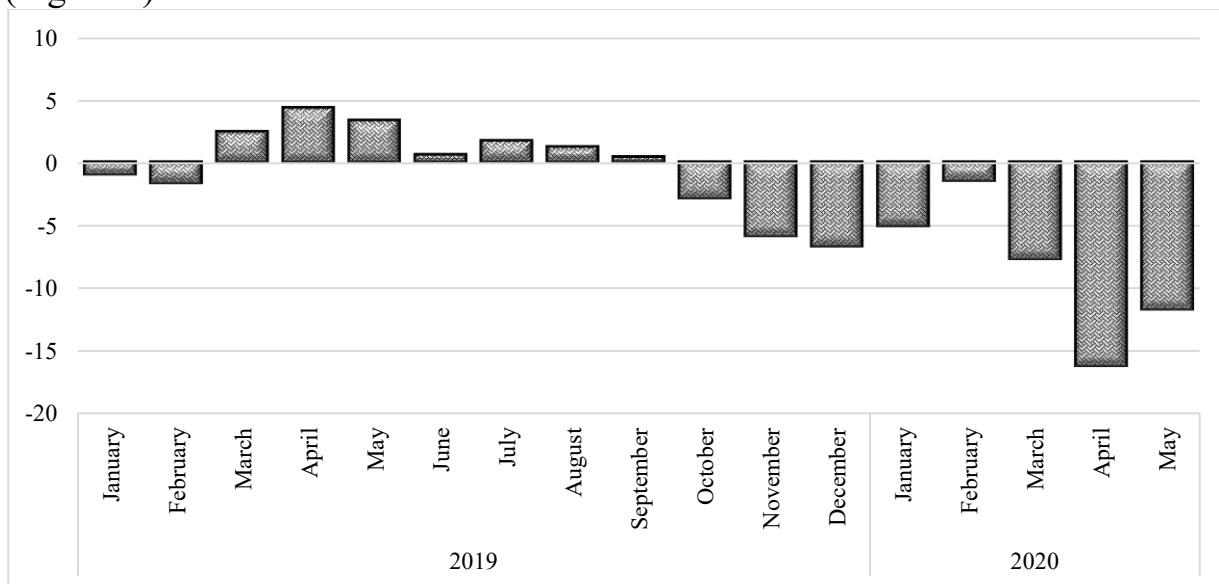


Figure 1. Industrial Products Dynamics, % of the Corresponding Month of the Previous Year

Source: compiled by authors according to data of [21; 24; 30–31]

The only exception from among the industries of the natural-and-resource sector is the chemical industry, which has retained positive advances gained over the last years. We will emphasize that, in May 2020, the depth of the drop almost in all sectors of the national economy reduced (Figure 2), it is especially seen in the extraction industry and quarry development, metallurgical production, wood, paper product manufacturing and printing activities.

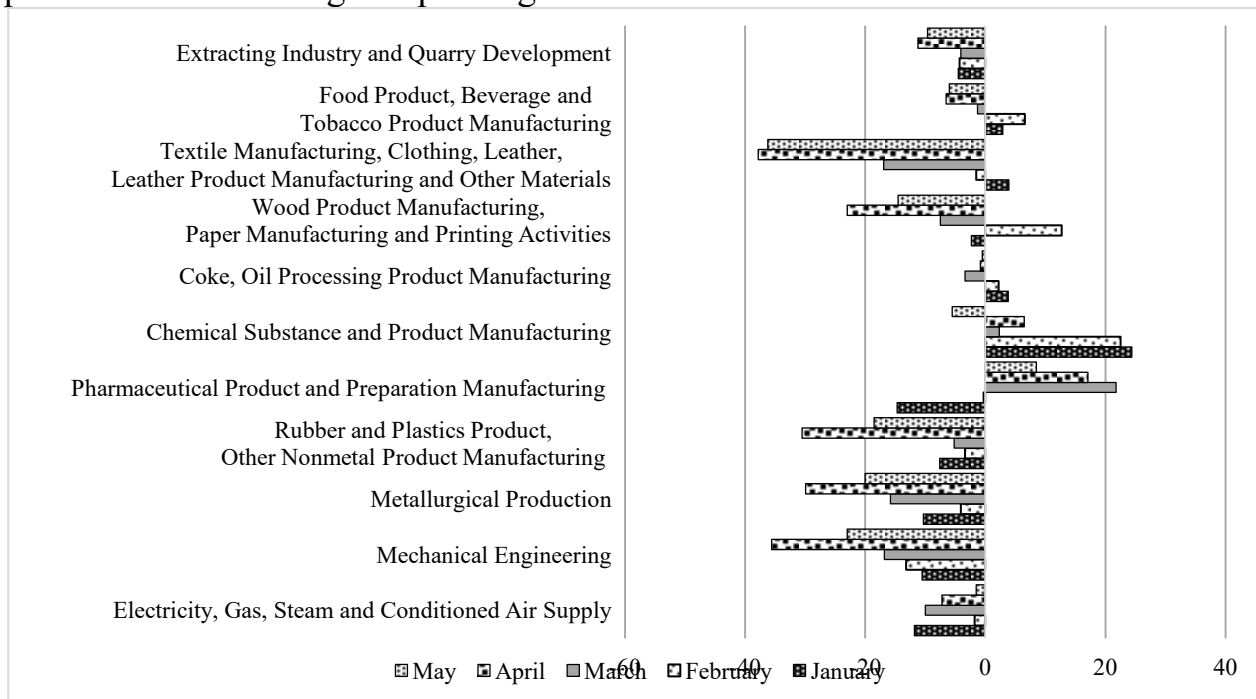


Figure 2. Production Dynamics in Industry Sectors in 2020, % of the Corresponding Month of the Previous Year

Source: compiled by authors according to data of [21; 24; 30–31]

According to the data of the State Statistics Service of Ukraine [21], agricultural products reduced, over January-May 2020, by 2.0 %, inter alia, in population households – by 3.7 %. In April 2020, as compared to April 2019, milk sales (in physical measurements), decreased by 4.7 %, in May – by 3.6 %. Slaughtering of cattle at enterprises – accordingly, by 20.7 % and 13.9 %, of pigs – by 9.0 % and 5.2 %.

According to the results of January-May 2020, commodity export volumes decreased, as compared to the same period of 2019, by 6.6 %, and, in May, an export drop rapidly accelerated (Figure 3) up to -24.2 % (in April -6.2 %, March – -4.3 %, February – +2.4 % and January – +2.4 %). In the export structure, the COVID-19 pandemic crystallized a clear dependence of Ukrainian export on raw material sectors (agriculture, extracting industry) and low-technological productions (food industry, in which low-processing-degree products prevail).

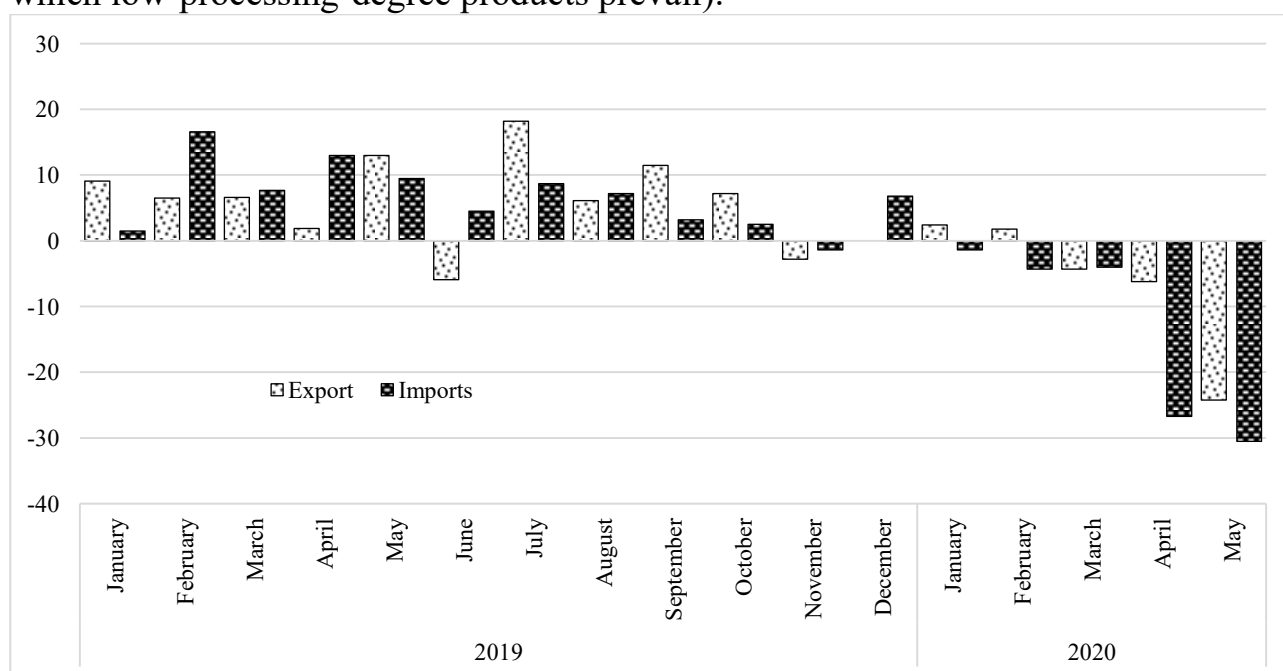


Figure 3. Foreign Commodity Trade Dynamics, % of the Corresponding Month of the Previous Year

Source: compiled by authors according to data of [21; 24; 30–31]

Resulted from the changes in the State Budget for 2020 [32], its revenues are decreased by UAH 119.7 B and, at the same time, its expenditures are increased by UAH 82.4 B, and the state budget deficit is increased almost three-fold – up to UAH 298.4 B (it is 7.5 % of GDP that is the highest indicator for the last 20 years [33]). However, already in March, a nonfulfillment of the tax payment plan was UAH 8.8 B (the plan was fulfilled at 89.6 %), in April, the tax payment plan was fulfilled at 73.9 %. In connection with the fact that, in May, the Ministry of Finance of Ukraine considerably adjusted plans for budget receipts downwards, the tax receipts in May were even over-fulfilled by UAH 3.6 B (Figure 4). Meanwhile, in aggregate, according to the data of the State Treasury Service of Ukraine [34], in January-May 2020, shortfalls to the state budget were UAH 43.8 B (the plan is fulfilled at 89.9 %), to the local budgets – UAH 12.2 B (90.2 % of the plan), having provided a

considerable reduction in budgetary capacities to receive state assistance by spatially localized systems in natural-and-resource and agrarian sectors of the national economy.

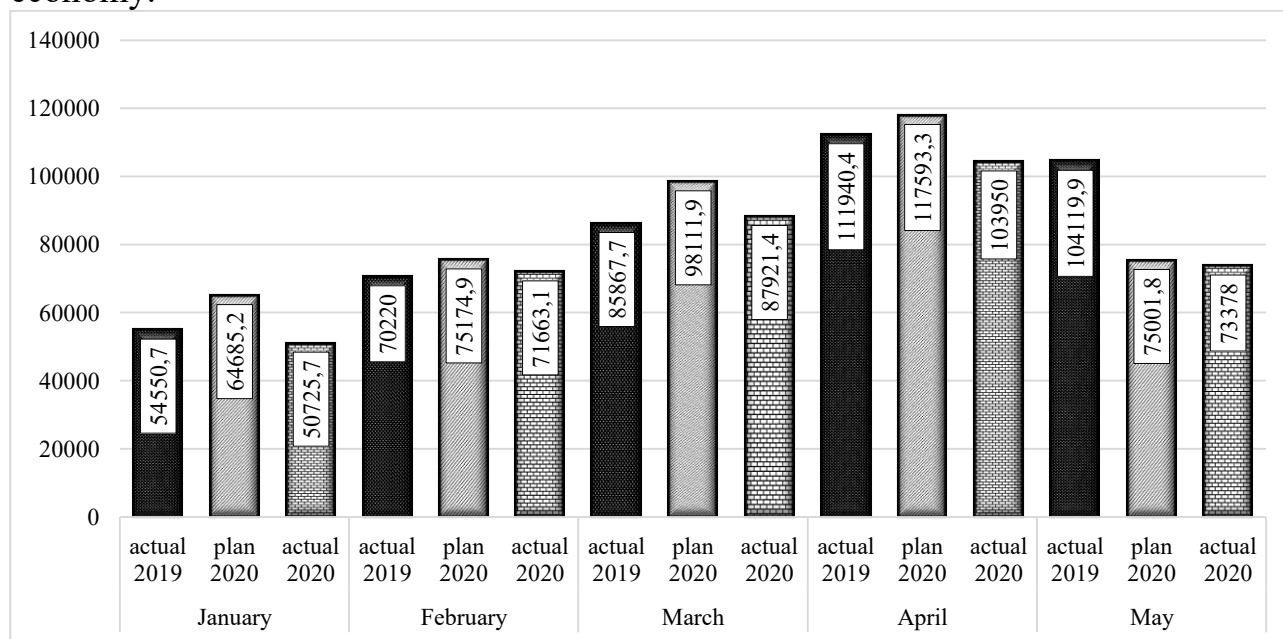


Figure 4. Dynamics of Monthly Receipts to the State Budget of Ukraine in 2019–2020, UAH M

Source: compiled by authors according to data of [21; 24; 30; 31]

The amount of the state assistance provided in 2019 in Ukraine, according to the data of central and local bodies of executive power and bodies of local self-government, was UAH 3,957.34 M that at the mean rate of the National Bank of Ukraine for 2019 (EUR 1 = UAH 28.95 [35]) was only EUR 136.70 M. Further, according to the information furnished by state assistance providers, the amount of considerable state assistance provided in 2019, was UAH 553.24 M [36].

The most widespread form of state assistance in 2019 is a subsidy, which, according to the information of providers, was 19 %. Guarantees were 12 %, compensation economic entities for losses – 11 %, grants – 4 %, fiscal measures – 3 %, increasing in the state's share of the charter capital of economic entities – 1 %, decreasing in financial liabilities of economic entities to the mandatory state social insurance funds – less than 1 %, other state assistance forms were 49 %.

The greatest state assistance, including that within fiscal incentives, was provided in 2019 in the functioning of land and pipeline transport (43 %), in activities in creation, arts and entertainments (16 %), air transport (13 %), building and area maintenance (11 %), activities in sports (8 %), in other industries (9 %). Among other industries belonging to natural-and-resource and agrarian sectors of the national economy, the state assistance was provided only to manufacturers of other nonmetal mineral products – UAH 2.84 M and agriculture – UAH 0.01 M, considerably narrowing stimulating aspects of the current fiscal policy in mentioned sectors.

As of today, Ukraine is the world's second largest amber reserve holding country and differs by a markedly low value of this kind of a gemstone as compared

to other countries. As a consequence, a demand for amber mined in the territory of Ukraine is extremely high and provokes increasing in volumes of its illegal mining.

As of today, Ukraine has a global problem of illegal amber mining, which has started a way back in the beginning of the 1990s, however, has taken a mass and dangerous form after 2014. Rapid developing illegal “black gold” mining has caused an amber price rise. The Zhytomyr, Volyn and Rivne oblasts have become the three most attractive oblasts for illegal “black gold” mining.

An amber extraction method, which is used by evil-doers, has led to actual destruction of hundreds of hectares of the fertile soil layer and forests, abnormalities of small river channels and a ground water system. These consequences are disastrous and overcoming them requires both an extended time interval and extremely high expenditures from the State Budget of Ukraine – as of 2019, the expenditures reached an amount over US\$ 10 M [37].

A problem with illegal amber mining has been multiply attempted to be addressed. On 4 February 2020, the Verkhovna Rada adopted a draft Law “On Introduction of the Amendment to Article 252 of the Tax Code of Ukraine on Regulation of the Subsoil Use Rent Payment Rate for Amber Mining” (registration No 2241; the Law) [38–39]. The document provides to considerably reduce this rent even by the end of the current year. Today, the amber mining rent rate is 25 %. This is one of the highest rent payment rates, only that for gas extraction is higher. The said legislative initiative considerably lowers a rent rate – by 31 December 2020 inclusive, it will be 5 %, by 31 December 2021 – 8 %, thereafter – 10 %. Despite the fact that rate reduction is the only amendment provided by a draft law, it is not worth to belittle to significance of such decision.

However, a draft Law does not account for the other base norm of the Tax Code of Ukraine. Indeed, amendments to any elements of taxes and levies may not be introduced later than six months before the beginning of the new budgetary period, in which they will be effective. Thereafter, rent payment rates may not be changed during a budgetary year. If said norms are followed, then a 5 % rate may be applied no earlier than in 2021, but for 2021, an 8 % rate is already provided. So, there is a risk that additional accruals from the tax service of Ukraine arise, if a corporation pays not 25 %, but 5 %, and this is a totally different situation, as those entrepreneurs can get under blow who even without that were paying such a high rent payment.

A draft law also states that the Cabinet of Ministers of Ukraine shall harmonize its regulatory-and-legal acts, subject to the rate reduction, and adopt regulatory-and-legal acts needed so that reduced rates might yet be applied. Such legal framework is not very successful, whereto the attention was paid by the Main Legal Department. In remarks [40] on a draft law, it is stated that implementing the norms of this law is made dependent on the adoption of subordinated acts by the government in the future. So, it is too early to say that a 5 % amber extraction rate will start to be in effect even tomorrow. As a minimum, it is needed to wait until the Law is signed by the President and how the State Tax Service of Ukraine will implement it.

Discussion. An important factor of success of the proposed Law is the ability of the state and extracting corporations to manage social expectations after new natural

resource deposits are discovered. As a practice of the Klondike Gold Rush and California Gold Rush as well as that of the amber rush in Ukraine showed, many citizens have a keen sense of local identity that is often expressed in claims to receive a personally larger share of the resource rent. Ghana is one of many countries, which experienced a fierce debate after a state had started a policy of allocating land plots for extraction of useful minerals without involving a local community in a decision-making process.

It is important for investors to impress on local stakeholders that they are beneficiaries of developments of useful minerals and natural resources as well. A characteristic example can be the South-African Broad-Based Black Economic Empowerment [41] Act, obligating extracting corporations to allot a certain share of the joint-stock property to the local population. Stimulating establishing joint ventures between foreign extracting companies and local corporations is also an efficient mechanism to reduce country's risks in the natural-and-resource sector.

A braking effect of the quarantine caused by the COVID-19 pandemic is now weaker for Ukraine than for the countries with that kind of a model of countering the spread of the COVID-19 disease. The cause is a lower actual contribution to GDP by the sectors, which activities were suspended, first of all, a tourism-and-recreation sphere, trade, services, creative industries etc. However, it is easier for the developed countries, unlike Ukraine, to apply incentives including economic recovery fiscal-colored incentives accelerating a way out of the post-crisis industrial and natural-and-raw material depression. Instead, for Ukraine, the post-crisis depression may be found to be deeper and more protracted than a corona crisis itself.

Conclusions. Ukraine is doomed to fight “on two fronts” – with the consequences of the corona crisis and the effect of the global economic depression, which will limit exogenous factors of activation of natural-and-resource and agrarian sectors of the national economy. To ensure a dynamic way out of the crisis, it is needed to overcome the depressive “traps” in the three major system directions:

first, recovering a functionality for major mechanisms of the monetary-and-credit and budgetary policy in order to obtain their effectiveness in implementing the measures for stimulating the economic growth and regulating structural changes;

second, improving a sectoral structure of the national economy in order to recover its sensitivity to endogenous factors, which have to promote the economic growth by adapting to the domestic demand structure and optimizing the integration in the global labor distribution;

third, adjusting an institutional structure of the national economy in order to consolidate the society in implementing an anti-crisis strategy on the basis of achieving inclusion through the lens of the national model of economic development, in general, and natural-and-resource and agrarian sectors of the national economy, in particular.

All special taxes in natural-and-resource and agrarian sectors increase, in the short-term, in extraction expenses and mineral resource prices, and in the long-term – decrease in the rate of profit on capital and, therefore, – investments in the extraction industry and employment in this sector. However, this may not be irrevocably

attributed to the defects of these taxes, because reducing in the mineral raw material extraction itself is namely one of the key goals of resource taxation. In addition, each of the taxes brings additional distortional effects in economic behavior of spatially localized systems in the natural-and-resource sector of the economy, in particular, a tax:

- 1) at the fixed rate per extraction unit exclusive of qualitative parameters provokes a decision to postpone the extraction from the current time to the future but does not change time decisions on the extracted raw material quality;

- 2) per extraction unit inclusive of qualitative criteria at the fixed rate affects the extraction time as well as changes decisions on the extracted raw material quality;

- 3) the extraction time does not affect the extracted raw material quality but is able to postpone the extraction in general. However, it is practically impossible to identify a direction of such time changes as they depend, to a considerable extent, on the ratio of raw material price increases to the bank interest rate or value of other borrowed funds – the so called Hotelling's rule [42].

An advantage of all above taxes is an ease of and low costs for their administration as well as stability of receipts to the budget regardless of financial results of activities of corporations, but a main disadvantage is that they strengthen a threat of bankruptcy for low-profitable or loss-making spatially localized systems in the natural-and-resource sector of the economy.

An orthodox property tax, first, requires assessing the reserve value in situ that is quite difficult to conduct and, the second, accelerates the depletion of resources. The latter circumstance compels to recognize inappropriate to apply this tax as its effect contradicts the traditional goals of the state resource policy.

A progressive tax on profit brings large distortions as compared with a proportional tax, is more complicated in administration. In addition, we consider an essential argument against its application also that, as receipts of revenues from activities of corporations in the natural-and-resource sector are extremely unequally distributed in time, the application of the progressive tax may lead not only to the exclusion of the rent but also to a loss of a portion of their profit.

Soil depletion discounts transform decisions on extraction from the future to the present, so they should be carefully applied, taking into consideration that they may contradict the main resource regulation goals as well as complicate the tax administration problems.

So, taking into consideration the resource regulation goals (rent exclusion, reduction in natural resource extraction and consumption at present), we consider appropriate to separate the two most acceptable options of architecting a special taxation system in the natural-and-resource sector of the economy:

- 1) an additional proportional tax on profit of corporations combined with a progressive personal profit tax. This tax brings the minimum distortion and is associated with relatively low administrative expenses provided that a tax on profit is present in the general tax package. In this case, expenses for geological exploration may be capitalized while expenses for development may be amortized by the ordinary rules;

2) a tax on separation as a percentage of extracted raw material subject to its quality and content of a useful component. This tax is relatively simple in administration and does not affect a profile of the extracted useful mineral quality. In addition, in connection with the fact that a tax rate depends on the price in effect at the moment of the calculation of liabilities, this tax better accounts for the inflation factor.

However, these conclusions are fair, first of all, for the developed market economy, well specified ownership relations subject to the Government's capacity to apply relatively complex tax systems, collect established taxes to the full extent with minimum expenses as well as existence of other institutions and factors inherent in developed countries. So, it is obvious that grounded proposals for resource taxation of corporations in the natural-and-resource sector may not be automatically transferred to the Ukraine's economy without essential adjustment subject to its institutional features – poor property and contract protection, absence of developed markets of production factors, large-scale concealment of real financial results and tax evasion. The same conclusion may be applied to the problem of choosing between national and local (regional) resource taxation. So, forming an efficient system of taxation of corporations in the natural-and-resource sector for Ukraine requires conducting additional specialized studies.

