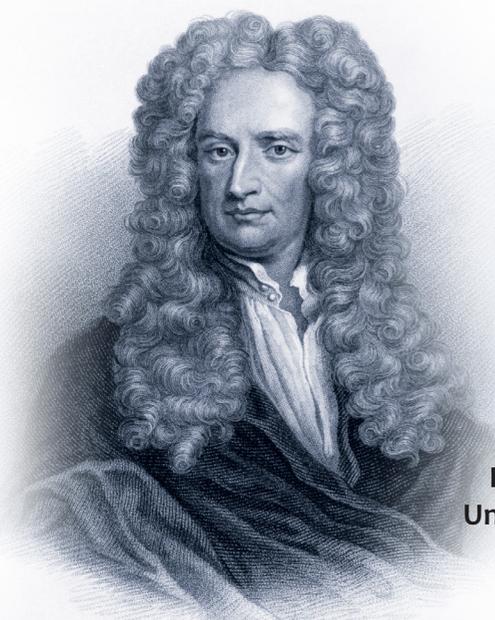




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**THE ROLE OF SMALL BUSINESS IN THE FORMATION
OF BUDGET REVENUES OF VARIOUS LEVELS
(ON THE EXAMPLE OF SMALL BUSINESS
OF THE MAGADAN OBLAST)