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ALTERNATIVE METHODS OF SMALL BUSINESS FINANCING IN UKRAINE

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Abstract. *Today's realities show a crisis in the solvency of domestic businesses, which is caused, in particular, by lower interest rates after 2008. This encourages small businesses to attract alternative financing methods. Access to external financing in times of crisis is becoming more difficult, especially for small businesses. The purpose of the study is to examine the practice of alternative methods of financing small business in Ukraine in a pandemic and solvency crisis in 2020. The results show that in developing countries, in particular in Ukraine, lending as a form of financing for small businesses is underused due to high interest rates. Small businesses mainly rely on financing from creditors (suppliers) and management of accounts payable, receivables. Government support is also low. The main methods of financing include financing at the expense of creditors, in particular, it may be deferred payments for goods, works and services. At the same time, small business did not significantly increase the amount of financing through loans on a long-term basis in 2010-2019. Compared to long-term liabilities, corporate equity is a more widely used source of financing in Ukraine. In the period of economic recovery (2017-2018) there was an increase in the share of long-term commitments and provision and a reduction in the share of equity capital in the balance of small enterprises. This means that the structure of financing depends on the country's economy: in a crisis, borrowing is reduced. In Ukraine, starting from 2017, there has been an increase in the level of efficiency of state support for the agro-industrial complex of Ukraine through the expansion of public funding instruments, taking into account the various needs and problems of individual industries.*

Keywords: *alternative methods of financing, small business, small business, capital structure of small enterprises.*

JET Classification: D22, G18, G21, G28

Formulas: 0; **fig.:** 1; **tabl.:** 6; **bibl.:** 20

Introduction. Today's realities show a crisis in the solvency of domestic businesses, which is caused, in particular, by lower interest rates after 2008. This encourages small businesses to attract alternative financing methods. The economic activity of small businesses is further negatively affected by the coronavirus pandemic. As a result, such sectors of the economy as tourism, trade, agricultural production, and industry suffer. Access to external financing in times of crisis is becoming more difficult, especially for small businesses, and access to capital remains a problem in times of economic recession (Cowling, Liu & Ledger, 2012; Geho & Frakes, 2013). Exceptions are qualified small enterprises with a high level of productivity (Geho & Frakes, 2013) or small enterprises with innovative projects (Comeig, Del Brio & Fernandez-Blanco, 2014), or providing direct financing and obtaining bank loans through government policy despite the recession (Rumiński,

2012). For example, in New Zealand and the United Kingdom, despite the decline in 2008, small businesses used similar financing methods to deliver positive results (Smallbone, Deakins, Battisti & Kitching, 2012). This means a high level of adaptability and flexibility of small business, resilience in the absence of control over changing circumstances (Smallbone, Deakins, Battisti & Kitching, 2012). In Ukraine, the situation is complicated by high interest rates and the unavailability of loans for small businesses due to their high cost. In addition, there is no practice of state support for small business in Ukraine. The recent practice of financing agricultural enterprises is insufficient to assess the effectiveness of various forms of external financing. The implementation of the Strategy for the Development of Small and Medium-Sized Enterprises in Ukraine for the period up to 2020 in Ukraine has not provided obvious results in the context of financial support of small enterprises by the state (Verkhovna Rada of Ukraine, 2020).

Literature review. The scientific literature discusses discrimination against small businesses in lending, in particular, unequal access to commercial credit due to the possible risks of non-repayment (Cheng, 2015; Bates & Robb, 2016). Small businesses can attract different forms of financing by combining different configurations (Atherton, 2012). Borrowers of small and medium enterprises (SMEs) with a low probability of success of the project attract resources without collateral (collateral) with high interest rates, while SMEs with a high probability of success - loans with real estate at low interest rates, Comeig, Del Brio & Fernandez-Blanco, 2014). This provides access to good financing conditions for small businesses with efficient projects. For example, in Poland, SMEs receive direct financing and bank loans (Rumiński, 2012), which in the conditions of economic downturn ensures the development of entrepreneurship due to high flexibility.

External constraints determine the financing of small enterprises (investment in research and development, capital investment) to a greater extent than internal ones (Czarnitzki & Hottenrott, 2011). Among the risk factors for not receiving external financing - the location of a small business, geographical concentration (Bates & Robb, 2016). Other important characteristics are activity scale, age, type of ownership, form of ownership, operating sector, asset structure, age and gender of the business owner, management experience and education (Abdulsaleh & Worthington, 2013). One of the determining factors in borrowing is the level of capitalization: companies with low capitalization have less chance of survival, there may be a shortage of funding (Atherton, 2012). Deregulation of the banking sector, which expands access to corporate finance, provides growth in the total factor productivity of small businesses through investment in production projects (Krishnan, Nandy & Puri, 2015).

The practice of different countries proves the importance of small business development and financing (Smallbone, Deakins, Battisti & Kitching, 2012; Rumiński, 2012). Among the main sources of funding are borrowing, capital financing and government support (Figure 1).



Figure 1. Sources of small business financing

Source: (Abdulsaleh & Worthington, 2013).

Given the above, the issue of research of alternative methods of financing small business in Ukraine is particularly relevant. Developing countries are gradually implementing small business financing through a variety of methods.

Aims. The purpose of the study is to examine the practice of alternative methods of financing small business in Ukraine in a pandemic and solvency crisis in 2020.

Method. This study is based on a qualitative and quantitative methodology for evaluating alternative methods of financing small business in Ukraine. For this purpose, the following indicators of the State Statistics Service of Ukraine were used:

1. Number of small enterprises in Ukraine in 2010-2019, in particular in terms of economic sectors.
2. Volume of sold products (goods, services) of small enterprises by types of economic activity in Ukraine in 2010-2019.
3. Indicators of the balance sheet of small enterprises in 2013-2019 to study the structure of assets and, accordingly, sources of funding.

Content analysis of state support programs was conducted on the basis of data from government programs of Ukraine in various sectors of agriculture. Data from the Ministry of Agrarian Policy and Food of Ukraine (2019; 2020) were used to summarize the effectiveness of small business financing methods in Ukraine. The agricultural sector was selected for analysis due to the existence of enterprise financing practices in 2017-2020.

Results. In developing countries, particularly in Ukraine, lending as a form of financing for small businesses is underused due to high interest rates. Small businesses mainly rely on financing from creditors (suppliers) and management of accounts payable, receivables. Government support is also low.

Over the last ten years, the number of small enterprises in Ukraine has increased by 5,087 units (Table 1) due to the implementation of the SME Development Strategy. Thus, 95.2% of all enterprises are small enterprises, while their sales are only 19.1% of the total volume in 2019 (Table 1-2). At the same time, the share of sales volumes is slowly growing in 2010-2019 (from 16.9% to 19.1%). Among small enterprises, a significant share of enterprises in agriculture (13.23%), industry (11.70) and processing industry (9.54%), but the largest share is occupied by wholesale and

retail enterprises; repair of motor vehicles and motorcycles (27% in 2019). This determines the level of financing and methods, because the sector of the economy is one of the factors in attracting funds to small businesses. It is obvious that enterprises in capital-intensive industries are more likely to raise funds of various forms.

Table 1. Dynamics of the number of small enterprises in Ukraine in 2010-2019

Indicator	2010	2016	2017	2018	2019	Absolute deviation 2019/2010, +/-
Number of small enterprises, units	357241	291154	322920	339374	362328	5087
in % to the total indicator of the corresponding type of activity	94,3	95,0	95,5	95,4	95,2	0,90
Agriculture, forestry and fisheries	47213	42477	47714	48183	47924	711
Specific weight, %	13,22%	14,59%	14,78%	14,20%	13,23%	0,01%
Industry	41373	33695	37066	39322	42396	1023
Specific weight, %	11,58%	11,57%	11,48%	11,59%	11,70%	0,12%
Processing industry	36086	28596	31239	32780	34573	-1513
Specific weight, %	10,10%	9,82%	9,67%	9,66%	9,54%	-0,56%

Source: State Statistics Service of Ukraine (2020).

During 2010-2019, the volumes of sold products (goods, services) of small enterprises increased by 1271.61%, and the share by 2.2%. Thus, the agricultural sector provides 11.21% of the total sales of small business, industry - 12.17%, construction - 9.7%, wholesale and retail trade; repair of motor vehicles and motorcycles - 45.76%. Obviously, this determines the methods of financing small business in Ukraine.

Table 2. Dynamics of volumes of sold products (goods, services) of small enterprises by types of economic activity in Ukraine in 2010-2019

Indicator	2010	2016	2017	2018	2019	Absolute deviation 2019/2010, +/-
In total, billion (UAH)	568,27	1177,39	1482,00	1766,15	1839,88	1271,61
in % to the total indicator of the corresponding type of activity	16,9	18,9	19,2	19,2	19,1	2,20
Agriculture, forestry and fisheries, billion (UAH)	22,67	144,02	177,51	198,13	206,24	183,57
Specific weight, %	3,99%	12,23%	11,98%	11,22%	11,21%	0,07
Industry, billion (UAH)	54,08	152,41	188,35	227,65	223,97	169,89
Specific weight, %	9,52%	12,94%	12,71%	12,89%	12,17%	0,03
Construction, billion (UAH)	36,61	82,76	110,29	146,37	178,55	141,94
Specific weight, %	6,44%	7,03%	7,44%	8,29%	9,70%	0,03
Wholesale and retail trade; repair of motor vehicles and motorcycles	352,38	572,08	723,18	854,13	841,96	489,58
Specific weight, %	62,01%	48,59%	48,80%	48,36%	45,76%	-0,16

Source: State Statistics Service of Ukraine (2020).

The dynamics of the balance sheet of small enterprises (Table 3) shows an increase in non-current assets (by UAH 443.8 billion), current assets (by UAH 1186.0 billion), equity capital (by UAH 147.2 billion), long-term commitments and provision

(UAH 158.8 billion), current liabilities and provision (UAH 1324.6 billion), liabilities related to the irreversible assets and groups of leaving and net cost of non-assets - state pension fund (by UAH 1.9 billion). This means the predominance of such financing methods as creditors' funds, in particular, it may be deferred payments for goods, works and services. At the same time, current liabilities and provision do not significantly outweigh current assets, which means high liquidity of small businesses and the ability to settle liabilities on time. At the same time, small enterprises did not significantly increase the volume of financing at the expense of credit funds on a long-term basis (UAH 158.8 billion), in fact, 1 small enterprise accounted for UAH 491.66 thousand. long-term liabilities in 2019, while in 2010 the load was much higher - 836.56 thousand UAH.

Table 3. Dynamics of balance sheet of small enterprises in Ukraine in 2013-2019

Balance sheet item, billion (UAH)	2013	2016	2017	2018	2019	Absolute deviation, 2013/2019 +/-
non-negotiable assets	637,9	760,4	916,5	1028,2	1081,7	443,8
current assets	985,5	2355,2	1810,0	2075,5	2171,5	1186,0
non-negotiable assets and groups of leaving	1,7	2,7	4,3	3,0	4,3	2,6
equity capital	479,9	224,7	278,9	416,5	627,1	147,2
long-term commitments and provision	298,9	451,5	557,2	602,9	457,6	158,8
current liabilities and provision	844,8	2440,0	1892,1	2084,3	2169,4	1324,6
obligations, related to the irreversible assets and groups of leaving and net cost of assets of non-state pension fund	1,5	2,3	2,6	3,1	3,4	1,9
Balance	1625,1	3118,4	2730,7	3106,7	3257,5	1632,4

Source: State Statistics Service of Ukraine (2020).

Compared to long-term liabilities, the equity of enterprises is a more used source of financing: in 2010, 1 small enterprise accounted for UAH 1,343.42 thousand. equity, in 2019 - 455.72 thousand UAH. This means a change in the financing structure (Table 4) and the ratio of equity and debt capital (from 1.61 in 2010 to 0.93 in 2019 in favor of long-term loans).

Current assets account for 66.66% of the balance sheet of small enterprises. The share of equity in 2010 was 29.53%, in 2019 - 19.25%, while long-term commitments and provision - 18.39% and 14.05%, respectively. In the period of economic recovery (2017-2018) there was an increase in the share of long-term commitments and provision and a reduction in the share of equity capital in the balance of small enterprises. This means that the structure of financing depends on the country's economy: in a crisis, borrowing is reduced.

Table 4. Structure of balance sheet of small enterprises in Ukraine in 2013-2019

	2013	2016	2017	2018	2019	Absolute deviation, 2013/2019, +/-
non-negotiable assets	39,25%	24,39%	33,56%	33,10%	33,21%	-6,05%
current assets	60,64%	75,53%	66,28%	66,81%	66,66%	6,02%
non-negotiable assets and groups of leaving	0,11%	0,09%	0,16%	0,10%	0,13%	0,03%
equity capital	29,53%	7,21%	10,21%	13,41%	19,25%	-10,28%
long-term commitments and provision	18,39%	14,48%	20,40%	19,41%	14,05%	-4,34%
current liabilities and provision	51,98%	78,24%	69,29%	67,09%	66,60%	14,61%
obligations, related to the irreversible assets and groups of leaving and net cost of assets of non-state pension fund	0,09%	0,07%	0,09%	0,10%	0,10%	0,01%
Balance	100,00%	100,00%	100,00%	100,00%	100,00%	0,00%

Source: State Statistics Service of Ukraine (2020).

Given that in 2017-2020 the agricultural sector of Ukraine uses a variety of forms and methods of financing, it is advisable to consider the practice of this sector. The last few years in Ukraine there has been an increase in funding for agriculture through various methods of state support: through state support programs (including intensification of compensation programs for machinery and equipment in 2017-2019), which provide compensation for machinery, construction, equipment, cheaper loans and more.

State support of the agro-industrial complex provides for state regulation in the form of indirect support (tax benefits) and direct support (appropriations, loans).

In 2017, at the request of the IMF, the preferential VAT regime was abolished and budget subsidies were introduced in order to develop agricultural producers who sell products on the domestic market to a greater extent. Compensation for the cost of agricultural machinery and equipment of domestic producers was also introduced. At the same time, since 2017, the government has been constantly expanding the range of state support instruments. In general, the financing of the agro-industrial complex is growing every year, but the systemic problems of the industry remain unresolved.

Today, the government's priority is to stimulate the development of farming and the formation of an effective model of socially responsible, productive farm owners. In particular, for 2019, financial state support is provided on the basis of previously existing government programs (Table 5).

It should be noted that the conditions for providing state support differ depending on the form of economic activity. For cooperatives (associations of agricultural producers) compensation of 70% of the cost of machinery and equipment is provided. For large manufacturers who need assistance of another nature, cheap loans are provided, the cost of equipment is reimbursed in the amount of 25%.

Table 5. Government programs of state support for agriculture

Branch of agro-industrial complex	Essence of state support
Livestock	Subsidies for keeping cattle in the amount of 900 UAH for 1 unit Partial reimbursement of breeding animals (50%) Compensation for the construction of animal complexes (financing through bank loans) in the amount of not more than 25% of credit funds up to 5 years
Machinery and equipment	Compensation for the cost of purchased equipment: 25% due to the budget program "Financial support for agricultural producers" and 15% due to "Financial support for farm development"
Plant growing	Compensation of 80% of the cost (excluding VAT) of seeds of domestic production (not more than in the amount of 80 thousand UAH per 1 farm) Compensation of 80% of the cost for the purchase of planting material in the fields of viticulture, hops and horticulture, construction of refrigerators, freezing facilities, purchase of processing lines Compensation for the cost of construction of storage facilities, grain processing (30% of the cost)
Subsidies	60 000 UAH for the established farm / 3000 UAH per 1 ha 12 000 UAH per 1 member of the farm, but not more than 40,000 UAH
Loans	Partial compensation of the interest rate for up to 12 months to cover production costs, 36 months - capital costs Cheaper loans (compensation of 1.5% of the discount rate: up to 1 year up to 500 000 UAH; up to 3 years up to UAH 9,000 000 UAH) Loans for livestock industries (compensation of 1.5% of the discount rate on 1 short-term and / or 1 medium-term loan)

Source: Ministry of Agrarian Policy and Food of Ukraine (2019).

Table 6 shows the actual amount of funding for state support for the development of agricultural enterprises of Ukraine in 2017-2019 under various budget programs.

Table 6. Dynamics of financing of state support for the development of agro-industrial enterprises of Ukraine in 2017-2019, million (UAH)

№	Program/direction	2017	2018	2019 (till 18.09)	Growth rate, %, 18/17
2801030	Financial support of measures in the agro-industrial complex by reducing the cost of loans	263,40	265,91	80,59	0,95
2801230	Financial support for the development of farms, including	101,13	203,26	136,23	101,00
2801350	State support for the development of hop growing, establishment of young orchards, vineyards and berries and their supervision	224,90	394,33	119,12	75,34
2801540	State support of the livestock industry, including	166,47	2389,84	14,07	1335,58
2801580	Financial support for agricultural producers, including	47,10	912,86	1036,19	1838,13
Total, including:		803,00	4166,22	1386,19	418,83

Source: Ministry of Agrarian Policy and Food of Ukraine (2020).

In 2018, there was a significant increase in funding within the budget programs to support the development of agriculture. Cheaper loans remain a relatively ineffective instrument of state support, as the amount of funding under this program does not change and is only 6% in 2018 of the total funding of agricultural enterprises. Financial support for farms increased significantly (by 101% in 2018), and its share was only 5%, including compensation for the cost of machinery and equipment - 3%, subsidy per 1 hectare for newly established farms - 1%, cheaper loans only 0.20 %. The amount of funding for the program "State support for the development of hop growing, establishment of young orchards, vineyards and berries and their supervision" has increased significantly - by 75%, and the share in 2018 was 9.5%. The largest amount of funding fell on livestock - 57%, and growth - by 1335%, which indicates the effectiveness of the program. It is worth noting the effectiveness of budget subsidies for keeping cows (12.29%), for raising young cattle (7.7%), reimbursement of breeding animals (5%), reimbursement of the cost of facilities - 31%. Thus, the most effective tool is to reimburse the cost of construction. Financial support for agricultural producers by reducing the cost of agricultural machinery and equipment is also an effective tool, because in 2018 the growth was 1838%, and the share - 22%. Thus, we see an increase in the efficiency of state support for agricultural enterprises, as the purchasing power of farms has been increased, equipment has been updated, and facilities have been built. It should be noted that as of September 18, 2019, the amount of state support is significantly lower than in 2018, in general, accounting for only one third of the amount of funding in 2018. The following banks financed PJSC CB Privatbank, PJSC Oschadbank, PJSC Ukreximbank, and PJSC JSB Ukrgasbank.

Discussion. This study allows us to draw conclusions about the reduction of small business financing in the crisis (Cowling, Liu & Ledger, 2012; Geho & Frakes, 2013), in particular through long-term loans, the economic recession is changing the capital structure of small businesses in Ukraine. Small businesses in Ukraine have uneven access to credit due to the predominance in the structure of the economy of enterprises in the field of trade. Similar findings are contained in a study by Cheng, 2015; Bates & Robb (2016), noting the possible risks of non-repayment of loans. Small business in Ukraine has several forms of financing at its disposal, and the structure of financing is changing during the crisis. High interest rates in Ukraine still remain an obstacle to attracting financial resources, which correlates with the conclusions (Comeig, Del Brio & Fernandez-Blanco, 2014). At the same time, this trend is complemented by a low level of collateral supply by small businesses due to the predominance of wholesale trade. Only in the agricultural sector do companies have the opportunity to offer collateral or submit a project for consideration to increase the probability of success in obtaining financial resources.

Despite the increase in funding, compared to EU countries, where 21% of gross agricultural output is compensated by the state, in OECD countries - 19%, in Ukraine in 2018 the share was 9.5% (Ivaskevych, 2018). The disadvantages of financing agricultural enterprises is a transparent mechanism for the access, distribution costs, particularly for small and medium producers, inefficient use of resources (lack of

systemic innovation, new technologies), impaired objectivity mismatch distribution and final beneficiaries declared. The actual amount of financing of the agro-industrial complex is less than 5% and is less than planned. At the same time, scientists note the systemic underfunding of agriculture (Radchenko, 2016). For example, 41% - 0.942 billion UAH - "Myronivsky Khliboprodukt" has received all paid subsidies since the beginning of 2017, according to the State Treasury. The second place in state support was taken by Ukrlandfarming Group of Companies, which paid 0.236 billion UAH (10%). At the same time, the requirements were met, according to which the monthly amount of the budget subsidy for poultry producers cannot exceed 50% of the allocated appropriations for the budget subsidy in the current month. That is, small farms received almost no state support. Although the current mechanism of budget allocation "excludes the human fact", this proved to be insufficient for logic and efficiency. Thus, the support of the agricultural sector implemented in the first half of 2017 shows that the new mechanism has not got rid of previous, systemic problems, and has acquired its own, which nullifies the stated efforts of public policy (Dumanska, 2018).

The current system of using funds under budget programs does not provide access to most small producers to them, and therefore does not allow the development of new areas of agriculture (organic production in particular). In Ukraine, there is no extensive system of regional advisory services, whose activity is to expand the professional knowledge of producers, skills of both government officials and businesses (Dumanska, 2018). Therefore, one of the ways to improve the mechanism of state support is decentralized distribution of funds to ensure equal access of all producers to funds. Cheaper loans for agricultural enterprises are one of the effective tools of state support, but in Ukraine it is characterized by a low level of efficiency due to bureaucratization and limited banking institutions that act as partners.

Conclusion. This study allows us to draw the following conclusions. In developing countries, particularly in Ukraine, lending as a form of financing for small businesses is underused due to high interest rates. Small businesses mainly rely on financing from creditors (suppliers) and management of accounts payable, receivables. Government support is also low. The main methods of financing include financing at the expense of creditors, in particular, it may be deferred payments for goods, works and services. At the same time, small business did not significantly increase the amount of financing through loans on a long-term basis in 2010-2019. Compared to long-term liabilities, corporate equity is a more widely used source of financing in Ukraine. In the period of economic recovery (2017-2018) there was an increase in the share of long-term commitments and provision and a reduction in the share of equity capital in the balance of small enterprises. This means that the structure of financing depends on the country's economy: in a crisis, borrowing is reduced. In Ukraine, starting from 2017, there has been an increase in the level of efficiency of state support for the agro-industrial complex of Ukraine through the expansion of public funding instruments, taking into account the various needs and problems of individual industries.

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PECULIARITIES OF INVENTORY IN PUBLIC SECTOR OF ECONOMY OF UKRAINE

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Abstract. *The peculiarity of the activities of public sector institutions of the Ukrainian economy is that they are forced to form and use their resources within the approved budget of revenues and expenditures. That is why it is important to monitor the condition and preservation of the property of such institutions. The purpose of the study is to identify ways to improve the stage of preparation for the inventory and its documentation by developing and approving an internal regulation on the inventory of public sector institutions. During the study of the essence of the concept of "institutions of the public sector of the economy", the principles and features of the inventory were used methods of scientific analysis, synthesis, scientific abstraction, the method of theoretical and logical generalization. One of the methods of control over the proper storage and use of the resource base of public sector institutions is inventory. The purpose of the study is to examine ways to improve the process of preparation and documentation of inventory in public sector institutions of the Ukrainian economy. General scientific and specific methods of scientific research were used in studying the issue. The issue of conducting an inventory and qualitative reflection of its results always remains relevant. According to our study, the emphasis was on recommendations for public sector institutions to develop and implement internal regulations on inventory of assets and liabilities, which will greatly simplify their current work not only before the preparation of annual financial statements but throughout the financial year.*

Keywords: *institutions of the public sector of the economy, inventory, inventory commission, regulations on inventory.*

JEL Classification: H30, M40, M41

Formulas: 0; **fig.:** 3; **tabl.:** 0; **bibl.:** 8

Introduction. A special feature of public sector institutions is their activity, which requires maximum control over the proper use and preservation of their own property, which emphasizes the importance of inventory as a tool for such control. On the other hand, inventory is one of the elements of the method of accounting, so proper organization and detailed analysis of its implementation remains a topical issue.

Literature Review. Inventory in public sector institutions is an element of the accounting system that constantly needs research, but a number of scientists such as Bardash S.V., Belobzhetsky I.A., Belov M.G., Butynets F.F., Weizman N.V., Gorelkin V.G., Zuev M.P., Ilyin N.I., Nemchinov P.P., Kramarovsky L.M., Kuzhelny M.V., Sokolov Y.V., Shpig O.O. etc., repeatedly raised this issue in their works.

Theoretical and practical aspects of the organization and conduct of the inventory are reflected in the works of such scientists as F.F. Butynets, V.V. Borodin,

V.S. Len, N.M. Malyuga, V. Nagorny, V.M. Parkhomenko, V.V. Glivenko and others.

The scientific achievements of the above-mentioned scientists have made a significant contribution to the study of inventory, but the issues of quality organization and preparation for the inventory of public sector institutions remain open.

Aims. The purpose of the study is to identify ways to improve the stage of preparation for the inventory and its documentation by developing and approving an internal regulation on the inventory of public sector institutions.

Methods. During the study of the essence of the concept of "institutions of the public sector of the economy", the principles and features of the inventory were used methods of scientific analysis, synthesis, scientific abstraction, the method of theoretical and logical generalization.

Results. The activities of public sector institutions have a number of features that in turn affect the construction of accounting. They are non-profit organizations and operate on state property rights. The peculiarity of the activities of public sector institutions is that the purpose of their activities is not to generate profit, but to achieve the indicators provided for in the plans and estimates, the implementation of the tasks and functions specified in the statute or provided by the funding program.

A public sector institution is an organization created by a public authority to perform administrative, socio-cultural, scientific, technical or other non-commercial functions, whose activities are financed from the state budget or extra-budgetary funds based on estimates of revenues and expenditures [6, p. 6-7].

Institutions of the public sector of the economy include (Fig. 1.)

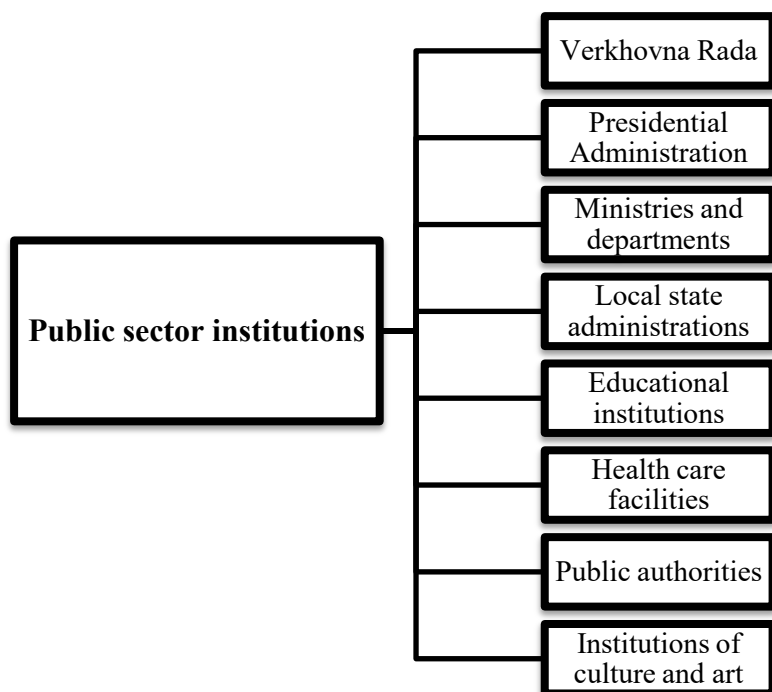


Figure 1. Institutions of the public sector of the economy of Ukraine

Source: developed by the authors based on [6].

The system of accounting and financial reporting of public sector institutions of the Ukrainian economy is in a state of transformational change and has a number of problems and shortcomings that need to be addressed immediately. Such key changes include:

- the need for final adaptation of Ukrainian legislation on accounting and financial reporting to international requirements;
- the lack of a uniform methodology in the legislation to reflect in the accounting operations of budgetary institutions, which does not allow to obtain complete, reliable, transparent and comparable information about the financial condition of the state;
- lack of a unified accounting policy and the development of methodological and methodological recommendations on the conduct and organization of accounting and reporting.

Among a number of unresolved issues regarding the methodology of accounting and reporting, the most relevant, especially at the moment, are issues related to the preparation and conduct of inventory in public sector institutions.

Inventory is a comparison of accounting data about the property of the institution, regardless of its location, as well as all types of financial liabilities with their actual availability [2].

Conducting an inventory in public sector institutions is regulated by such basic regulations as: the Law of Ukraine "On Accounting and Financial Reporting in Ukraine"; Regulations on inventory of assets and liabilities; Regulations on the inventory of military property in the Armed Forces; The procedure for conducting an inventory of equipment in state and municipal health care facilities that provide secondary (specialized) and tertiary (highly specialized) medical care; Order of the Ministry of Finance of Ukraine "On approval of standard forms for budgetary institutions to reflect the results of the inventory" and others [1,2,3,4,5].

The key purpose of the inventory is to ensure the reliability of accounting data and financial statements of public sector institutions. During the inventory of assets and liabilities are checked and documented their presence, condition, compliance with the criteria for recognition and evaluation (Fig. 2.).

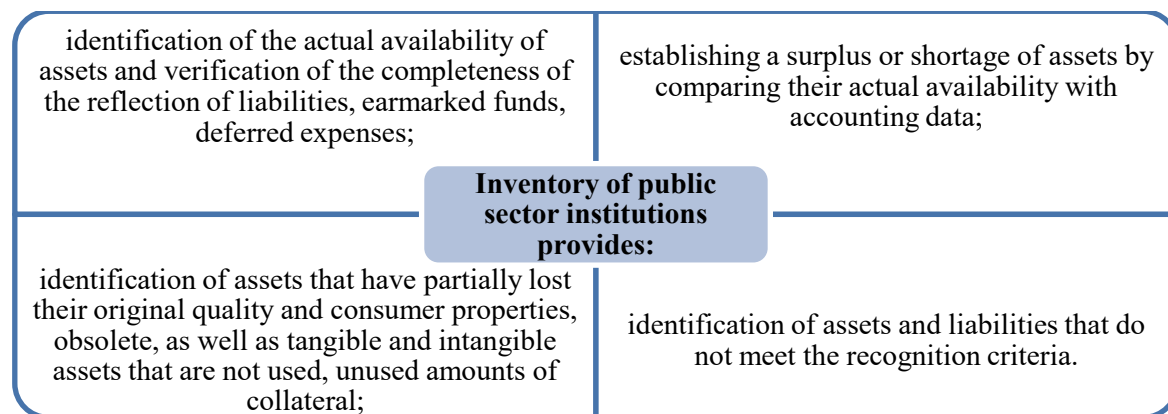


Figure 2. Tasks of inventory of institutions of the public sector of the economy of Ukraine

Source: development by authors

The main reference point when organizing and conducting an inventory for institutions of the public sector of the economy of Ukraine is the Regulation on inventory of assets and liabilities № 879, which regulates the inventory procedure and the procedure for registration of its results. This provision contains a methodology for conducting an inventory of public sector institutions.

It is well known that each public sector institution is required to conduct a continuous inventory of assets and liabilities each year prior to the preparation of the annual financial statements. Usually, the inventory starts from October 1 of the reporting year, because for certain types of assets, the inventory period is 3 months.

To begin with, the head of the institution must issue an inventory order, and an inventory commission must be established. Usually, during the inventory at the end of the year, institutions also set up working inventory commissions to inspect certain types of assets and materially responsible persons. The stages of the inventory are shown in Figure 3.

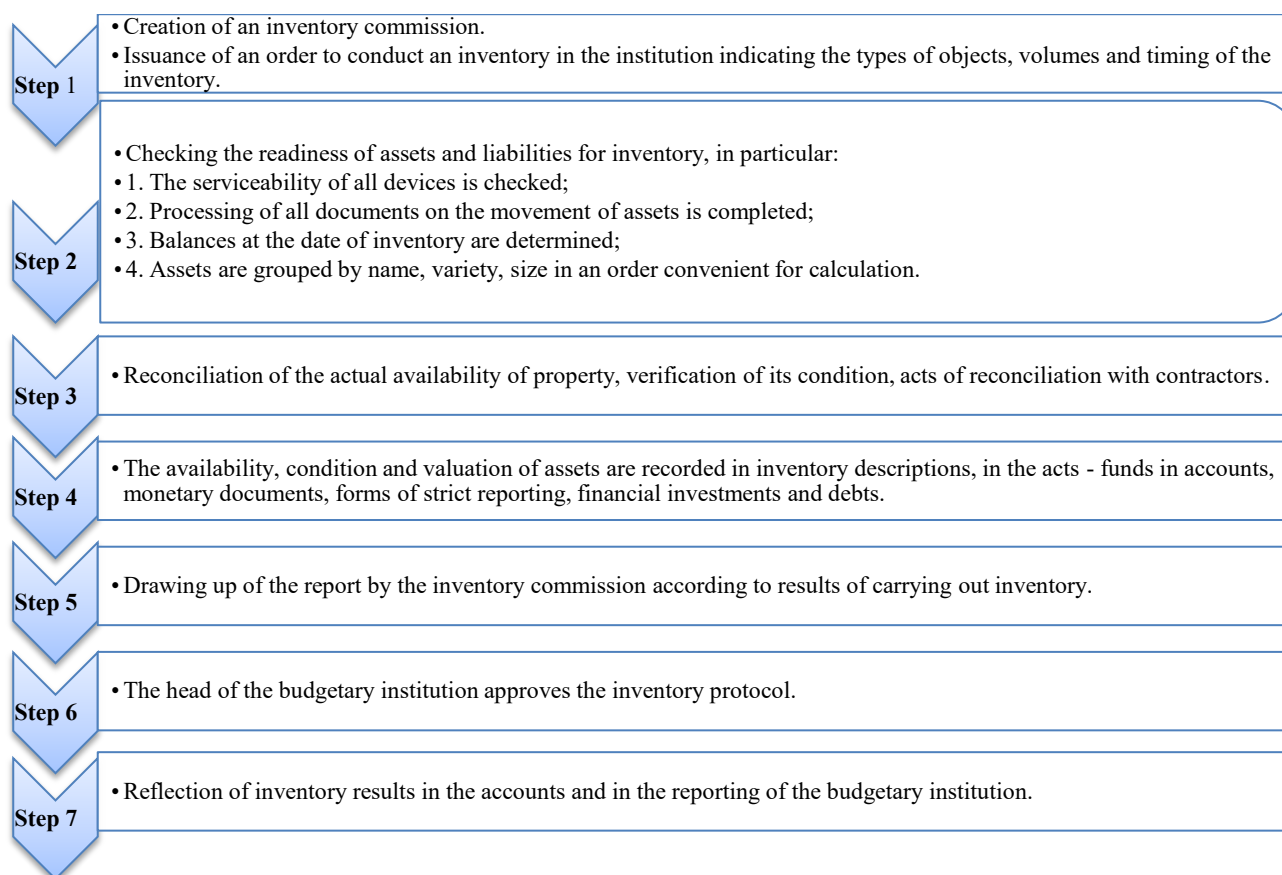


Figure 3. Stages of inventory of public sector institutions

Source: development by authors based on [2]

Without denying the importance of all stages of the inventory in public sector institutions, the initial stage needs attention. The fact is that the correct organization of the inventory process will greatly simplify the work of inventory commissions and the head himself.

In our opinion, despite the existence of Regulation № 879, which defines the general aspects of the inventory, each institution of the public sector of the economy

is recommended to develop and approve its own regulations on the inventory of assets and liabilities. This means that, based on legal regulations, the head of the institution, together with the accounting and financial service must approve the basic rules of inventory. This is an appropriate solution, because there are cases when at the end of the year it is impossible to cover the inventory of all types of assets and liabilities, and there are cases when it is necessary to set separate dates for the inventory.

The Regulations on inventory, developed by the head of the institution must specify:

1. Objects and types of inventory.

This item describes the assets and liabilities that will be subject to inventory and are registered with institutions, regardless of the timing of the inventory.

2. Frequency and timing of inventory.

Here it is important to indicate the terms for certain types of assets and liabilities that are registered in the institution of the public sector of the economy. It is important to anticipate all exceptions and indicate which objects will be inventoried at the end of the year and for which separate deadlines will be set.

3. Creation of inventory commissions (permanent and working), description of their tasks.

If, however, the management decides to create a permanent commission, its composition and term of office shall be indicated.

4. Features of the inventory for certain types of assets and liabilities (land, real estate, inventory, library and museum funds);

5. Procedure for settling discrepancies with accounting data (surpluses and shortages) identified during the inventory.

The creation of an internal inventory regulation will, first of all, regulate the issue of its timing. This primarily applies to cash settlements (cash and funds in accounts). Since public sector institutions are financed from the budget, the calculations are made in accordance with the estimates of revenues and expenditures, which is why their timeliness is not always maintained. Hence the need for inventory of cash registers and calculations at least once a quarter.

In the same provision, it is possible to approve a permanent composition of the inventory commission, which would allow in case of unforeseen situations to conduct an inventory immediately (for example, in case of change of materially responsible persons and transfer of material values). Of course, the commission may include:

- representatives of the management staff, accounting service (in particular, centralized accounting);
- Experienced employees of the institution, familiar with the object of inventory, prices and primary accounting.

The inventory commission may be headed by the head of the institution, which would be the best solution, regardless of the period and timing of the inventory.

Quite often, inventory issues are partially covered in the accounting policies of public sector institutions. Usually, this information is superficial, as it is impossible to describe in detail all the intricacies of the inventory in this document. This once again

emphasizes the feasibility of developing an internal regulation on inventory in public sector institutions of the Ukrainian economy.

Discussion. To assess the effectiveness of our proposed ideas for the development of internal regulations on the inventory of assets and liabilities, we propose to implement it in practice for public sector institutions. The best option is to start work on the formation of the situation at the beginning of the financial (reporting) year, as this will allow you to assess the effectiveness of such a decision during a particular period.

Conclusion. Based on the results of the study, we should focus on the following:

1. To achieve the maximum result during the inventory, it is necessary to plan its implementation at the beginning of the year.

2. One of the methods to improve the inventory in public sector institutions should be to develop and implement an internal regulation on the inventory of assets and liabilities of a particular public sector institution, depending on the specifics of its activities.

3. Responsibility for the effective conduct of the inventory should be borne by both the head and the accounting and financial service, which consists in constant monitoring of the condition and preservation of property.

Author contributions. The authors contributed equally.

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PROBLEMS OF DRAWING UP THE ACCOUNTING POLICIES FOR THE NEEDS OF CORPORATE ENTERPRISE MANAGEMENT

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Abstract. *An effective system of corporate governance increases the cost of capital, encourages companies to use their own resources more efficiently, which forms the basis for their growth. One of the structures of corporate governance is the accounting policies, which is a special area of economic activity of the corporation, aimed at mobilizing financial resources, their rational distribution and use to ensure functions of the corporation. The purpose of the article is to identify the problems of formation of accounting policy for the needs of corporate enterprise management. In the process of writing the article, methods of analysis and synthesis, comparison and generalization of research results were used, which allowed to achieve this goal. Using this element of the accounting policies, the corporation can influence the formation of its costs, and hence the formation of financial statements in different reporting periods. The decision to include interest on loans obtained from member banks of the corporation in the calculation is made for each loan separately. The main tasks of the accounting policies of the corporation are as follows: to ensure a clear understanding of indicators of the financial statements by users; enabling users to assess effects of different accounting alternatives; accurate interpretation and comparability of financial statements of different companies that use alternative accounting methods.*

Keywords: *accounting policies, corporation, information, corporate governance, financial policies, accounting.*

JEL Classification: G30, M40, M41

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Introduction. The corporate sector of the economy is the basis of any modern economic system, in which the processes of integration and globalization play an important role. Understanding the economic nature of economic activities of a corporation that is based on the priorities of involvement in management determines a problem of developing the accounting policies for the preparation of consolidated financial statements and determining peculiarities of accounting for transactions with corporate rights. The accounting policies are a special area of economic activity of the corporation, aimed at mobilizing financial resources, their rational distribution and use to ensure functions of the corporation. Solving a number of problems related to the accounting policies in accounting is laid in the study of its historical aspect, which, in turn, requires the study of a problem of a directivity of historical development in accounting, which determines the impact of nature, social and historical laws, forms and stages of social progress, development and influence of the economic system on increasing the variability of accounting, determining the very existence of the accounting policies. That is, researching the accounting policies in

retrospect, we can identify the whole set of reasons and factors, the presence of which has contributed to the emergence of the accounting policies and necessitated its formation.

Literature review. In modern conditions of development, the effective operation of corporate entities depends on two processes, including corporate governance, which is aimed at protecting the corporate rights of the company members and accounting. An important link in the financial and economic activities of an enterprise is the management system, which should play a key role in the organization of accounting. Accounting, having become one of the many information subsystems that are interconnected both at the stage of solving problems and at the stage of the entire information system of the entity, becomes one of the main management factors in the conditions of use of automated systems. The success in carrying out the managerial function significantly depends on the right establishment of the interrelation of tasks [1].

As noted by O.I. Pylypenko [2, p. 118] corporate governance is an internal means of ensuring the functioning of corporations and control over them, and the appropriate level of corporate governance helps ensure the effective use of capital by member companies of the corporation.

An effective system of corporate governance increases the cost of capital, encourages companies to use their own resources more efficiently, which forms the basis for their growth.

From the standpoint of the institutional approach, corporate governance is a system of formal and informal norms that reveal the property rights and ways to exercise the said rights through various forms of personal and social controls. Given the essence of the corporation as a transparent system, the main task of corporate governance is to control and supervise activities of management staff, which can be solved through the use of external and internal control mechanisms.

Thus, a key point of corporate governance is a system of relations between the company's owners, its management staff and stakeholders in order to carry out effective activities of the enterprise, ensure the balance of influence of interests of participants of the corporate rights.

One of the structures of corporate governance is the accounting policies, which is a special area of economic activity of the corporation, aimed at mobilizing financial resources, their rational distribution and use to ensure functions of the corporation.

The accounting policies in corporate governance determine the ideology of the corporation's economy for a long time, strengthen the accounting and analytical functions in the enterprise management, allow to quickly respond to changes taking place in the production process, effectively adapt the production system to environmental conditions, reduce economic risk and achieve success in the competition.

A French scientist E.P. Leote wrote that the wheel of the economy moves not only with the help of labour and capital, but thanks to the "accounting order" [3, p.

78-80]. In other words, the effectiveness of maintenance accounting depends on clearly defined accounting policies.

Attempts to implement certain elements of the accounting policies in accounting practice are associated with J. Mayer, who on September 22, 1932 in his letter from the American Institute of Accountants to the New York Stock Exchange outlined an action program, which included three points, namely:

- 1) the need to place public companies under an obligation to provide a detailed report on the accounting methods used by them;
- 2) enterprises must certify that they constantly adhere to these methods;
- 3) auditors must confirm that economic entities have used these methods of accounting, to which they refer for all intents and purposes [4, p.155].

At the time when there were no accounting regulations available, in 1934 the US Congress instructed the Securities and Exchange Commission to develop a Regulation on the accounting policies for the companies that list their securities, due to the need to bring order and ensure predictability in the practice of accounting after the great crisis of 1929. And only later, with the national standard in 1972, the rules of the accounting policies were extended to all enterprises [5].

The accounting policies emerged from almost nothing at the time when no one could imagine, letting alone declare "planning policy", "control policy", "analytical policy" and even any other policy that determines the rules of conduct of other management functions. The accounting policies were an exception, which was made from an overall number of policies only for this management function. Bakayev A.S. [6] and Efremova A.A. [7] note that the use of this term in accounting of post-Soviet countries dates back to the late 80s of the twentieth century, which was the result of the translation of terminology of international standards issued by the Committee on International Financial Reporting Standards, namely of an English word combination "accounting policies".

The concept of "accounting policies" in the international practice of accounting was officially introduced in November 1974 in connection with the adoption, and from 01.01.1975 putting into force the International Accounting Standard No1 "Disclosure of accounting policies" [8, p. 2]. In Ukraine, the concept of "accounting policies" appeared in accounting terminology in the early 90s of the twentieth century as a result of the translation of International Accounting Standards. The need for this arose in connection with the refusal of Ukraine from a strict state regulation of financial reporting and introduction of national provisions (standards) of accounting, correlating to the international ones [9, p. 19].

According to prof. F.F. Butynets, reasons for the emergence of the accounting policies in market conditions are as follows:

- alternatives for the organization and maintenance of accounting, provided by legislative documents;
- expansion of activities as well as organizational and legal forms of business entities;
- changing the role of an accountant in the economic life of the enterprise from a simple registrar of business transactions to an active party to them [10, c. 41].

Karputova I.G. argues that the accounting policies are an independent object for auditing for the purpose of proving the judgment on the reliability of financial statements. T.A. Zalyshkina lays emphasis on such a subtype of the category "accounting policies" as effective accounting policies, which is the basis for the entire accounting system that generates information used to make effective management decisions, and which should be consistent with the company's development strategy and be one of ways of their achievement. Voitenko T.V. considers that the accounting policies are the accounting methodology chosen by the company, taking into account the established norms and features, which are aimed at achieving their goals and objectives and they are used to ensure the reliability of financial statements and quality management system [11].

Valuev B.I. and Ruzmaikina I.V. [12] define the concept of "accounting policies" based on four positions, namely:

- 1) a complex of accounting methods accepted by the enterprise (primary supervision, cost measurement, current grouping and final generalization of the facts of economic activity);
- 2) a complex of methods of organization and maintenance of accounting in accordance with the general rules and features of economic activity of the enterprise;
- 3) a complex of techniques, forms and methods that influence the evaluation and decision-making of information users;
- 4) a set of principles, methods and procedures used by the company to prepare and submit financial statements.

International Standards apply a concept of the accounting policies exclusively to financial statements and not to accounting, and the approach to forming the accounting policies is aimed solely at ensuring compliance with IFRS financial statements. According to the International Financial Reporting Standards, the accounting policies are an opportunity to prepare financial statements that contain relevant and reliable information about transactions, other events and the conditions to which they apply. Drawing up the accounting policies in accordance with the requirements of IAS begins with the preparation of an order (regulation) on the accounting policies of the enterprise. The accounting policies should be drafted so it should ensure that the business entity's financial statements comply with the requirements of each applicable IAS / IFRS. Deviation from the requirements of the standard is permissible in extremely rare cases, when it is necessary to ensure the reliability of financial statements.

Aims. The purpose of the article is to identify the problems of formation of accounting policy for the needs of corporate enterprise management.

Methods. In the process of writing the article, methods of analysis and synthesis, comparison and generalization of research results were used, which allowed to achieve this goal.

Results. Thus, based on the conducted analysis, we can say that the accounting policies, whether they are internal documents or a complex of tools and methods of accounting and preparing financial statements, or a set of interrelated standards of applicable law, have acted and will continue to serve as a basis for the organization of

maintenance of accounting at the enterprise, but in the context of globalization and harmonization of accounting and financial statements, the accounting policies are also a primary link in the process of creating a unified accounting system. This is what research of many scientists is currently aimed at, i.e., to form unified accounting policies in accordance with the requirements of international documents.

The main task of the accounting policies is to ensure the organization of accounting at the corporate enterprise as a holistic system, which should cover all aspects (elements) of the accounting process, including theoretical, organizational and methodological ones (Fig. 1).

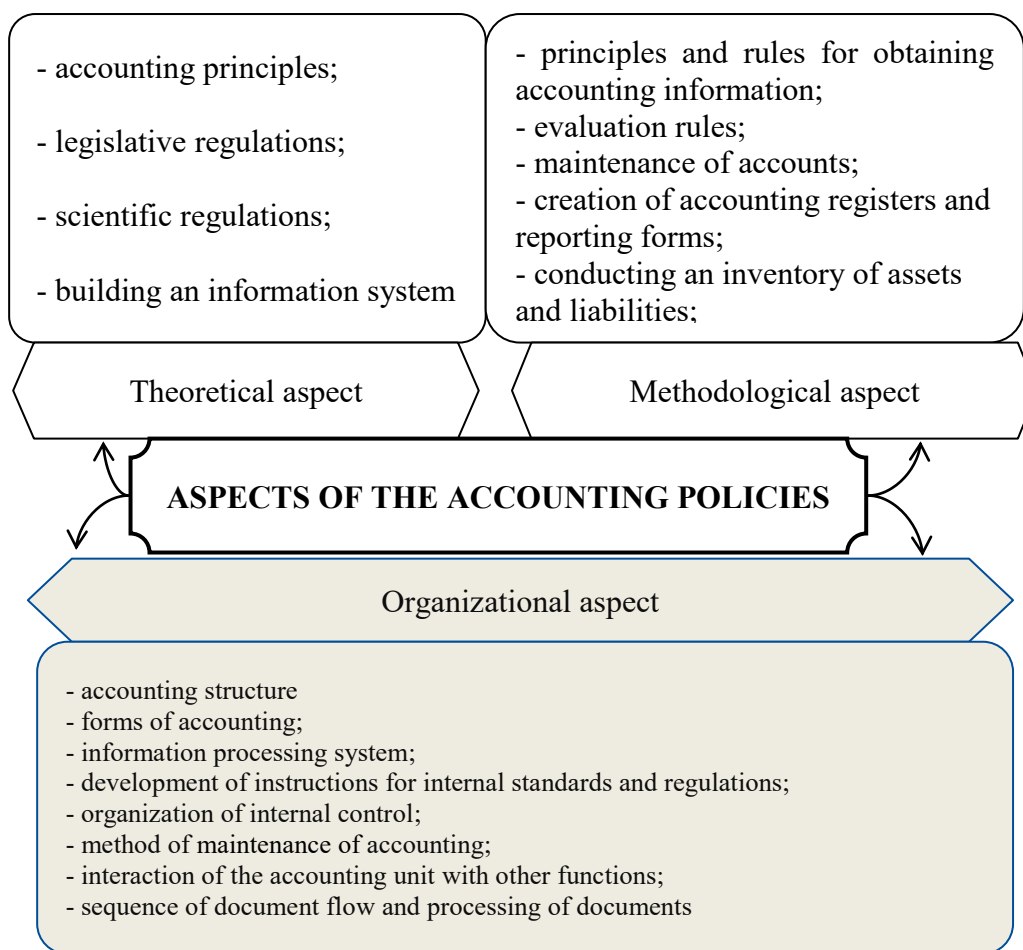


Figure 1. Aspects of the accounting policies of the corporate enterprise

At the same time, the accounting policies at enterprises of different organizational and legal forms will for sure differ, as their aspects are not exhaustive and they take into account the industrial characteristics of each business entity (in our case, the specifics of activities of corporate mining and metallurgical enterprises). The company has the right to expand them, adding other elements.

At the present stage of maturity of the corporation there are accounting problems, incompatibility of accounting and analytical data. The business units of the corporation have the right to independently set up and implement an accounting information system. As a result it may happen that different facts of economic life of

the corporation are accounted on the same account in different structural units of the same corporation.

In the corporation there is a situation when business units interpret provisions of the accounting policies (tax calculations, the National accounting regulation (standards)), IFRS in a different way. The current legislation describes several elements of the accounting policies, for which there are different options of accounting. Let us consider these options for corporations operating in the mining and metallurgical industry.

After analysing the regulatory framework governing accounting procedures, as well as modern scientific and methodological works on the accounting policies, we can identify elements of the accounting policies that significantly affect the accounting and analytical support of corporate management. These elements include the following [13], namely:

1. A method of evaluating stocks and calculating the actual cost of material resources released into production.

The choice of a method of inventory evaluation and calculation of the actual cost of material resources released into production has a significant impact on the informativeness of the value of financial statements from the sale of all types of products of the corporation [14].

When releasing inventories into production, sale and other disposal, inventory evaluation can be performed at:

–weighted average cost – for raw materials, coke, coking coal, semi-finished products, work in progress and finished/ ready-made products;

–selling prices – for goods;

–at identified cost of sale – for other types of inventories.

2. A procedure for recognition and amortization of intangible assets.

In accordance with the Regulation (standard) of accounting 8 "Intangible assets" [15], the amortization of intangible assets should be carried out using the straight-line method.

The useful life of intangible assets should be set upon their receipt, but it should not exceed 20 years. The liquidation value of intangible assets should be taken as such that equals to zero.

It makes sense not to recognize the asset, not to charge depreciation on it but to reflect cost of research, costs of staff training and additional training, costs of advertising and promotion of products in the market in the structure of costs of the reporting period.

The amount of payments for the right to use (royalty) developments, patents should not be recognized as intangible assets or attributed to the costs of the current period.

Thus, the decision on this element of the accounting policies depends on the amount of amortization of intangible assets, which is attributed to the cost of production and, accordingly, affects the value of the corporation's financial statements.

3. An option of accounting costs of production costs [16].

The regulatory framework provides for two options for accounting of production costs for the corporation.

An option with a division of costs of the reporting period into direct and indirect ones with the inclusion of the latter after the distribution to the actual calculation of a unit of production (works, services). The accounting registers reflect the full actual production cost of the calculation object.

An option with the division of costs of the reporting period into production (conditionally variable) and periodic (conditionally constant) ones. The division of costs into conditionally variable and conditionally constant is based on the study of the calculation of the corporation:

- conditionally variable costs include all direct costs, as well as part of the overhead costs, the value of which varies according to the volume of manufactured products;
- conditionally fixed costs include those costs, the value of which varies slightly, regardless of the volume of manufactured products.

At the end of the reporting period conditionally fixed costs are fully written off to reduce revenue from sales of products (works, services). These costs are not included in the product calculation. Not full (limited) actual production cost of the calculation object is formed on accounting accounts.

For the corporation, the second option is the most appropriate, because when dividing conditionally fixed costs by types of product a possibility of clear budgeting and control of financial flows arises.

4. A choice of the option of accounting and payment back of low-value and perishable items (hereinafter referred to as LVPI).

The first option implies writing off the value of 50% of the original cost of LVPI transferred from the warehouse to the operation and the other 50% of the value (excluding the cost of these items at the price of possible use) in case of disposal because of its unworthiness.

The second option is writing-off in the amount of 100% when transferring LVPI from the warehouse into operation. With this option, the cost of low-value and perishable items will be included in the total costs of the corporation in the reporting period, which is more rational than the first option suggests.

The choice of one or another option depends on the number of LVPI and their share in the total assets of the corporation, the intensity of the flow of instruments of labour in circulation, as well as on the objectives of the accounting policies for the reporting year. With the first option of accounting in the case of a significant number of LVPI and their intensive flow, the cost of production is getting slightly reduced, being more evenly distributed over the reporting periods; while with the second option under the same conditions it is getting relatively inflated.

It should be noted that regardless of the option of writing off LVPI, LVPI within one its unit can be written off as they are released into production or operation. However, in the current conditions, the first option is the most appropriate for corporations, which allows the latter to more clearly determine their balance sheet profit.

5. An option of accounting of receivables.

According to the National accounting regulation (standards)) 10 "Receivables" current receivables of corporations for products, goods, works and services are included in the balance sheet at net realizable value [17]. To determine the net realizable value on the balance sheet date, the amount of the provision for doubtful debts is calculated based on the solvency of individual debtors taking into consideration the classification of receivables.

At present, a doubtful debt is receivables of the corporation, which are not paid due set forth by the agreements, and are not secured by appropriate guarantees. Doubtful debts may not include internal receivables between member companies of the corporation, but in some cases the corporation management may decide to include it in the calculations.

The provision for doubtful debts is created on the basis of the results of the inventory of receivables of the corporation conducted at the end of the reporting year. The amount of the provision is determined separately for each doubtful debt depending on the financial condition (solvency) of a debtor and the assessment of the probability of the debt repayment in full or partially.

If by the end of the year following the year of creation of the provision for doubtful debts, this provision will not be used in any part, the unspent amounts must be added to the profit of the relevant year.

Accounting of provisions for doubtful debts is carried out on account 38 "Reserve for doubtful debts", which is an offset, adjustment account and it is used to clarify the evaluation of current receivables.

A method of synthetic accounting for provisions for doubtful debts is not perfect and not entirely clear as the account is not closed and the balance shows bad debts. The amount of return of the formed provision is other operating expenses, but not income.

The formation of provisions would be appropriate to reflect in the debit of the account 79 "Financial results" and in the credit of account 38 "Provision for doubtful debts".

If the debt is repaid in a usual way (debit of the account 31 "Accounts in banks", credit of accounts 36 "Settlements with buyers and customers", 37 "Settlements with various debtors"), the profit booked in the previous reporting period must be added to the profit of the reporting year.

One should pay attention to the method of writing off receivables accumulated for a period of more than five years to the off-balance sheet account 071 "Write-off of bad receivables".

When developing the accounting policies and approving a decision to create provisions for doubtful debts, the corporation management can significantly affect the formation of the final financial performance of its activities.

Financial managers determine the procedure for creating a provision for doubtful debts and annually by January 31 provide the main accounting unit with the calculation of the amount of the provision for the current year.

However, such a regulation, in which corporations are allowed to create a provision for doubtful debts only at the end of the year, leads to a situation when during the year the corporation (e.g., an agro-industrial one), which determines revenue for tax purposes, shows profit and calculates income tax, but has no real funds to pay it.

One of the ways to get rid of doubtful debts is a more balanced approach in determining the customer solvency. For a corporation in which the consumer is mainly wholesaling enterprises, determining the customer solvency causes considerable difficulties. This is why another way to get rid of doubtful debts is to find unaffiliated (i.e., debt-free customers) customers that can be required to pay through arbitration.

6. The procedure for evaluating payables.

The option in which liabilities are recorded in accounting excluding interest to be paid is traditional for domestic accounting.

In modern conditions, when corporations have to pay significant amounts of interest on their obligations, such an accounting procedure can significantly distort the real indicators and undermine the reliability of reflection of its financial performance [18]. Therefore, it is advisable to show the indebtedness on the received loans taking into account those that are subject to repayment at the end of the reporting period before interest payment.

Discussion. Thus, using this element of the accounting policies, the corporation can influence the formation of its costs, and hence the formation of financial statements in different reporting periods. The decision to include interest on loans obtained from member banks of the corporation in the calculation is made for each loan separately.

As stated above, the choice of the accounting option for each of the above elements of the accounting policies may have an impact on the consolidated financial statements of the corporation. It is possible to determine which of the elements has a bigger influence and which has a smaller one based on the factor analysis of the financial indicators of a particular corporation, this is why the study does not contain ranking of elements according to their degree of importance.

Thus, the mentioned aspects of the accounting policies significantly affect the effectiveness of the corporation, the reliability of accounting and analytical information and the operational efficiency of management decisions, but it also depends on the methodological support of the analysis.

A separate problematic issue is a somewhat formal approach to the process of forming the accounting policies of enterprises. Given the trends of recent years regarding bringing in line the system of tax and accounting legislation, the accounting policies cease to play a superficial role in the formation of reliable financial information and in the preparation of reports on tax calculations with the budget.

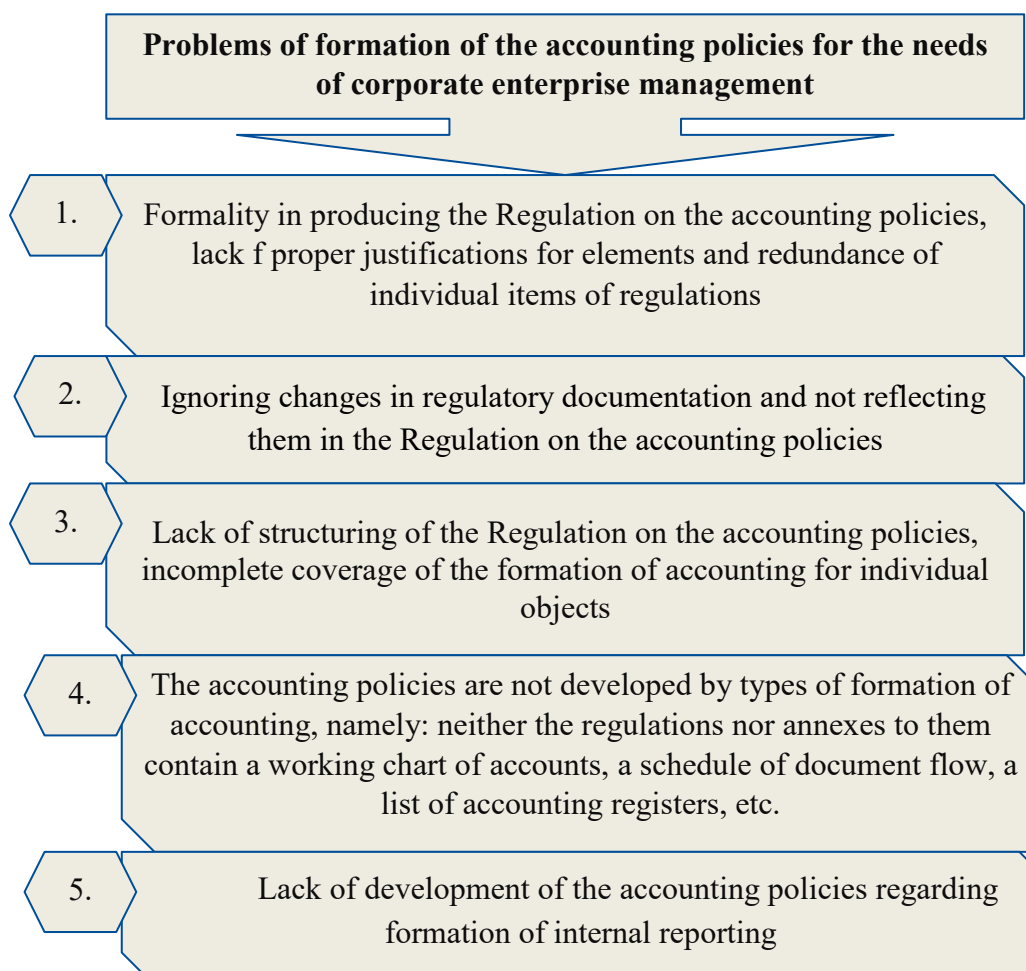


Figure 2. Problems of formation of the accounting policies for the needs of corporate enterprise management

If the importance of the accounting policies is underestimated by the manager who is responsible for the organization of accounting at the enterprise, negative consequences of a formal approach to development of the accounting policies, appliance of their certain elements may take place, and in turn, it will affect not only the main indicators of the financial standing, but it will also significantly affect the processes of tax planning, budgeting, pricing, formation of financial statements and, as a result, the accuracy of the calculation of taxes payable to the budget.

The said problems must be taken into account when developing measures to optimize the accounting policies of enterprises, and eliminate these problems in the formation of the accounting policies at the enterprise will contribute to the validity of accounting items in order to make sound management decisions by users of financial statements.

To prevent problems with the formation of the accounting policies for management purposes, we can identify the following areas of influence:

1. The choice of information base for producing the accounting policies is the study of available sources regarding maintenance of accounting and submitting reports.

2. Identification of users of accounting information, i.e., of internal users (the company management, the accounting unit staff), and external users (government regulatory authorities, financial institutions and organizations).

3. Justification of the factors of influence that arise during drawing up the accounting policies including external and internal ones.

4. Generalization of the scope of the accounting policies.

Pylypenko O.I. [2, p. 157] notes that the unified corporate accounting policies are an important means thanks to which there is a reasonable combination of government regulation and corporate initiative in matters of organization and maintenance of accounting, which allows to timely identify positive and negative social and economic results of the corporation's activities and their outcomes, to balance the interests of all stakeholders of corporate relations. The unified corporate accounting policies reflect effective methods of interaction between the government, market and corporate entities, as well as help identify "bottlenecks", provisions and economic benefits from business transactions and their reflection in accounting using relevant alternative methods and ways selected by the corporation.

For the needs of corporate governance the accounting policies provide for maximum number of alternative options. Therefore, we believe that for the management purposes the accounting policies at a corporate enterprise should include only those methods of accounting that are necessary for adequate and effective management decisions.

The ability of the enterprise to influence the efficiency of the use of its resources and financial and economic indicators of its activity also depends on the extent to which the accounting policies are economically justified [19, p. 5].

The impact of elements of the accounting policies on the reporting indicators of the performance of corporate enterprises is manifested in different ways: through the value of assets and liabilities, the elements of the accounting policies selected by the enterprise affect the indicators of the Balance Sheet and the Annual financial statements notes; through the amount of income, expenses, and as a result through financial performance (net profit and retained earnings) the elements of the accounting policies selected by the enterprise affect the indicators of the Balance Sheet, the Statement of Financial Performance, the Equity Statement and the Annual financial statements notes.

The objects of the accounting policies that have the greatest impact on indicators of the financial statements are as follows:

1) accounting of fixed assets (the procedure for recognizing fixed assets; recognition of their useful lives; identifying their liquidation value; choice of a depreciation method);

2) inventory accounting (choice of an inventory disposal method);

3) accounting of receivables (choice of a method for determining the estimate of the provision for doubtful debts);

4) accounting of items ensuring subsequent expenses and payments (calculation of the provisions that provide for further expenses and payments);

5) cost accounting (establishing a list and structure of items for calculating the production cost of products).

The economically justified accounting policies allow the enterprise to influence the efficiency of its resources and financial and economic performance.

Conclusions. Thus, the main tasks of the accounting policies of the corporation are as follows: to ensure a clear understanding of indicators of the financial statements by users; enabling users to assess effects of different accounting alternatives; accurate interpretation and comparability of financial statements of different companies that use alternative accounting methods.

Author contributions. The authors contributed equally.

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CHAPTER 3

MODERN MANAGEMENT TECHNOLOGIES

RISK MANAGEMENT AND COMPLIANCE CONTROL AT ENTERPRISES: THEORETICAL BASIS

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Abstract. *The article provides a theoretical analysis of the organization of security activities in enterprises, which is proposed to mean activities to ensure the most efficient use of available resources to protect their interests from the effects of internal and external threats, as well as adaptation to existing conditions with minimal losses. Theoretical bases of essence of safety activity of the enterprises as bases for maintenance of effective functioning of the enterprises in the conditions of competition are substantiated. It is proposed to position security activities as a management technology in the enterprise, which contributes to the achievement of strategy and a high level of competitiveness in the market. Currently, businesses face an increasing number of risks and threats that arise from a significant level of uncertainty in the environment, as well as illegal intentional or unintentional actions of employees. The impact of such threats has significant negative consequences on the results of enterprises, their image, market position and so on. Therefore, special attention is paid to the details of the process of risk management and compliance control in order to achieve a high level of economic security of the enterprise. Using methods of analysis, scientific abstraction, formal logic and logical generalization to determine the essence of the main categories in the field of security activities of enterprises and risk management. A comparison of risk management and a comprehensive enterprise risk management system is made. The advantages of using a comprehensive risk management system are analyzed. The ERM concept is characterized as an approach to enterprise management that integrates strategic planning, operations management and internal control and is based on risk accounting. Comparisons were made and differences were established between compliance control and internal audit at the enterprise.*

Keywords: risks, threats, enterprise management, security activities, economic security of the enterprise, risk management, compliance control.

JEL Classification J11, J21, M21, M5

Formulas: 0; **fig.:** 1; **tabl.:** 1; **bibl.:** 17

Introduction. Security activities are activities to ensure the most efficient use of available resources in order to protect their own interests from the impact of threats to the internal and external environment, as well as adaptation to existing conditions with minimal losses. We consider it expedient to use such wording, because it allows you to reflect the security activities in terms of management technology, rather than a set of individual actions.

The author's approach to the formation of a model of security activities of the enterprise is presented in Fig. 1.

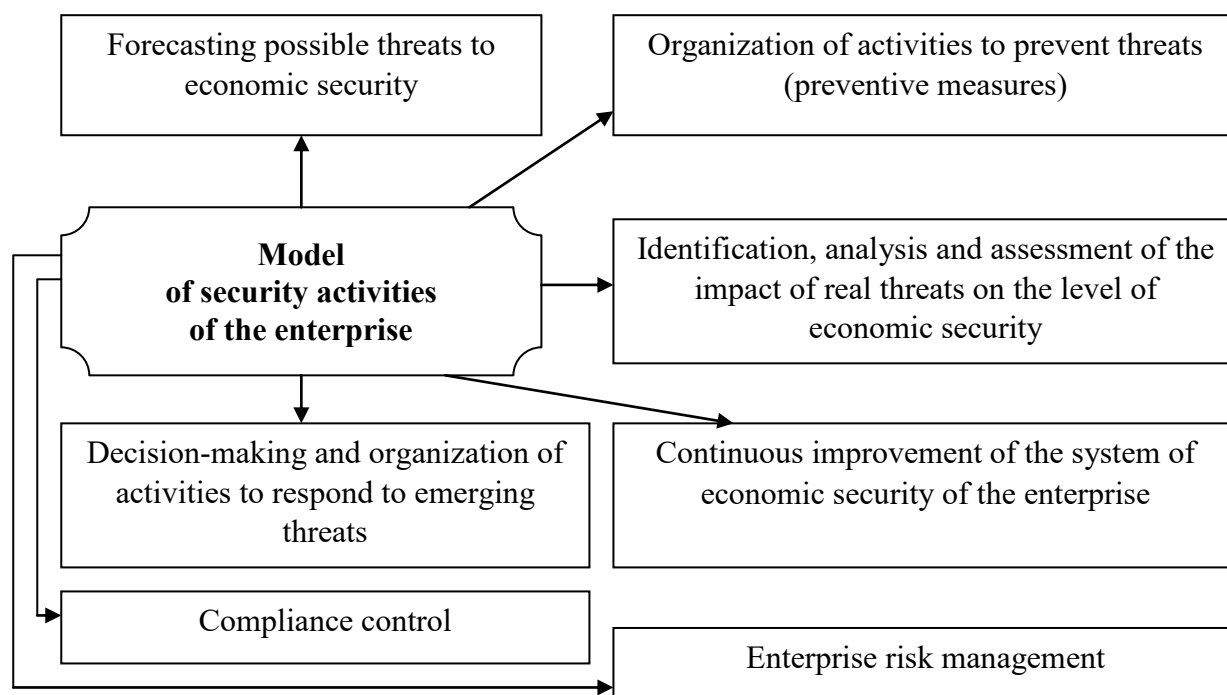


Figure 1. Model of security activities of the enterprise

Source: author's development based on [1, 2]

Analyzing fig. 1. we see that 6 functions of security activity out of 7 belong to the detection, prevention, forecasting of impact, minimization of the consequences of destabilizing factors, which include risks, threats and dangers.

In [3], Baker Tilly expert Roman Grinevsky notes that "if a company does not know and manage its risks, it knows nothing about its future." Therefore, the priority for each company is to develop its own, adapted to the specifics of the activity, the process of identifying risks and threats, which will be the first step to effectively manage them to help achieve the goal of the activity.

Therefore, special attention should be paid to the study of the features of the process of risk and threat management to increase the level of economic security of enterprises.

Literature review. To understand the essence of risks, it is advisable to agree with T.Yu. Feofilova, who notes that negative influences are a set of all influences that can damage the economic system of a certain level with varying degrees of probability [4]. The scientist believes that the basis of the grouping of negative impacts is the probability of the moment when the economy will be caused real damage. She further clarifies that "if we quantify the possibility of damage from 0 to 1, the risk is in the range from 0.3 to 0.5, the threat - from 0.7 to 0.9. The range from 0.5 to 0.7 will be a risk that creates a threat, ie such an impact has no clear "intention" to cause harm, but this trend is clearly visible "[4]. It is no less important that T.Yu. Feofilova gives the concept of negative impact assessment: "negative impact assessment is a process by which the compliance of the expected results is determined - damage to the economic system, specific forms and intensity of the impact on the economic security of negative impacts. Algorithm for assessing negative impacts provides:

“First, the identification of negative impacts;

secondly, determining changes in the strength of the impact of negative impacts on economic security in the period;

third, identifying possible changes in the economic system adequate to the effects of negative influences "[4].

There is a belief among scientists [5-7] that risks are sources of threats; so N.N. Poida-Nosyk [8] believes that this statement is true for the financial security sector of businesses, because it is the risks that generate the potential for harm to the business entity.

Correlates the concept of "risk" and "threat" K. Goryacheva [9], who formulated the following statements:

- risk in relation to the threat - the primary category, while the threat - the secondary and arises from the risk;

- risk - a category of general, non-specific, it is something that has not yet been identified, a threat - is something that has been identified, ie a specific category;

- risk is always present when there is financial activity, while the threat - no, it may or may not be, and arises only under certain conditions;

- the relationship between risk levels and financial security is inverse: the higher the level of financial risk, the lower the level of financial security and vice versa.

Aims. Investigate the features of risk management and compliance control in order to identify areas of security to improve the economic security of enterprises.

Methods. The main research methods were scientific abstraction, formal logic and logical generalization to determine the essence of the main categories in the field of security activities of enterprises and risk management.

Results. Identifying or identifying risks is the first and most important step in the risk management process. If an error was made in identifying a certain risk, ie the risk was identified inaccurately, incorrectly or was not taken into account at all, then other steps in risk management will not be implemented in relation to this risk. This means that it will not be possible to analyze this risk and minimize losses from it.

In order to manage risks, an organization must know what risks it may face in its activities and be able to assess them. Identifying risks is the first step in creating an organization's risk profile. There is no single correct option for compiling a risk profile of the organization, but the availability and application of this document in the enterprise is crucial for effective risk management. Risk identification can be divided into two separate stages:

- primary risk identification - for organizations that have not previously identified their risks in a structured way, as well as for new organizations, a new project or activity within the organization;

- continuous identification of risks, which is necessary to identify new risks, previously forgotten, as well as changes in existing risks, or risks that existed before, but now become relevant to the organization [10].

The most common methods of risk identification are: brainstorming, Delphi method, SWOT-analysis, checklists, the method of building flowcharts.

After identifying the risks, an important step is to assess the level of their impact. The level of impact can be determined both by quantitative methods (expert evaluation, statistical methods, analogy methods, etc.) and qualitative methods, the peculiarity of which is manifested in identifying sources and causes of risks, identifying types of risks and areas of influence, analysis of potential negative impacts or practical benefits, etc. . The most common method of qualitative risk assessment is the method of expert assessments.

The risk management process in the enterprise is multicomponent. Until recently, leading researchers and professional managers used risk management to identify and overcome the effects of risks and threats to the enterprise. But this approach loses its position in favor of a comprehensive system of enterprise risk management (ERM - Enterprise risk management). The differences between risk management and integrated enterprise risk management system (ERM) are given in table. 1.

Table 1. Differences between risk management and integrated enterprise risk management system (ERM)

Risk management	Integrated enterprise risk management system (ERM)
1. Risk management by individual fragments - each department at the enterprise guided by its own functions carries out risk management. 2. Risk management by episodes - risk management occurs when there is an awareness of its need. 3. Limited risk management - is carried out in relation to financial risks and risks to be insured	1. Integrated risk management - the process of risk management is organized and coordinated by senior management, the responsibilities of each employee include the functions of risk management. 2. The risk management process is continuous. 3. Extended risk management - all risks in the process of enterprise activity are taken into account.

Source: author's development based on [11].

An integrated enterprise risk management system is a concept that contains the methods and processes used by organizations to manage the risks and opportunities associated with achieving their goals. ERM forms the basis of risk management, in particular, determines the ability to identify events or circumstances that can affect the achievement of enterprise goals, assess the likelihood of adverse effects or benefits, form a response strategy, as well as to monitor the level of efficiency. This work protects and creates value for stakeholders, including owners, employees, customers, regulators and society at large. The concept of ERM can also be described as a risk-based approach to enterprise management that integrates strategic planning, operations management and internal control [12].

ERM focuses on risk management for the company as a whole. At the same time, attention is paid to all risks that may arise in the activities of the enterprise at different stages, regardless of the place of origin, features and control. The advantages of using ERM are the ability to:

- to build a single risk management strategy for the company taking into account the level of riskiness of the company's managers;
- optimize the level of subjectivity of decisions;

- to form a unified methodology for assessing the level of risk impact;
- set thresholds for assessing the level of risk impact;
- to form an integrated risk indicator based on the composition of the impact of all identified and assessed risks;
- increase the level of confidence in the stability of the level of activity of top managers and owners;
- improve the quality of corporate governance and the quality of decisions;
- increase the efficiency of internal control and internal audit systems;
- will lead to an increase or stabilization of the value of shares due to more positive expectations of investors;
- ensure compliance with the requirements of regulators when placing securities [11].

Consider in more detail the process of compliance control in enterprises from the standpoint of the structural element of security activities.

International Compliance Association compliance is ensuring compliance with established requirements and standards. Compliance is interpreted by domestic scholars from different positions, so professors Pererva PG, Kotsyski D. believe that the ideology of "compliance" calls for compliance with internal policies and procedures of the company and is implemented by creating conditions in which persons representing the organization will act in accordance with high professional and ethical standards [13].

The primary purpose of compliance control is to minimize an entity's risks to events that could cause not only financial loss but also loss of trust by supervisors, shareholders, investors, and customers.

In today's business world, the leading place in the field of risk management belongs to risks that are difficult to quantify, they include, in particular:

- operational risk,
- risk of loss of image and business reputation,
- risks caused by political and legal changes in the country or region,
- risk of force majeure,
- risk of conflict of interest,
- the risk of activities related to the prevention of participation, which contradicts the requirements of current legislation (financing of illegal activities, including terrorism, money laundering through securities transactions, money laundering for the purpose of introducing them into financial traffic, the use of prohibited practices doing business) [14].

In summary, you can group compliance risks into the following categories:

- reputational: publication of negative information about the organization or its employees, shareholders, members of management bodies, affiliates in the media;
- legal: non-compliance with the law, which is the reason for prosecution by supervisory authorities;
- operational: violation of internal rules and documents of the organization, which caused losses; non-compliance by affiliated persons and shareholders with the legislation, constituent and internal documents of the economic entity.

Important for the effective operation of the enterprise is the implementation of corporate compliance. Corporate compliance is a set of procedures (processes) in the company that regulate the behavior of staff in compliance with legal and ethical standards [15]. These procedures include:

- 1) combating corruption, money laundering and terrorist financing;
- 2) regulation of the process of accepting and giving gifts, invitations to events;
- 3) notification of violation of ethical standards;
- 4) regulation of conflicts of interest;
- 5) non-disclosure of data related to confidential information in the organization, as well as the organization of storage and compliance with certain standards in the processing of personal data, etc. [15];
- 6) counteraction to violation of the ecological legislation;
- 7) regulation of the processes of safety and minimization of injuries in the workplace;
- 8) compliance with the principles of corporate social responsibility;
- 9) compliance with the proper quality of products, provision of services;
- 10) prevention of operational risks, etc.

When distributing compliance control functions between different departments, it is necessary to provide a mechanism for cooperation between departments and managers of the compliance control function as a whole. The distribution of compliance functions between services can be recommended as follows:

- the function of internal audit is an independent audit of the internal control system;
- the function of the compliance control structure (or enterprise security service) is to organize the current control of compliance risk management procedures.

Another important difference is the time aspect of the object of control and the compliance of the unit. The role of compliance control as an element of risk management is to coordinate compliance risk control at the level of individual functional units and aggregate the results of compliance control in the assessment of aggregate risk. Compliance monitoring works in a precautionary mode, while auditors analyze what has happened and whether it meets the requirements at the moment. It is worth emphasizing that, despite the similar purpose of internal control and compliance control, they can not be performed by the same unit [16].

Discussion. It can be noted that many Ukrainian companies consider internal control and compliance not too important for successful business, so they do not want to spend time or money on compliance control. At the same time, Western firms in practice demonstrate that competent compliance control is able to generate added value. Control in the field of compliance is customer loyalty, interest and trust of shareholders, trust of society as a whole. When entering global capital markets, the presence of a compliance function in the organization is viewed in a positive light by both international regulators and investment financial institutions, and institutional investors. For potential investors, effective compliance control increases the level of investment attractiveness of the organization. Moreover, the current legislation of the

United States and the United Kingdom requires foreign partners to have an effective compliance unit within the organization.

Conclusion. Thus, the theoretical foundations of the essence of security activities of enterprises as a basis for ensuring the effective functioning of business in a highly competitive environment. It is proposed to position security activities as a management technology in the enterprise, which contributes to the achievement of strategy and a high level of competitiveness in the market.

It is determined that the basis of security activities should be upavlin measures to identify, prevent, minimize the impact, eliminate the consequences of risks and threats to the activities of enterprises.

Particular attention is paid to the benefits of using a comprehensive risk management system and compliance control in the process of enterprise activity.

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THE IMPACT OF FINANCIAL FRAUD ON THE ECONOMIC SECURITY OF CONSTRUCTION ENTERPRISES

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Abstract. *The article is devoted to the results of a survey of owners of construction enterprises on the impact of financial fraud on the economic security of such enterprises. The purpose of the article is to establish the impact of financial fraud on the economic security of construction enterprises based on a survey of owners of such enterprises. In the process of preparing the article, the following methods were used: the method of questionnaires for the receipt; graphical method - to display the results of the survey; methods of analysis and synthesis; method of generalization of research results. The results showed that the majority of respondents are owners of limited liability companies for which the issues of financial fraud are quite relevant and important. The main way to detect financial fraud in the surveyed companies is an internal audit, which allows you to leave all issues closed from information leakage. Most cases of financial fraud among hired top managers and middle managers. Cases of financial fraud are most often reported to employees by employees, but also by buyers, sellers and competitors. It has also been found that in most cases, whistleblowers report cases of financial fraud directly to business owners rather than management. However, there are also cases of informing law enforcement agencies and the public through the media. According to the results of the survey, the owners of construction enterprises should: pay great attention to working with employees to inform about suspected financial fraud or suspicion of it; conduct an internal audit to prevent financial fraud among employees; create an economic security service to investigate cases of financial fraud.*

Keywords: *financial fraud, business owners, economic security of enterprises, construction enterprises.*

JEL Classification: L53, L70, L74, M42, M48

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Introduction. In the current conditions of economic development of Ukraine, cases of financial fraud in the civil service and at various enterprises, including construction, are not uncommon. The identified cases have a negative impact on the reputation of the company and on all participants in construction relations. In addition, financial fraud in the construction industry has a serious impact on the development of the economy as a whole, as well as on the economic security of construction companies.

Literature review. The issues of ensuring the economic security of enterprises, including the construction industry, have been studied by foreign and domestic scientists, among whom are: V. Alkema, V. Andrienko [1], A. Balanda, O. Bielenkova [2], Z. Zhivko, I. Mihus [3], O. Molodid [4], O. Lyashenko, L. Shemayeva and others.

Despite this, the impact of financial fraud on the economic security of construction companies has not been studied in sufficient depth.

Aims. The purpose of the article is to establish the impact of financial fraud on the economic security of construction companies based on a survey of owners of such enterprises.

Methods. In the process of preparing the article, the following methods were used: the method of questionnaires for the receipt; graphical method - to display the results of the survey; methods of analysis and synthesis; method of generalization of research results.

Results. In the period from January to September 2020, we conducted a survey of owners of construction companies of various forms of ownership (fig. 1).

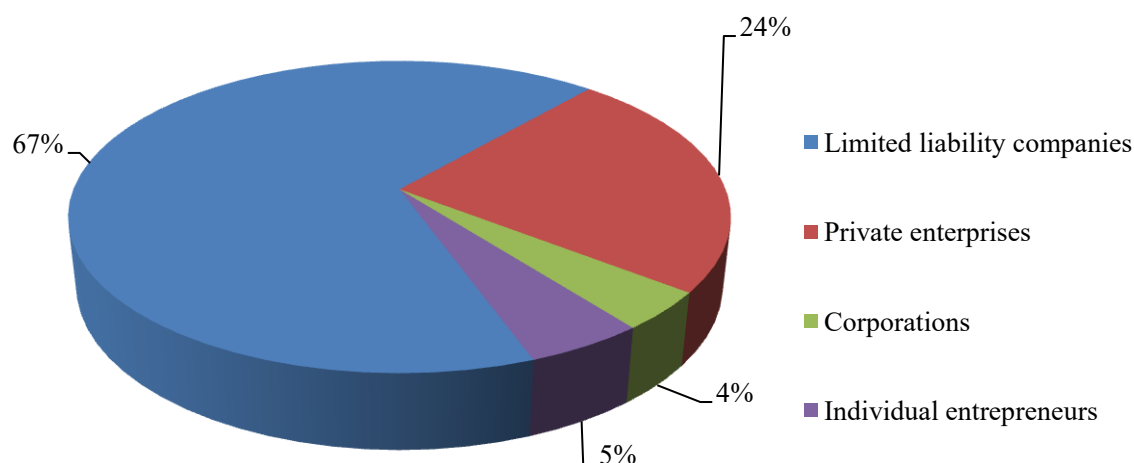


Figure 1. Structure of construction enterprises whose representatives participated in the survey, %

Source: compiled by the author on the basis of a survey of construction enterprises owners

The study analyzed ways to detect different types of financial fraud. Detection is an important concept in fraud investigation because the speed with which fraud is detected – as well as the way it is detected – can have a significant impact on the size of the fraud. It is also key to fraud prevention because organizations can take steps to improve how they detect fraud, which in turn increases the staff's perception that fraud will be detected and might help deter future misconduct. Our data revealed several notable trends relating to how fraud is initially detected, when it is detected, and who detects it, all of which can help fraud examiners improve the effectiveness of fraud detection and prevention at their organizations.

The foundation to effective detection of occupational fraud is knowing the most common methods by which fraud is discovered. Despite the increasingly sophisticated fraud detection techniques available to organizations, tips were the most common way occupational frauds were discovered in our study by a wide margin, as they have been in every one of our previous reports.

Typically, there are the following sources of information to detect financial fraud (figure 2).

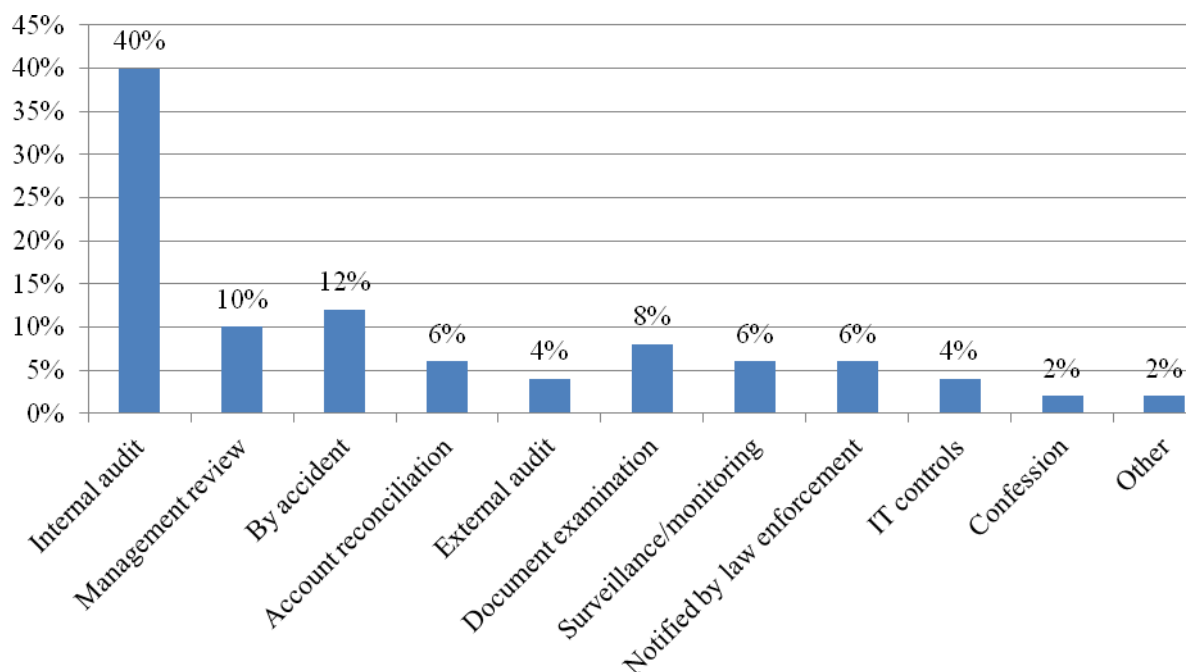


Figure 2. The main sources of information to detect financial fraud in construction enterprises

Source: compiled by the author on the basis of a survey of construction enterprises owners

As shown in Figure 2, more than 40% of cases in our study were uncovered by tips, which is almost three times as many cases as the next-most-common detection method. Therefore, processes to cultivate and thoroughly evaluate tips should be a priority for fraud examiners.

The following answers were received to questions about those who committed or attempted to commit financial fraud (figure 3).

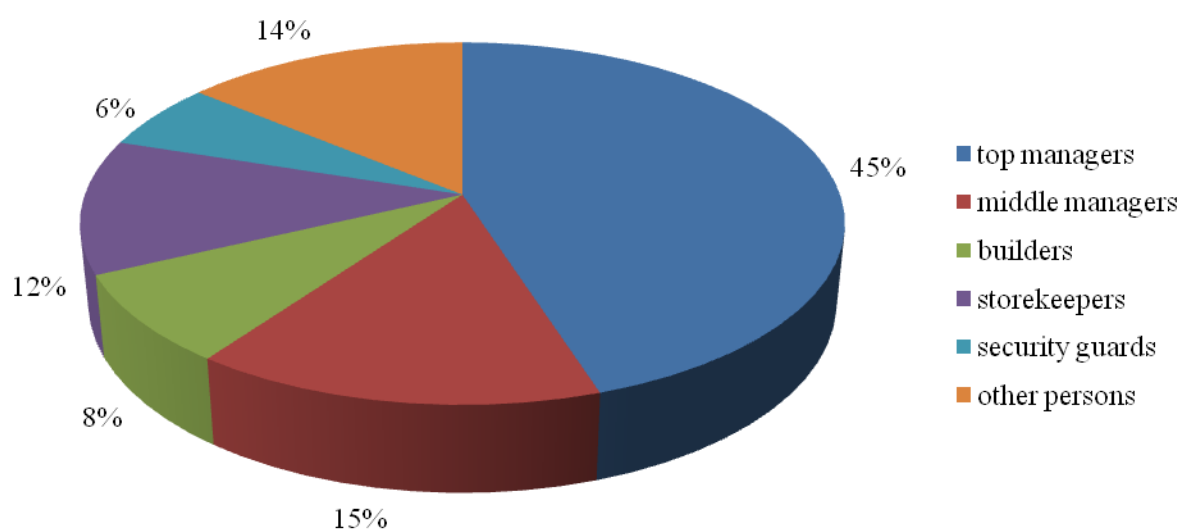


Figure 3. The main persons who committed or attempted to commit financial fraud in construction enterprises

Source: compiled by the author on the basis of a survey of construction enterprises owners

Half of all tips came from employees, while a substantial number of tips came from outside parties, including customers, vendors, and competitors. These findings demonstrate that anti-fraud education and the communication of designated reporting mechanisms should target not only internal staff, but external parties as well (fig. 4).

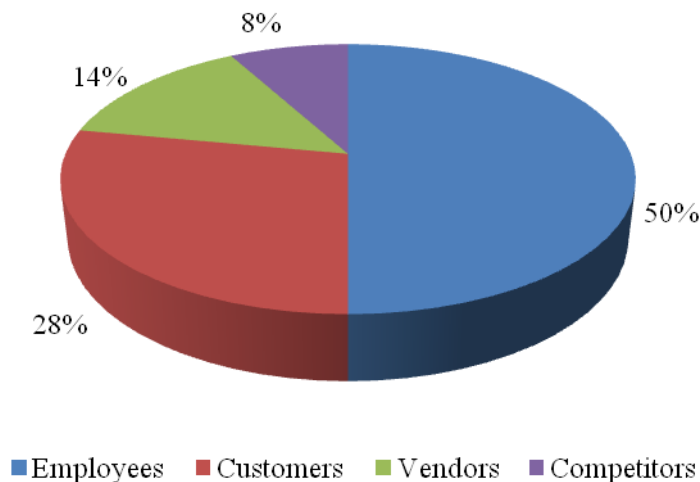


Figure 4. Internal and external entities that report financial fraud in construction enterprises

Source: compiled by the author on the basis of a survey of construction enterprises owners

The question was also asked about who exactly received reports of suspected financial fraud at construction companies (figure 5).

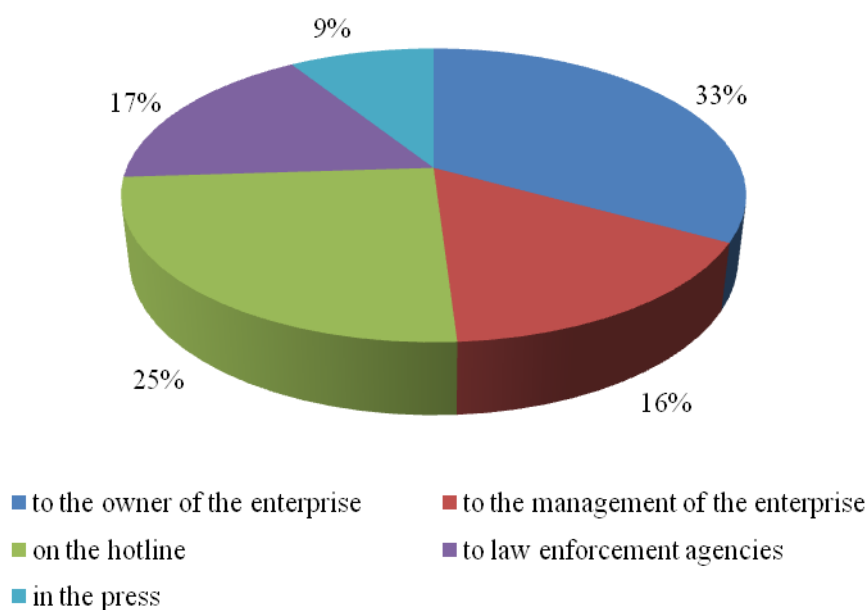


Figure 5. Information channels that were used to transmit data on financial fraudsters in construction enterprises

Source: compiled by the author on the basis of a survey of construction enterprises owners

In 33% of cases where a tip was made, the whistleblowers did not use a formal reporting mechanism. Instead, they reported their suspicions directly to supervisors, investigators, or other interested persons. Identifying how often whistleblowers tend to report fraud to various parties can help organizations answer several important questions.

Discussion. How likely are whistleblowers to report outside of the organization? How should complaints lodged outside a formal reporting mechanism be recorded and escalated? Whistleblowers are most likely to report fraud to their direct supervisors, yet many will go to other parties, such as fraud investigation teams, human resources, or their coworkers. Therefore, it is important to provide all staff with guidance on how fraud allegations should be responded to and escalated.

It is also noteworthy that 17% of reports were made directly to law enforcement or regulators, instead of internally, which is something most organizations would hope to avoid. This illustrates the importance of training staff on how and why they should report fraud internally.

Conclusion. The article is devoted to the results of a survey of owners of construction enterprises on the impact of financial fraud on the economic security of such enterprises.

The results showed that the majority of respondents are owners of limited liability companies for which the issues of financial fraud are quite relevant and important. The main way to detect financial fraud in the surveyed companies is an internal audit, which allows you to leave all issues closed from information leakage. Most cases of financial fraud among hired top managers and middle managers. Cases of financial fraud are most often reported to employees by employees, but also by buyers, sellers and competitors. It has also been found that in most cases, whistleblowers report cases of financial fraud directly to business owners rather than management. However, there are also cases of informing law enforcement agencies and the public through the media. According to the results of the survey, the owners of construction enterprises should: pay great attention to working with employees to inform about suspected financial fraud or suspicion of it; conduct an internal audit to prevent financial fraud among employees; create an economic security service to investigate cases of financial fraud.

According to the results of the survey, the owners of construction companies should:

- pay great attention to working with employees to inform about suspected financial fraud or suspicion of it;
- conduct an internal audit to prevent financial fraud among employees;
- create an economic security service to investigate cases of financial fraud.

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THE MAIN AREAS OF THE BLOCKCHAIN TECHNOLOGY USING IN EDUCATIONAL MANAGEMENT

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Abstract. *The article is devoted to the study of scientific research of scientists from around the world on the use of blockchain technologies in education. The purpose of the article is to systematize the areas of possible use of blockchain technologies in the activities of universities. In the process of preparation of the article the methods of analysis and synthesis, the method of generalization and the comparative method were used. As a result of the research, the main directions of using blockchain technologies in education were systematized: to check the level of accreditation of the university; to identify students at the university; for the organization of the educational process; for lifelong learning; to protect intellectual property; to pay for tuition; to provide loans to students; to verify the authenticity of the issued document on education; for professional education of adults; to rank universities when they receive grant funding. We believe that blockchain technologies in education should use only open sources of information, which will allow them to be used by all stakeholders. At the same time, it is necessary to comply with all the necessary rules for the protection of personal data provided by the laws of different countries. The combination of openness of information and protection of personal data is a major problem that currently faces the possibility of more active use of blockchain technology in education.*

Keywords: education, education management, blockchain technologies, blockchain technologies in education, diploma, financing, rating.

JEL Classification: A20, A29, C99, I23

Formulas: 0; **fig.:** 1; **tabl.:** 0; **bibl.:** 6

Introduction. In the conditions of rapid digitalization of the economy, more and more attention is paid to the study of this issue in education as well. Most universities are actively implementing elements of distance and online education, moving to electronic document management and digitalization of educational processes.

Special attention began to be paid to the use of Blockchain technology in education management.

Literature review. Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system. A blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain. Each block in the chain contains a number of transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant's ledger. The decentralised database managed by multiple participants is known as Distributed Ledger Technology (DLT). Blockchain is a type of DLT in which transactions are recorded with an immutable cryptographic signature called a hash [1].

An important stage in the integration of blockchain into the educational management system was the Blockchain in Education report [2], prepared at the end of 2017 by the Joint Research Center (JRC) on the instructions of the European Commission. The report analyzes the feasibility, problems, benefits and risks of using

blockchain in schools and universities, and presents scenarios for using blockchain to solve current and future problems in the education sector.

The Hafiza Yumna, Muhammad Murad Khan, Maria Ikram & Sabahat Ilyas in «Use of Blockchain in Education: A Systematic Literature Review» have adopted a systematic literature review approach for the identification and the extraction of relevant information from the shortlisted studies. This study describes existing issues in three aspects physical, digital and financial. The results of the analysis shows that the manipulation risk, difficulty in verification and exchanging record between institutions are the major issues faced by the educational institutions [3].

The Preeti Bhaskar, Chandan Kumar Tiwari & Amit Joshi in «Blockchain in education management: present and future applications» have provided a systematic literature review on blockchain technology in education and offered a detailed understanding of the present scenario in terms of benefits, barriers, present blockchain technology application and future areas where blockchain technology can be implemented in the other fields of education [4].

Among the first blockchain-based systems, which moved from the prototype stage to commercial products, some refer to diplomas. These systems can be found, for example, at MIT, UT Austin, and the University of Nicosia (Cyprus), where digital diplomas are being issued to students.

In management, the value of blockchain technologies is determined by the fact that it allows you to ensure absolute reliability in any relationship and type of human activity.

Aims. The purpose of the article is to systematize the areas of possible use of blockchain technologies in the activities of universities.

Methods. In the process of preparation of the article the methods of analysis and synthesis, the method of generalization and the comparative method were used.

Results. The study of the works of scientists dealing with the use of blockchain technology in education, allowed us to identify the following areas of its use (Figure 1).

1. Blockchain technologies using to verify university accreditation at all levels. In this case, not only will educational organizations use digital certificates in the manner described in the previous case, but the accredited organizations themselves will also place their own digital signatures in Blockchain. This will verify not only that student A has actually received a certificate from University B, but also that this University B has been accredited by organization C [6]. Such a system can be used to ensure the system of state accreditation, or to check the availability of specific quality certificates in the educational organization, for example, the NAME certificate in Ukraine or another institution.

2. Blockchain technologies using of verified personal data to identify students in universities. After students submit their personal data to the university's admissions committee, they will receive their university ID. The use of biometric identification on smartphones, in combination with these certificates will allow you to identify those who study in any structural unit of the university, such as a library,

gym, cafeteria, dormitory and more. Each of these services will be able to identify students without requiring or storing unnecessary personal information.

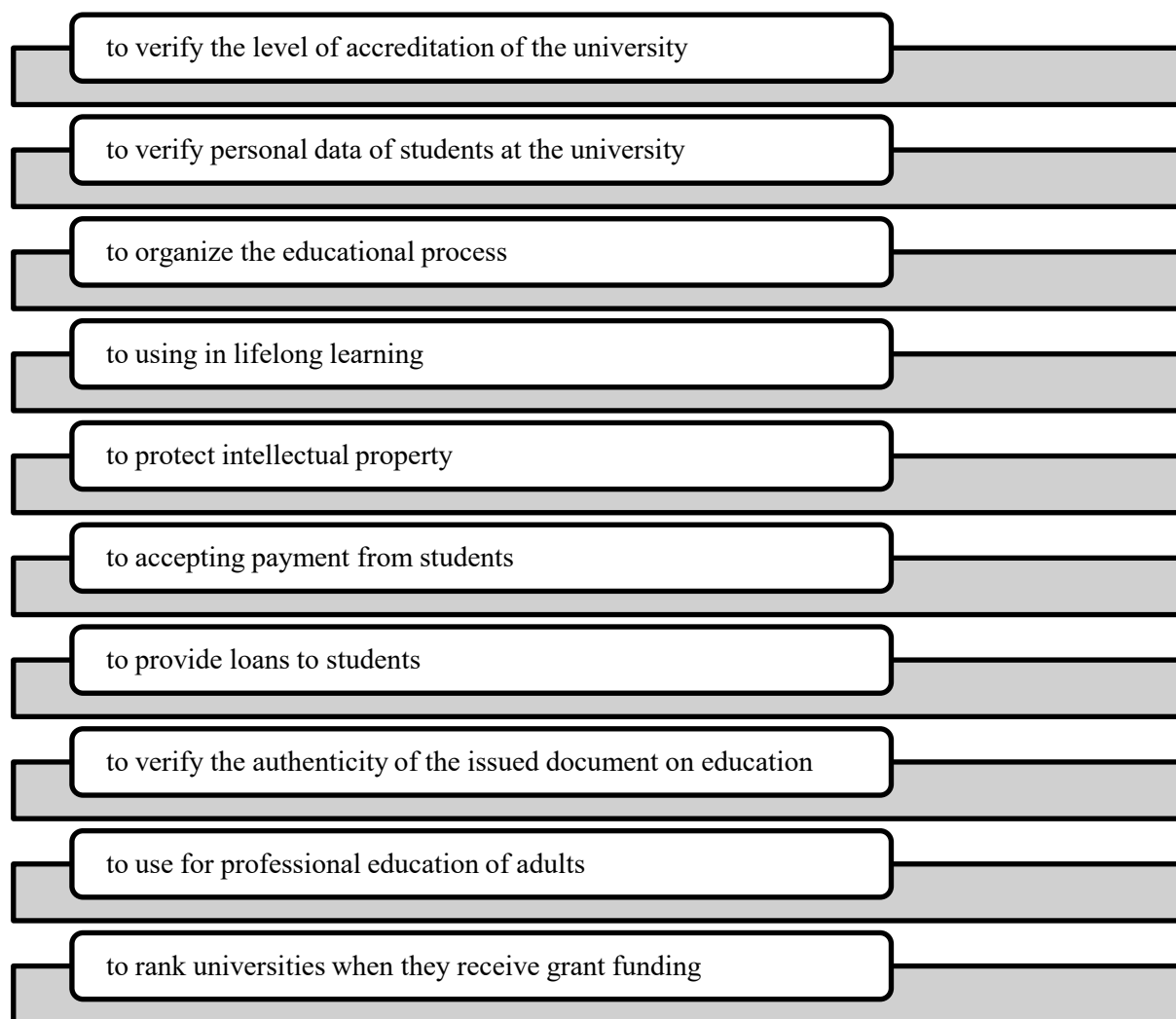


Figure 1. The areas of blockchain technologies using in education

Source: developed by the author on the basis of [1-6]

3. Blockchain technologies using to organize the educational process. Under this scenario, educational organizations that use the ECTS credit system to monitor the learning process will use Blockchain to enroll in individual disciplines (modules), thus supporting the international mobility of students.

4. Blockchain technologies using for lifelong learning. According to this direction, students will keep their certificates of training obtained from any source: formal or informal, and to instantly verify the authenticity of these documents will be used Blockchain technology. This will allow students to take an active part in various volunteer and other informal events, scientific conferences and professional seminars, participation in which can be credited as part of the training.

5. Blockchain technologies using to protect intellectual property. In accordance with this area, blockchain technologies can be used to identify authorship of scientific papers and prevent plagiarism in student work, graduate dissertations,

and in the works of teachers. It is blockchain technology that will be able to certify the date, place of publication, as well as authorship of it, as well as references to the document as a whole and its individual parts. To do this, a blockchain of publicly available publications and a record of the links they used will be created.

The same system can be used to track and reuse intellectual property created by an institution and to enforce copyright.

6. Blockchain technologies using to accepting payments from students. According to this direction, students will provide tuition fees through Blockchain cryptocurrency.

7. Providing student funding through Blockchain in the form of vouchers (loans). According to this direction, state (or sponsorship) tuition funding will be issued to students in the form of "vouchers" through Blockchain. Vouchers can be programmed to allocate tranches of funding to a student or educational organization based on certain performance criteria, such as grades or test results.

8. Blockchain technologies using to verify the authenticity of the issued educational document. In this case, universities that issue educational documents in paper form also issue a digital document (diploma / certificate), which will use the public Blockchain to store digital signatures related to digital certification. Uniquely signed digital documents are given immediately to consumers. Authentication of such a document requires only a comparison with a digital signature stored on Blockchain.

With the help of blockchain technology and general availability of information, it will be possible to track each diploma, to verify its authenticity.

9. Blockchain technologies using for professional education of adults. This area will involve the use of blockchain technologies for specific professions, whose representatives must continue their education throughout life (teachers, engineers, lawyers, attorneys, physicians, auditors and others). With the help of blockchain technologies you can confirm your practical experience and additional knowledge gained during scientific conferences and professional seminars, as required by the qualification requirements for the respective professions [5].

10. Blockchain technologies using for ranking universities when they receive grant funding. University rankings, the information for which will be verified from several open sources, will allow more efficient distribution of grant funding in accordance with university research [6].

Discussion. We believe that blockchain technologies in education should use only open sources of information, which will allow them to be used by all stakeholders. At the same time, it is necessary to comply with all the necessary rules for the protection of personal data provided by the laws of different countries. The combination of openness of information and protection of personal data is a major problem that currently faces the possibility of more active use of blockchain technology in education.

Conclusions. Thus, the possibility of using blockchain technologies in the management of educational institutions will bring them to a new level of functioning, which will improve the quality of the educational process and the level of knowledge of students.

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CURRENT TRENDS IN THE SPORTS INDUSTRY AND THEIR INFLUENCE ON THE DEVELOPMENT OF ORGANIZATIONS

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Abstract. *The article considers the current trends in the sports industry and their impact on the development of organizations. In conditions of rapid changes in the regulatory framework, unstable economic situation, fierce competition for effective demand, organizations must not only focus on the development of domestic capacity, but also to form a flexible policy aimed at adapting to change. Therefore, the task of developing and implementing a model of strategic development of sports organizations, which would increase the efficiency of their functioning in a market environment, take into account the growing needs of the population in sports and health services and allow to form competitive strategies. The impact of the fitness industry on the health of modern man has been studied. In modern conditions, the issue of creating the necessary conditions to involve people in daily and specially organized physical activity of appropriate duration, intensity and regularity is relevant. In Ukraine, due to a number of objective and subjective reasons, significant reserves for increasing the motivation of the population to physical activity, the formation of relevant interests, the use of organizational and managerial capabilities of various actors in the system of sports and recreational physical activity, strategic directions and justification of innovative technologies to create a comfortable environment that will encourage physical activity.*

It is proved that for today fitness is a driver of growth and development of the sports industry. This confirms the fact that the fitness industry involves many sectors of the national economy: industry (production of sporting goods, equipment, equipment, facilities), nutrition, sports medicine and pharmacy, and so on. Therefore, consider the current trends in the sports industry on the example of fitness.

The experience of fitness development in the leading countries is analyzed. It is noted that fitness is becoming more and more popular among the population every year, and the health industry has a positive dynamics of development - more than 80% of the market accumulates the ten largest fitness markets. The most active fitness enthusiasts in the world are Americans, Norwegians and Canadians. In the US - 40%, in European countries - 25% of users of the fitness industry product. At the same time, a third of the global market in monetary terms belongs to the United States. It is proved that in the promotion strategy in the strategy of promoting their product, sports organizations should use social networks, content marketing, SEO-promotion, crowd-marketing and other tools. The use of digital marketing tools will allow sports organizations to increase their competitive advantages, stabilize their financial condition in the crisis period and create conditions for growth in the post-crisis period. Thus, it can be noted that the culture of a healthy lifestyle and physical activity is gaining popularity in Ukraine, so the presence of modern sports organizations is an important condition for the development of the country. The support of the state is manifested in ensuring the development of organizations in the sports industry, increasing their social responsibility and prestige, the legal provision of social investment conditions, flexible tax policy for charitable organizations.

Today, there is a need for change in the sports industry and the production of quality sports products based on the use of modern approaches, combining the efforts of interested organizations and the public. The definition of strategic directions of development of the sports industry, forecasting of perspective processes, use of system and program-target approaches in development and realization of practical actions acquires special urgency.

Keywords: *sports industry, strategic development, physical activity, state policy, fitness, sports organizations, digital marketing technologies.*

JEL Classification: D40; L11; L83.

Formulas: 0; **fig.:** 1; **tabl.:** 1; **bibl.:** 12.

Introduction. Modern socio-political and humanitarian challenges in the global space are related to a complex of various factors (coronary crisis, globalization, integration, decentralization, digitalization, etc.) and are complex and contradictory in the development of states. Leading countries in the face of current challenges are taking an active position in overcoming the crisis - implementing stabilization measures and creating conditions for sustainable development in the long run. Others, following the actions of leaders, implement the best mechanisms and tools in their management practices.

The development of all social processes in Ukraine is influenced by a set of external and internal factors. The main factors are: inefficiency of the state system of government and socio-economic policy, imperfect administrative-territorial reform, lack of political responsibility, a significant decrease in people's trust in state institutions. Therefore, the urgent problem is the formation of effective interaction between government (central, territorial), business and the public in search of new ways to ensure socio-economic development of territories, creating an effective system of government that will positively affect the quality of life.

Literature review. Domestic and foreign scientists: Andrey V., Humeniuk V., Dvigun A., Kercher V., Zholdak V., Zolotov M., Platonov V. and others. made a significant contribution to achieving a balanced management system of the sports industry, substantiation of mechanisms and theoretical and methodological foundations of state and territorial governance. ., Available publications focus only on certain aspects of the research issue. But the issue of managing the development of sports organizations in the context of change, taking into account the positive foreign experience, has not been studied enough.

Aims. The aim of the study – to form an idea of current trends in the development of the sports industry and their impact on the development of organizations.

Methods. The theoretical and methodological basis of the study are the basic provisions of the dialectical method of cognition, in particular induction and deduction. To achieve this goal, various methods and techniques were used: abstract-logical, systematic approach, statistical observation and grouping, analysis and synthesis, comparison, forecasting, graphical.

Results. In the context of reforming market relations, rapid changes in the regulatory framework, unstable economic situation, fierce competition for effective demand, organizations should not only focus on developing domestic capacity, but also form a flexible policy aimed at adapting to change. Therefore, the task of developing and implementing a model of strategic development of sports organizations, which would increase the efficiency of their functioning in a market environment, take into account the growing needs of the population in sports and health services and allow to form competitive strategies.

The relevance of the use of modern approaches, models, methods of strategic management in the activities of sports organizations is due to the fact that the level of

logistical, financial, personnel, scientific support of these organizations does not allow to provide quality sports and health services, develop mass physical culture in relevant areas. At the present stage, most non-profit sports organizations have certain problems with attracting professional staff, financial and investment resources, on the one hand. On the other hand, low wages, underdeveloped infrastructure negatively affect their competitiveness. The task of strategic management is to create conditions that will allow organizations to respond in a timely manner to changes in the external environment in the scientific, technical, social and political spheres, implement modern investment tools to attract new sources of funding and ensure sustainable development of organizations.

In the world practice of development of organizations of the sports industry considerable attention is paid to training, retraining and advanced training of personnel. This allows to involve staff in further professional growth, which in general affects the competitiveness of sports organizations and meet the demands and needs of buyers of sports products.

Therefore, the strategic development of organizations in the sports industry is ensured by the comprehensive implementation of the system of personnel training and innovative technologies using the best world practices in the production of quality sports products. This approach will allow organizations to create conditions for increasing competitiveness and sustainable development.

The fast pace of life, competition in the labor market require modern people to be in excellent health and in good physical shape. The standard of a successful and business person today is a healthy lifestyle with mandatory visits to sports organizations (sports and health clubs, fitness centers, etc.). But this pace of change has a negative impact on human health, which is manifested in increased stress, anxiety, depression, cardiovascular disease. One of the effective tools to overcome these phenomena is the prevention of diseases by means of physical culture. Sports and health classes significantly affect the condition, consciousness and social life of people.

A healthy lifestyle means the forms of daily life used, which meet hygienic principles, strengthen the adaptive capacity of the human body, contribute to the restoration, maintenance and development of its reserve levels and increase productivity.

In modern conditions, the issue of creating the necessary conditions for attracting people to the ubiquitous and specially organized physical activity of appropriate duration, intensity and regularity is relevant. In Ukraine, due to a number of objective and subjective reasons, significant reserves remain to increase the motivation of the population to physical activity, the formation of relevant interests, the use of organizational and managerial capabilities of various actors in the sports industry. Defining strategic directions and introduction of innovative technologies to create a comfortable environment allows to involve the population in physical activity. The main producer of a sports product not so long ago were traditional sports organizations (sports clubs, sports clubs, sports schools, etc.), which were financed from the budget and carried out non-profit activities. However, since the beginning of

2000 in Ukraine the world direction on rendering of sports and improving services - the fitness industry develops. It organizationally includes sports organizations of the commercial type (fitness centers, fitness clubs, fitness halls, etc.), which provide better sports and health services than traditional organizations.

Today, fitness is a driver of growth and development of the sports industry. This confirms the fact that the fitness industry involves many sectors of the national economy: industry (production of sporting goods, equipment, equipment, facilities), nutrition, sports medicine and pharmacy, etc. Fitness is a way of life that allows disease prevention, preservation and strengthen health, balance the emotional state and improve physical fitness. Therefore, consider the current trends in the sports industry on the example of fitness.

The fitness industry is a component of the sports industry, a branch of socio-economic activity that creates an economic, logistical and information-ideological base for the provision of paid fitness services to various categories of the population.

The fitness industry in Ukraine has an accelerated pace of development and ranks second after the IT sector. Due to the rapid growth rate, the investment attractiveness and volume of its market is increasing every year. Experts estimate the market potential to \$ 2 billion. [7, 8, 11, 13]. Therefore, the fitness industry significantly affects the socio-economic development of the country.

In Ukraine, there are various fitness centers, clubs, beauty and health studios that provide a range of services that include popular fitness programs and technologies. They are based on innovations aimed at meeting various needs, demands, interests of people in the sports and health product.

Every year, fitness is becoming increasingly popular among the population, and the health industry has a positive dynamics of development - more than 80% of the market accumulates the ten largest fitness markets. The most active fitness enthusiasts in the world are Americans, Norwegians and Canadians. In the US - 40%, in European countries - 25% of users of the fitness industry product. In this case, a third of the global market in monetary terms belongs to the United States [1, 2, 3]. The US fitness industry is more than 30,000 clubs of various formats. For example, the giant Kryvyi Rih is an economy class network that has a franchise in many countries - more than 10,000 clubs. Clubs of another large American network Planet of Fitness are visited by more than 2.3 million people. According to research conducted in the United States, each dollar invested in attracting employees to physical activity programs, gives up to \$ 3.43. savings on medical expenses and payment of sick leaves [4].

The development of fitness in the leading countries has the state support of sports organizations: preferential treatment for taxation, rent of premises and land, utility tariffs. For example, in Italy, due to legislation aimed at encouraging the opening of sports and health clubs, the profitability is 25-30%, in other business sectors - up to 10%. [4, 5, 6].

Compared to world indicators, the demand of Ukrainians for sports services is still far from world indicators: only 3% of the population use fitness services. The

main users are people aged 27-45 living in cities with higher education, secondary or above average income. The characteristics of the sports industry are given in Table 1.

Table 1. Characteristics of the sports industry of Ukraine for the period 2016-2019

Indicator	Year			
	2016	2017	2018	2019
Current population, million people	45,8	42,8	42,6	42,4
Number of people engaged in physical culture and sports, thousand people.	5474,7	5841,0	6027,1	6137,6
Number of people engaged in physical culture, thousand people.	4532,9	4867,2	5048,5	5167,1
Number of people involved in sports, thousand people	941,8	972,8	978,5	970,5
Employment in sports (entertainment and recreation), thousand people	201,6	199,8	196,9	197,6
Sports facilities in total, units	80193	81910	82719	80315
including:				
swimming pools	534	557	545	557
sports halls with an area of at least 162 m ²	14664	14791	14771	14634
playgrounds with exercise equipment	12435	13208	13726	13955
Number of fitness facilities, units	2000	1569	1765	... ¹
Number of people engaged in fitness, million people.	4,1	3,8	1,2	...

¹ ... - no information.

Source: [7, 9, 12, 13].

With a steady decline in the population of Ukraine during 2016-2019, the indicator "the number of people engaged in physical culture" increased: in 2019 compared to 2016 increased by 14%. At the same time, employment in sports (entertainment and recreation) decreased by almost 2%. The number of people engaged in fitness increased during 2016-2017, but since 2018 there has been a negative trend. This figure in 2019 decreased by 2.2 times compared to 2016.

The number of sports facilities in 2019 compared to the previous year decreased by 2.9%. This was due to a decrease in the number of: sports grounds, football fields, shooting ranges and gyms. It should be noted that during 2016-2018 the number of sports facilities with training equipment increased by 12.2%.

During the period, there was a fluctuation in the number of fitness facilities, which is related to the general political and socio-economic situation in the country. Fitness facilities had the following structure: 57% were fitness clubs, 10% - fitness studios, 9% - martial arts clubs and Pilates studios, 7% - women's fitness clubs, 3% - yoga and dance studios, 2% - swimming pools [4, 6, 10, 11].

Modern demands of society to the level of development of physical qualities of a person, his need for physical activity and the desire for health and well-being have led to the widespread spread of fitness around the world. In Ukraine, fitness has developed over the past 15-20 years.

Over the past few years, there has been fluctuations in demand for the use of fitness services by the population. However, 2020 showed an increase in the interest of Ukrainians in sports and a healthy lifestyle.

The positive dynamics of the fitness industry took place until 2020 and was characterized by an increase in fitness facilities, their financing and the number of visitors, which affected the growth of market revenues and had positive consequences for investors. The fitness market in Ukraine is just being formed, so it has a huge potential for development.

The analysis of sports product market trends on the example of demand for fitness services in Ukraine and the world is shown in Fig. 1. Digital marketing technologies and tools were used in the analysis [10].

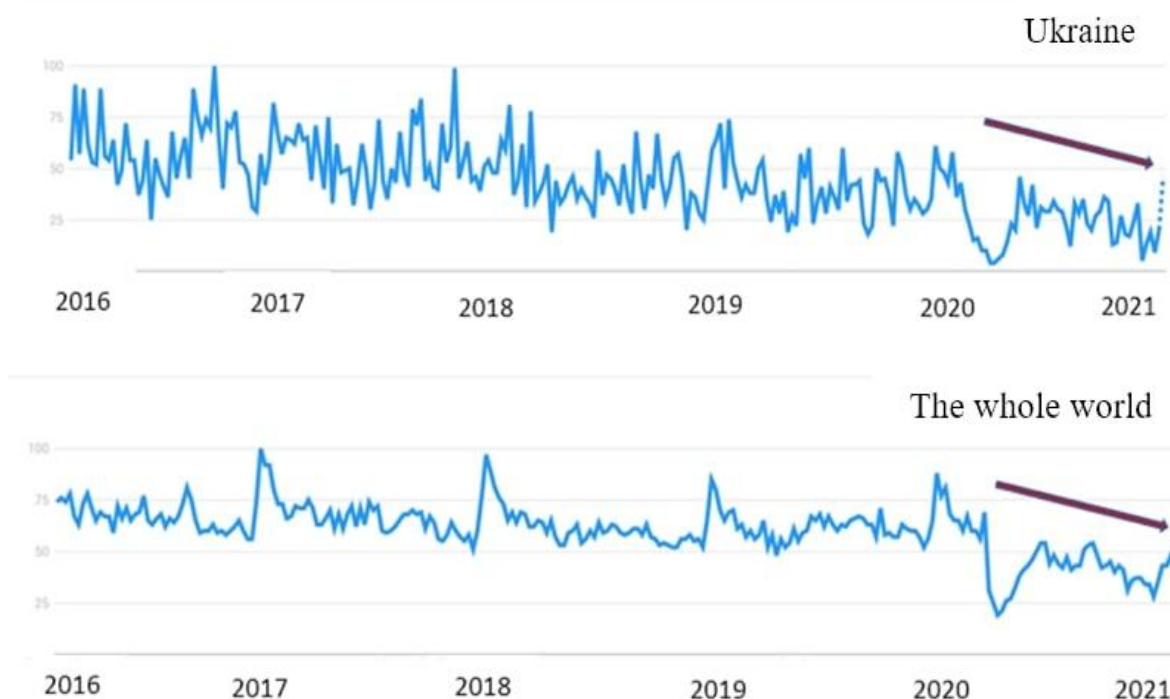


Figure 1. Current trends in the demand for fitness services in Ukraine and the world

From Fig. 1 we see: in the market of fitness services in the world and in Ukraine there are constant fluctuations with declining demand. It should be noted that due to global quarantine, the demands related to sports, healthy lifestyles and physical activity are increasing. In 2020-2021, the opportunity to visit sports clubs decreased, but people are showing interest in sports. Note the sharp increase in popularity, which has not been observed in previous periods. Such changes are associated with quarantine restrictions (closure of sports organizations) and an increased need to engage in physical activity at home. As a result, new opportunities have appeared for sports organizations to meet the demand associated with the transformation and development of online interaction with users of sports products (online fitness services, video consultations, video training, etc.).

In Ukraine, there is a revival of the market in early 2021. This trend is justified by the fact that people in the quarantine period begin to show interest in a healthy lifestyle due to low physical activity, overweight, etc. During the pandemic, the

impetus for the development of a sports organization is associated with the introduction of new business models that will ensure stability.

In these conditions for sports organizations there is a question of introduction of effective tools concerning work with the lowered demand. The main tool in the situation of quarantine restrictions are digital marketing technologies that will provide information about the state of the sports market (requests, needs, expectations of people), develop the most attractive conditions for promoting a sports product (increase people's interest, promote the brand of sports organization, etc.) and geographical location of people.

It should be noted that the sphere of information business is actively growing in Ukraine. People are actively interested in information about a healthy lifestyle and physical activity. Therefore, in the strategy of promoting their product, sports organizations should use social networks, content marketing, SEO-promotion, crowd-marketing and other tools. The use of digital marketing tools will allow sports organizations to increase competitive advantage, stabilize their financial situation in times of crisis and create growth in the post-crisis period.

The culture of a healthy lifestyle and physical activity is gaining popularity in Ukraine, so the presence of modern sports organizations is an important condition for the country's development. The support of the state is manifested in ensuring the development of sports industry organizations, increasing their social responsibility and prestige, the legal provision of social investment conditions, flexible tax policy for charitable organizations.

Discussion. Physical education is a component of comprehensive human development. It is aimed at ensuring the physical development of the individual, strengthening health, morphological and functional improvement of the body as a whole. The more developed the physical and spiritual strength of man, the higher the level of his ability to work and productivity. A healthy person is more active, mobile, cheerful and generally more viable. Further research should be devoted to the development of the system of state support for the development of the sports industry, the rationale for the development of the National Program and Strategy for the development of the sports industry of Ukraine.

Conclusions. Today, there is a need for qualitative changes in the sports industry and the production of quality sports products based on the use of modern approaches, combining the efforts of interested organizations and the public. The definition of strategic directions of development of the sports industry, forecasting of perspective processes, use of system and program-target approaches in development and realization of practical actions acquires special urgency.

It is determined that fitness is a driver of the sports industry and demonstrates positive growth dynamics. The prospects and trends in the development of the sports industry in Ukraine include the involvement of the entire population in physical activity, starting with the active development of children's fitness; individualization of fitness programs; integration of fitness into education; increase people's motivation for a healthy lifestyle.

Doing fitness is becoming prestigious in today's world. Therefore, the number of fitness facilities is increasing in countries where the population fully understands that a healthy lifestyle has a great impact on the development and prosperity of the state.

Thus, the demand for the product of sports industry organizations is growing due to changes in people's minds about a healthy lifestyle and physical activity. Organizations of the sports industry, along with traditional technologies for the provision of sports and health services need to actively implement modern methods, approaches to management (strategic management, innovation management, digital marketing technologies, etc.). This will ensure competitive advantage and sustainable development in the long run. It is necessary to involve state institutions in the development of effective national programs, strategies development of the sports industry and determine their impact on the economic success of the country and the formation of a healthy person.

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THE ECONOMIC SECURITY MECHANISM OF AGRICULTURAL ENTERPRISES: MARKETING APPROACH

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Abstract. Modern reform processes in different sectors of the country's economy occur under the conditions of economic crisis, and agricultural enterprises are no exception. Resilience and independence, i.e. to the concept of marketing. However, a certain percentage of agricultural enterprises in the sector still do not use marketing principles. The insufficient level of use by agricultural enterprises of the basic principles of marketing in their entrepreneurial activity is due to certain objective reasons. This is, in particular, the skeptical attitude of the part to the very essence of marketing and its importance for entrepreneurial activity; lack of financial ability to engage in marketing activities of a large number of small and medium-sized enterprises arising from transformation processes; lack of over-production of agricultural products, which would encourage the use of non-standard solutions in the process of selling products. The purpose of the research is to develop and model the mechanism of economic safety of agricultural enterprises on the basis of a marketing approach, to provide practical recommendations. Against this background and taking into account the peculiarities of transformation of the Ukrainian economy, it is necessary to study the possibilities of adapted use of marketing strategies in agricultural enterprises. The article investigates the characteristic features of agricultural enterprises; the mission of agricultural enterprises and the basic principles of management were summarized; the peculiarities of the differentiation strategy on the basis of marketing are substantiated; modeling of economic security at agricultural enterprises is proposed; the methodology of development of differentiation strategy within the marketing complex, which can be carried out according to the appropriate scheme, is analyzed; a generalized and analyzed mechanism for managing the economic security of agricultural enterprises on the basis of a marketing approach; the advantages and disadvantages of modeling the mechanism of economic safety of agricultural enterprises on the basis of a marketing approach are substantiated; proposals for the introduction of fixed means of communication policy in the activities of agricultural enterprises were submitted.

Keywords: marketing approach; economic security mechanism, agricultural enterprises; marketing strategy; efficiency; differentiation.

JEL Classification: F15; F52; P25; G34; M10; M11.

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Introduction. Today, in the context of market relations, each enterprise should focus not only on ensuring the effectiveness of economic processes, but also focus on the development and implementation of management systems and mechanisms that are able to respond promptly to changing conditions and unfavorable challenges of the external environment. Management of the economy to changing external and internal economic conditions can occur through such ways as increasing the aggressiveness of marketing activities, accelerating the pace of introduction of new types of products into production; increasing the reliability of market forecasts; transition from one-time transaction marketing to long-term marketing; search for information on new consumer needs and appropriate modification of marketing strategies. At the same time, when formulating a commodity policy, an agricultural enterprise should take into account in addition to the choice of strategy and the place

of its implementation, which is possible taking into account such key points as: determining the target segment; planning and ensuring conditions for storage and sale of agricultural products, taking into account market requirements and seasonality factor. In addition, the tendencies of saturation of domestic markets, the aggravation of competitive processes, the inevitability of Ukrainian enterprises entering the globalized system determine the inevitability of the maximum possible use of the elements of strategic marketing, its main consistency - the development and implementation of strategies for the development of enterprises in all sectors of the national economy

That is why in the conditions of unstable Ukrainian economy, the issue of developing an effective and reliable organizational and economic mechanism for ensuring the economic security of agricultural enterprises on the basis of a marketing approach becomes especially relevant for domestic agricultural enterprises.

Literature review. The research of issues related to the development and implementation of the mechanism of economic safety of agricultural enterprises on the basis of a marketing approach is devoted to the work of such scientists, how: Beskorovayna O., Bagorka M., Verhun A., Burova O., Voronetska I., Granovska Y., Kirilov Y., Kozhukhivska R., Makarenko N., Pasichnyk I., Sklyarenko A., Tubolets K., Chukurna O., etc.

However, questions remain relevant regarding the practical use of modern principles of marketing management in the practice of agricultural enterprises, the problem of choosing the optimal mechanism of economic security of agricultural enterprises on the basis of a marketing approach.

Aims. The purpose of the research is to develop and model the mechanism of economic safety of agricultural enterprises on the basis of a marketing approach, to provide practical recommendations.

Methods. In the course of the study, such methods of research as: methods of induction and deduction; observation and generalization; ordering; graphic methods; methods of system-structural analysis; method of scientific generalization were used.

Results. In the modern economic space, a management approach is quite common, in which the company is focused on continuous improvement of production and management processes, improvement of basic parameters and characteristics, increasing efficiency and increasing final financial and economic results, while preventing the emergence of probable threats and dangers that may not affect the activities of the enterprise. The success of the business depends on how effectively it is possible to prevent the negative impact of adverse factors. Operating enterprises are the central link of the economic system of any state, which has a direct impact on its stability and socio-economic achievements. In this regard, an important task of the effective functioning of enterprises is to ensure their economic security, which is especially updated in the conditions of unstable and uncertain business environment.

It should be noted that the peculiarities of marketing activities in the agricultural sector of the economy can be reduced primarily to the technological features of agricultural production, as well as to the peculiarities of food consumption and technological features of the sale of agricultural products [1].

In addition, the marketing activity of agricultural enterprises differs from industrial, commercial, banking and other types of marketing. This is determined by the peculiarities of agriculture: the dependence of the results on natural conditions, the role and value of the goods, the variety of forms of ownership, the inconsistency of the working period and production period, the seasonality of production and production of products, the variety of organizational forms of management and their dialectics, foreign economic relations, the participation of state bodies in the development and its industries. Natural and economic processes integrate and form special conditions for the production and organization of the marketing system (Table 1).

Table 1. Features of agricultural enterprises

Feature	Form of manifestation
Production of essential products	Food products need timely production in the required quantity and range, taking into account the needs and interests of consumers; the product has the ability to deteriorate quickly, so it requires prompt supply, appropriate packaging and transportation; forms the price non-elasticity of demand and the disparity of prices for industrial and agricultural products, which requires a state policy to support the agricultural producer.
The main means of production in agriculture is land	The effectiveness and efficiency of production depend on the quality and placement of land plots. A variety of forms of ownership in the system of land, means of production, sold goods.
The effectiveness and efficiency of production depends on the quality and placement of land plots	Agricultural production depends on climatic conditions.
The working period of production does not coincide with the production period	Crop production is obtained once or twice a year, and the working period lasts a year, so the task of marketers is to predict consumer demand, identify trends in its satisfaction and market conditions.
Variety of forms of ownership in the system of land, means of production, sold goods	This determines the multispecies of competition. Hence the variety of strategies and tactics, the desire to improve the forms and methods of marketing, adapt them to the needs and interests of consumers. The situation is complicated by the fact that a large mass of foreign foodstuffs enters Ukraine, so domestic marketing support is forced to compete with foreign companies.

Source: generated by the author based on [2-5]

Modern conditions for the functioning of agricultural enterprises are characterized by a high degree of uncertainty, dynamism, the presence of a large number of external and internal threats associated with a low level of consumer demand, unstable state tax policy, a decrease in resource potential, a decrease in the level of investment and innovation activity, the underdevelopment of the long-term

bank lending market, etc. The effect of such threats leads to significant losses and losses and, as a result, the crisis state of the enterprise.

The strategy of the enterprise, as it is known, is a means of achieving the mission of the organization, closely related to the goals in general, so the consideration of these elements is impossible without general acquaintance with the mission of the organization and the basic principles of management:

- have sufficient amount of data for the manifestation of statistical regularities;
- ensure methodological comparability of data;
- on the basis of a meaningful analysis of the studied indicator to substantiate the possibility of transferring patterns of the past to the selected forecasting period;
- get an adequate mathematical model and build point and interval forecasts on the basis [6].

Because of this, in the enterprise management systems, the problem of increasing the speed of response to negative environmental impacts and ensuring the economic safety of the enterprise comes to the fore. The direction of solving this problem is the development of a complex of models of management of economic security of the enterprise, which makes it possible to diagnose in time the threats of sustainable functioning and development of the enterprise, to develop a complex of ahead of reactions of their localization.

At the same time, an important place in the activities of an agricultural enterprise should be given to the choice and justification of such marketing strategies that will allow it to occupy a profitable niche in the agricultural goods market and contribute to further development. The choice and justification of strategic management of an agricultural enterprise will be carried out on the basis of a marketing complex. The classic marketing complex include goods, price, place and promotion. Despite the fact that the agricultural product is standard, the priority direction of agricultural enterprises may be the choice of differentiation strategy. Such a strategy consists in the creation of a number of advantages by the enterprise, which were significant among competitors (Fig. 1).

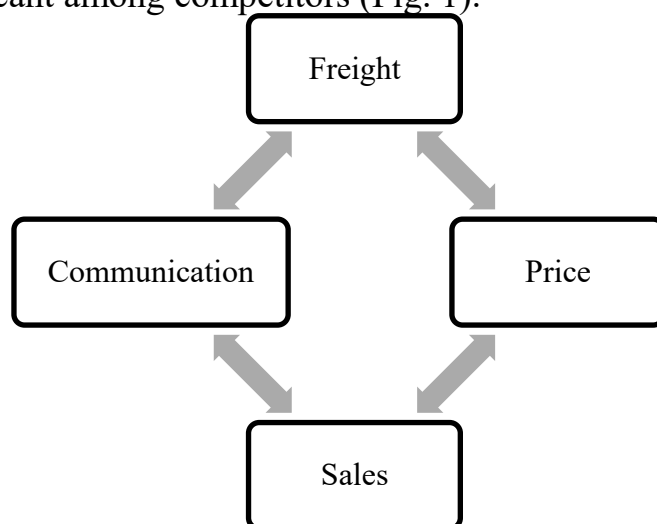


Figure. 1. Characteristic features of the strategy of differentiation on the basis of marketing

Source: compiled by author based on [7-11]

The strategic plan is justified by extensive research and actual data. In order to compete effectively in the current business world, the company must constantly collect a huge amount of information about the industry, market, competition and other factors. The strategic plan gives the firm certainty, individuality and confidence in the future.

The overall strategic plan should be seen as a program that guides activities over a long period of time, giving itself a report that the conflicting and ever-changing business and social situation makes permanent adjustments inevitable.

The benefits of strategic planning can be expressed as follows:

- planning encourages managers to think promisingly;
- leads to clearer coordination of efforts carried out by the enterprise;
- leads to the establishment of indicators for further control;
- makes it more clear to define their tasks and political settings;
- makes the firm more prepared for sudden changes;
- more clearly demonstrates the relationship between management and the responsibilities of all officials [12].

On the basis of the above, it is possible to propose modeling of economic security of agricultural enterprises on the basis of the following basic principles (Fig. 2).

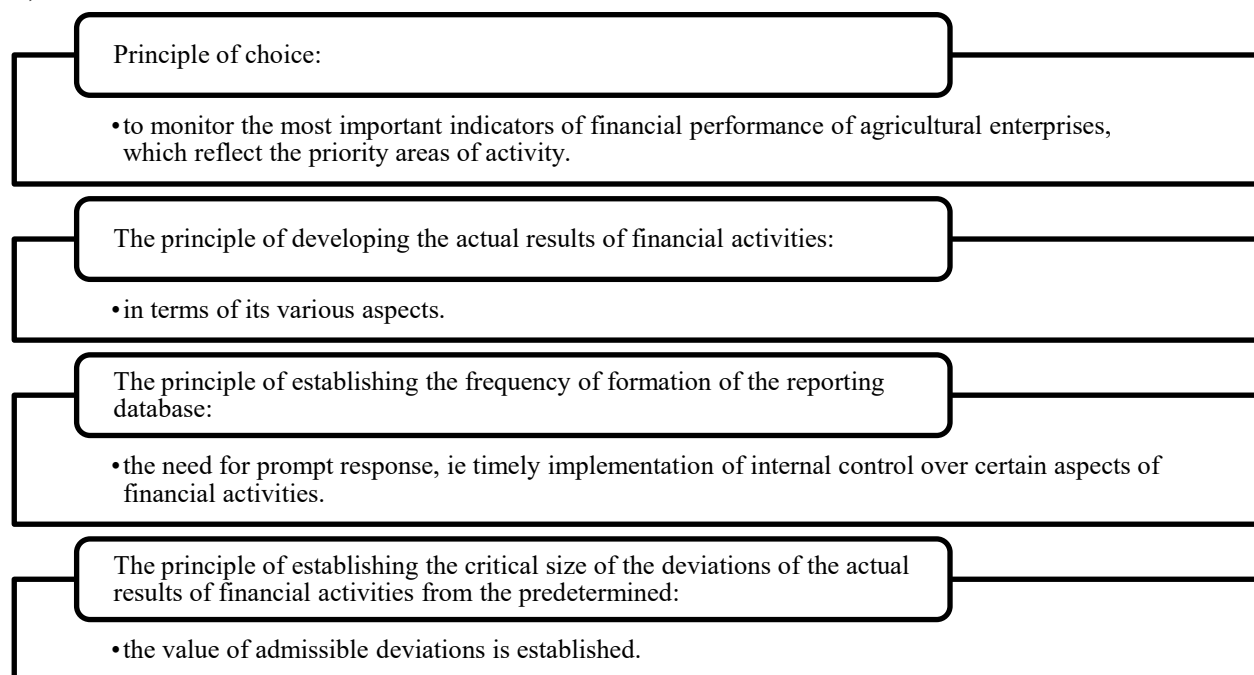


Figure. 2. Modeling of economic security principles at agricultural enterprises

Source: generated by the author based on [13-17]

Modeling the process of forming the conditions for the functioning of agricultural enterprises makes it possible to allocate regimes of stable, shaky and crisis state, for which differentiated strategies for the localization of threats can be used. Identification of the functioning mode is carried out on the basis of the scale of values of the integral indicator of economic security. The applied value of modeling and forecasting the level of economic security of agricultural enterprises is to explain development trends. Taking into account the above, it is necessary to consider in

more detail the methodology for developing a differentiation strategy within the marketing complex, which can be carried out according to the following scheme:

1. Analysis of the external and internal environment of an agricultural enterprise on the basis of various analysis methods (SWOT analysis, BCG, benchmarking, etc.), including mandatory in-depth analysis of the financial condition of the enterprise over the past three to five years.

2. Defining the goals of an agricultural enterprise.

3. Definition and evaluation of strategic alternatives to differentiation.

4. Choice of differentiation strategies within the marketing complex (substantiation and comparison of development prospects depending on the availability of enterprise resources).

5. Implementation of differentiation strategies and control over their implementation in the activities of agricultural enterprises [18].

When formulating pricing policies by agricultural enterprises, it is advisable to choose price adjustment strategies. For most Ukrainian agricultural enterprises, agricultural sales management is the biggest problem, so in fact, a significant part of the products they sell at minimal prices to intermediaries who receive high profits through the use of effective distribution strategies. Strategies for differentiating the sale of agricultural products depend on its differentiation and seasonality. Different sales strategies are effective for different types of agricultural products, similarly they will apply different sales strategies in different periods of the season, since the peculiarity of this product is that it is the first necessity, but its cultivation is seasonal in nature.

Thus, a mechanism for managing an agricultural enterprise under the conditions of a marketing approach was developed (Fig. 3).

Such a mechanism of management of an agricultural enterprise, subject to a marketing approach, reflects the general management functions (planning, analysis, organization, motivation, control), has a high level of adaptation to activities with versatile specialization, indicates the close relationship of all functioning subsystems of agricultural enterprises with marketing and provides a number of advantages, including:

- research and evaluation of factors of market environment, supply and demand;
- forecasting and strategic orientation of the enterprise;
- quick response to the influence of environmental factors;
- application of modern technologies during the formation of a marketing mix;
- in-depth study and further satisfaction of consumer needs;
- choosing an effective strategy for positioning agricultural enterprise products, etc.

In the face of ever-increasing competition, agricultural producers are forced to look for new ways to enter the market and retain existing ones. Sales are closely related to the marketing tool – promotion. As for agricultural enterprises, it is more expedient to choose a pushing strategy here, because in order to choose a forcing strategy, it is necessary to carry out branding that requires significant investment [23].

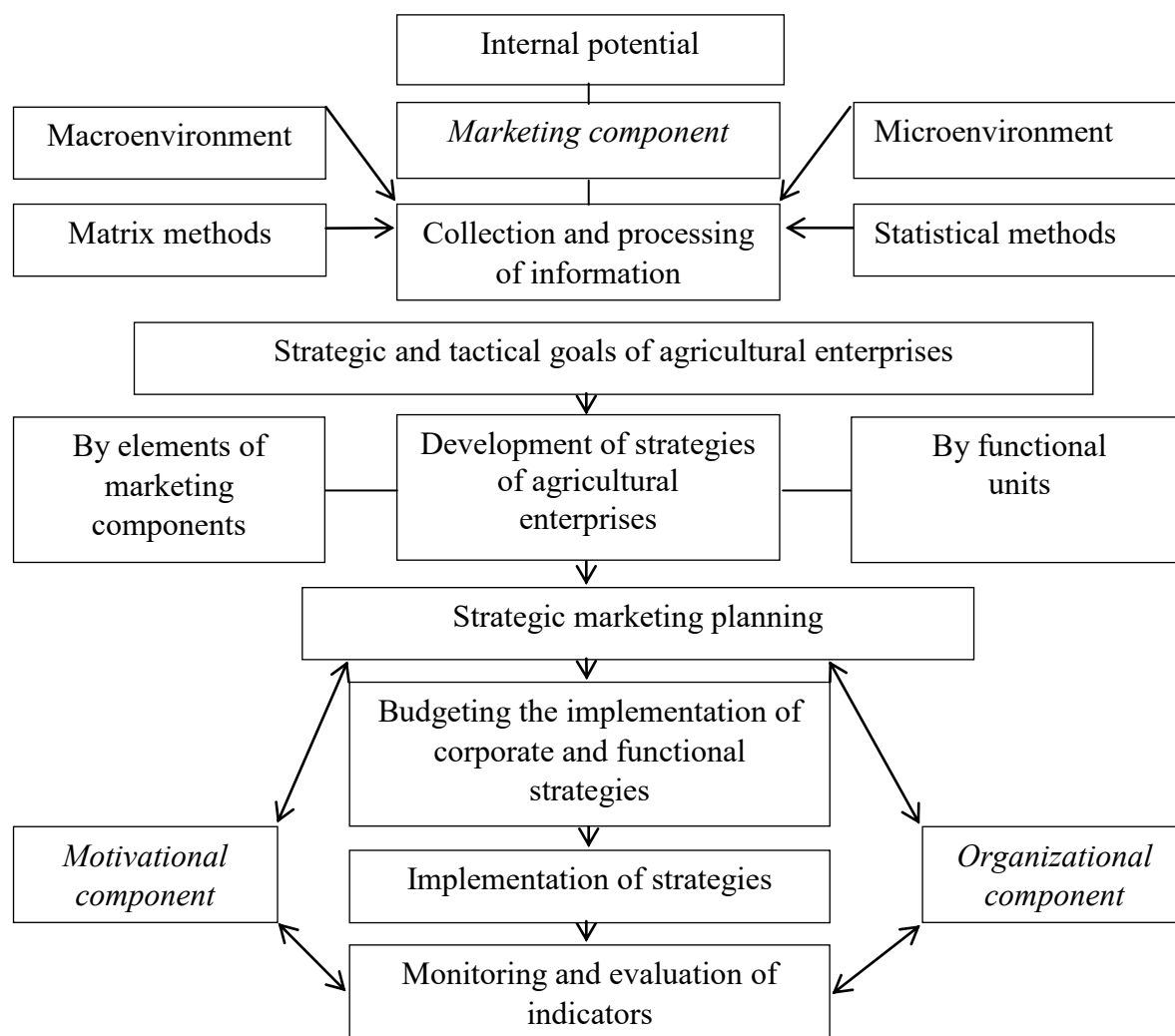


Figure. 3. The mechanism of managing the economic security of agricultural enterprises on the basis of a marketing approach

Source: generated by the author based on [19-22]

Given the fact that agricultural enterprises allocate the minimum amount of costs for the promotion of agricultural products, it is worth using the following means of basic elements of communication policy:

1. Advertising (creating your own website, business cards; firewalls and billboards, for example, with the image of the crop "from the field" and the caption "made in Ukraine" or "support the domestic manufacturer" and the address of production facilities).

2. Sales stimulation (discounts for the purchase of agricultural products in large batches, on the principle of "more – cheaper"; discounts on the purchase of a certain volume of additional products to the main one at a discount of up to 10%; discounts for regular partners and consumers; free delivery of goods, for example, more than 5 tons).

3. Personal sale (communication by phone with potential resellers; communication with consumers about the quality of agricultural products and possible advantages when buying it (population, wholesale and retail markets, etc.).

In addition, ensuring effective management of an agricultural enterprise under the condition of a marketing approach is possible by taking into account: integration of marketing into the system of specific management functions; combining the marketing system with other components of the system; centralization of marketing in the cycle of information flows. During the formation of a marketing approach to the management of agricultural enterprises, carry out management functions along with the transformation and conglomeration of marketing into a management system and develop a unified approach of managers to the interaction of all subsystems of the agricultural enterprise management system.

Conclusion. So, in the case of implementation of the outlined proposals for the formation of a marketing approach to management, creation of an effective marketing system and the use of a mechanism for managing the economic security of agricultural enterprises on the basis of a marketing approach, any agricultural enterprise will have the opportunity to carry out justified strategic management on the basis of a marketing complex.

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METHOD OF EVALUATION OF ROAD ROUTINE MAINTENANCE STRATEGIES

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Abstract. *The current unsatisfactory condition of most roads in Ukraine causes a significant increase in the cost of transportation, reducing the level of safety and comfort of road traffic and the level of environmental safety of roads. These factors negatively affect the socio-economic development of the state, the competitiveness of its economy and defense capabilities. The need to solve the problem of unsatisfactory condition of roads led to the reform of the road management system of Ukraine, the implementation of which paved the way for the strategic development of road maintenance enterprises (RME). The mechanism of ensuring the strategic development of road maintenance enterprises in the maintenance of roads can be implemented through the introduction of long-term agreements (contracts), in which payment for services and works directly depends on the RME clearly set requirements to maintain the final quality indicators of road performance. The problem of substantiation of measures to ensure the strategic development of road maintenance enterprises and quantification of their economic effectiveness in the application of long-term contracts in the selection of contractors and contracts (ex ante) and contract implementation (ex post) is insufficiently studied not only in Ukraine but also in the world. The method of evaluating the effectiveness of the road maintenance strategy is based on the application of a simulation model of the road maintenance process. A discrete-event simulation model with system time " Δt " has been developed (ex post). It is not necessary to record the moments of occurrence of the defect and its elimination. The most difficult issue is the quantification of the impact on public benefits of the parameters of service levels set within the operational maintenance of roads. The impact of only a small number of defects on the value of the public welfare function is sufficiently studied and can be quantified, but such defects are eliminated by capital and current average repairs. For defects that are remedied by retention, the impact on the welfare function is less obvious. There are no models for assessing such impacts.*

The input parameters of the simulation model are the main parameters of the long-term contract. These include length of road sections; duration of the contract; amount of monthly payment for the performance of works and provision of road maintenance services; cost of one penalty point for the operational condition of road sections; contractual level of maintenance. Random variables are modeled according to triangular distribution laws, the parameters of which are set by the expert method, due to the complete absence of statistical observations. The output of the simulation model is to estimate the probabilistic distributions of random values of costs of works and services, amounts of deductions for payment of RME, loss or profit, the dynamics of these values in the contract period and the dynamics of the retention rate and their derivatives. It is shown that the operational state of road elements is formed under the influence of two processes: degradation process, i.e. the occurrence and development in time and space of defects of road elements, which are the result of external and internal factors. The process of degradation of each element can be cumulative, discrete and discrete-continuous; renovation process - elimination of defects of road elements by RME forces through repair and maintenance of road elements. Two road maintenance strategies were explored: support strategy (corrective), which is to eliminate defects in road elements when they reach the level of intervention; anticipation strategy (preventive), which consists in the early execution of certain works, when the causes of cumulative defects are eliminated before the defects reach the level of intervention.

Keywords: management, method of evaluation, road routine maintenance strategies.

JEL Classification: C02, L90, L91, R40.

Formulas: 4; **fig.:** 1; **tabl.:** 0; **bibl.:** 6.

Introduction. The current unsatisfactory condition of most roads in Ukraine causes a significant increase in the cost of transportation, reducing the level of safety and comfort of road traffic and the level of environmental safety of roads. These factors negatively affect the socio-economic development of Ukraine, the competitiveness of its economy and defense capabilities. The need to solve the problem of unsatisfactory condition of roads led to the reform of the road management system of Ukraine, the implementation of which paved the way for the strategic development of road maintenance enterprises (RME). The mechanism of ensuring the strategic development of RME in the routine maintenance of roads can be implemented through the implementation of long-term contracts, in which payment for services and works of the RME directly depends on clearly set requirements to maintain quality performance of roads.

However, the problem of substantiation of measures to ensure the strategic development of RME and quantification of their economic efficiency in terms of long-term contracts in the selection of contractors (ex ante) and contract implementation (ex post) is insufficiently studied not only in Ukraine but also in the world.

Literature review. The main provisions of this article are based on the works of O. Hart, B. Holmstrom, L. Hurwicz, J.-J. Laffont, E. Maskin, R. Myerson, J. Tirole, P. Pakkala, C. Queiroz, A.S. Soliño, N. Stankevich, G. Zietlow and many others.

A.S. Soliño proposed an analytical optimization model of the contractor incentive mechanism in a long-term contract, based on solving a system of differential equations in partial derivatives by the criterion of maximum social welfare function, but this model does not contain time variables and has strict constraints utility of the contractor, which must have a third derivative. The model operates with a small number of independent variables - levels of service (LOS) [1, 2, 3, 4]. Model cannot display the dynamics of the road maintenance process.

An example of a model with a variable time is the model of D. Gupta, A. Vedantam, J. Azadivar [5] with an optimization algorithm by the induction method. The general approach for distress prediction is based upon the AASHTO Mechanistic-Empirical Pavement Design Guide (MEPDG) pavement performance predictions (MEPDG), but to perform computations quickly Closed Form Solutions (CFS) have been developed. CFS predict a single value for each distress at the end of project design life. Monte-Carlo simulations are run on the CFS with the design specifications as input to predict the as-designed distress. The as-designed distress is then used to predict the remaining service life of the pavement. Similarly, Monte-Carlo simulations are run using as-built specifications as input to estimate the remaining service life. Predicted Life Difference (PLD) is calculated as the difference in service life predicted for as-designed and as-built specifications. Based on the PLD, either a penalty or a bonus (I/D) is assigned to the contractor on a lot-by-lot basis. These are weighted for different distress types and added to obtain total penalty/bonus. Finally a ride quality I/D based on the International Roughness Index (IRI) is add. Model is used for periodic repair of the road surface. Only two types of

defects are taken into account - rutting and a alligator/fatigue cracking for hot mix asphalt.pavement.

The purpose of study [6] was to determine the duration of performance-based contracts that best optimize payments for both parties, namely the government (service users) and the private sector as service providers (performers). None of them can get more profit or benefit when the other is in a difficult situation. To do this, a simulation model was developed based on the approach from the standpoint of system dynamics of Jay Forrester. A systematic dynamic approach fits into the development of performance-based contracts, which have features of complexity, ranging from multi-actor, multi-sectoral and long-term participation. The complexity of long-term contracts is classified as dynamic complexity because it has many possible events.

The model [6] is also based on game theory. None of the construction projects is without risk. The risk must be shared between the parties involved in such a way that neither party is harmed. A study was conducted on the distribution of risk between the parties involved in construction contracts, as well as in a state of stability. The results of statistical analysis show that most are made by scientists from countries such as China, the United States, Australia and the United Kingdom. Researchers have found that many conclusions in which decision-making benefits only one party to the construction contract, i.e. the owner, and the other is not profitable. This causes a lot of legal controversy, the implementation of irrational construction projects in general. The distribution of risk between the parties to the construction contract should be based on the theory of cooperative games, in which the decision is made taking into account the needs of all stakeholders [6, p. 4434].

The analysis of the work [6] showed that it considers concession contracts of public-private partnership. Defects that are subject to road maintenance are not considered. Qualitative categories (such as low, medium, high) are used.

The above suggests that simulation models of deterioration and restoration, maintenance of road conditions are, according to the author of this article, the most promising area of development as part of the mechanism to stimulate road maintenance, but they must take into account the specific nature of defects inherent in maintenance of all elements of highways.

Aims. The aim of the study is to propose a method of probabilistic evaluation of the strategy of road maintenance by applying a simulation model of the road maintenance process.

Methods. The main methods of the study is computer experiment using the author's simulation model of the road maintenance process.

Results. In order to take into account public benefits and, through them, public welfare, the impact of which cannot currently be measured and assessed for most levels of defect maintenance, an approach is proposed that sets a lower limit on performance as a constraint that guarantees a certain level of public serviceability. benefits.

A discrete-event simulation model with system time " Δt " has been developed, which is a component of the mechanism for ensuring the strategic development of

RME (ex post) and a tool for its study. In each of the intervals " Δt " there is a random number of events for the elimination of defects, and in the middle of " Δt ". It is not necessary to record the moments of occurrence of the defect and its elimination. The most difficult issue is the quantification of the impact on public benefits of the parameters of service levels set within the operational maintenance of roads. The impact of only a small number of defects on the value of the public welfare function is sufficiently studied and can be quantified, but such defects are eliminated by capital and current average repairs. For defects that are remedied by retention, the impact on the welfare function is less obvious. There are no models for assessing such impacts.

The operational state of the elements of roads is formed under the influence of two processes:

- degradation process, i.e. the occurrence and development in time and space of defects of road elements, which are the result of external and internal factors. The process of degradation of each element can be cumulative, discrete and discrete-continuous;
- process of restoration - elimination by RME forces of defects of road elements by performance of works on repair and rendering of services on the maintenance of elements of roads.

The basis of the simulation model is the forecast model, which determines the mathematical relationships between the numerical variables of the forecast of the selected financial indicators: value, penalty, profit and the level of maintenance.

As a basic model for analysis, the models of Π_{NPV} profit and penalties III_t are proposed:

$$\Pi_{NPV} = \sum_{t=0}^T \frac{B_t - CP_t + IB_t + \text{III}_t}{(1+d)^t}; \sum_{t=1}^T \frac{B_t - \text{III}_t}{(1+d)^t} > \sum_{t=0}^T \frac{CP_t + IB_t}{(1+d)^t}, \quad (1)$$

where T is the duration of the contract, months; B_t – monthly payment for works and services in the t -th month, UAH; III_t – amounts of deductions for penalty points accrued for the month, UAH; d is the monthly discount rate adjusted for the inflation index; CP_t – cost of works and services under the contract in the t -th month, UAH; IB_t – other expenses: funds to cover administrative expenses, funds to cover risks, funds for risk insurance, taxes, fees, other mandatory payments established by current legislation, UAH.

The cost of works and services in the t -th month is determined by the formula:

$$CP_t = \sum_{i=1}^{E_t} \sum_{j=1}^{D_{t,i}} \left(C_{i,j}(t_{i,j}^y) \cdot n_{t,i,j} \right), \quad (2)$$

where E_t is the number of road elements that are serviced in the t -th month; $D_{t,i}$ – the number of types of defects of the i -th element of the road in the t -th month; $t_{i,j}^y$ – duration of elimination of

one defect of the j -th type of the i -th element, days; $C_{i,j}(t_{i,j}^Y)$ – the cost function of the work or service to eliminate one defect of the j -th type of the i -th element, which depends on the selected elimination technology; $n_{i,j}$ – the number of defects of the j -th type of the i -th element in the t -th month.

The amount of deductions for penalty points Π_t is determined by the formula:

$$\Pi_t = \sum_{i=1}^{E_t} \sum_{j=1}^{D_{t,i}} \left[cb_t \cdot P_{i,j}(q_{t,i,j}) \right], \quad (3)$$

where cb_t – the cost of one penalty point in the t -th month, which may be revised each year of the contract, UAH.; $q_{t,i,j}$ – the number of the interval of exceedances of the response period at elimination j -th defect of the i -th element in the t -th month; $P_{i,j}(q_{t,i,j})$ – the function of calculating the number of penalty points adopted at the conclusion of the contract, which depends on the number of intervals of exceeding the response period when eliminating the j -th defect of the i -th element, $P_{i,j}(0) = 0$.

It is accepted that the process of performing works and services to eliminate defects is under the influence of random factors. Their impact on the duration, cost, penalties, profit and level of service is proposed to be assessed through three sets of triangular laws of distribution of random variables, which are characterized by three parameters of values: a - minimum; b - maximum; c is the most probable. The model ("actual") value is determined by the Monte-Carlo method according to the known formulas of the triangular distribution law as a function of a uniformly evenly distributed in the range from 0 to 1 random number obtained using a random number generator.

When the "actual" (model) value of the duration of elimination of the defect exceeds the response period stipulated in the contract, the RME is charged a deduction from the amounts of payment (fine).

$$Y = cb \cdot n \cdot \sum_{i=1}^{i=5} (k_i^u \cdot q_i), \quad (4)$$

where Y – penalty, UAH; n – fractional number of penalty points per unit time of excess; cb – the cost of 1 penalty point, UAH; k_i^u – coefficient to the penalty for delay in execution; q_i – the number of units exceeding the response time

Maintenance are considered: support strategy (corrective), which is to eliminate defects in road elements when they reach the level of intervention; anticipation strategy (preventive), which consists in the early execution of certain works, when the causes of cumulative defects are eliminated before the defects reach the level of intervention.

Discussion. A method for evaluating road maintenance strategies has been developed, based on the application of a simulation model of the road maintenance process, which makes it possible to predict estimates of probabilistic laws of distribution of economic results - cost, fines, profit and road retention level.

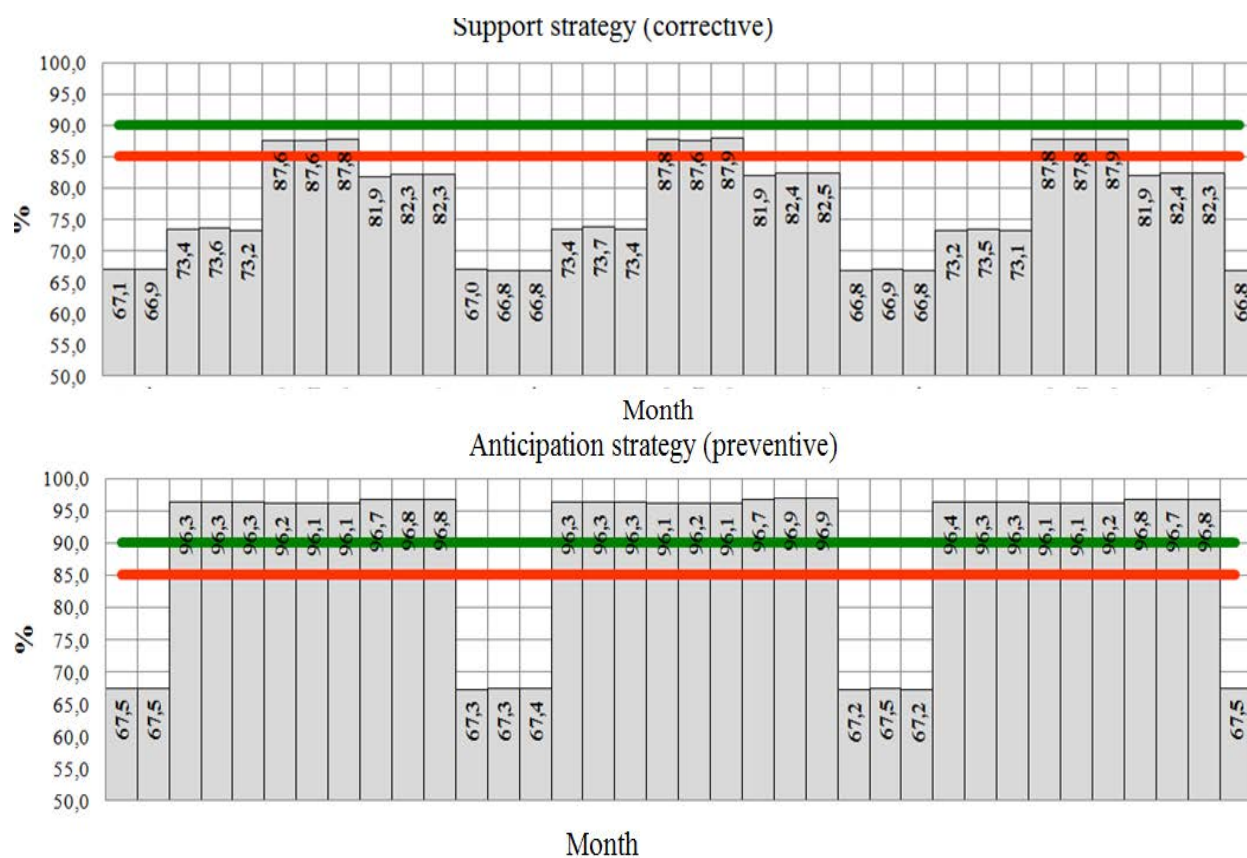


Figure 1. Diagrams of indicators of the level of retention, % – part of defects that are eliminated without exceeding the contractual response period

Conclusions. Based on the results of the study, it is possible to draw blunt conclusions. It is shown that the operational state of road elements is formed under the influence of two processes: degradation process, i.e. the occurrence and development in time and space of defects of road elements, which are the result of external and internal factors. The process of degradation of each element can be cumulative, discrete and discrete-continuous; renovation process - elimination of defects of road elements by RME forces through repair and maintenance of road elements. Two road maintenance strategies were explored: support strategy (corrective), which is to eliminate defects in road elements when they reach the level of intervention; anticipation strategy (preventive), which consists in the early execution of certain works, when the causes of cumulative defects are eliminated before the defects reach the level of intervention.

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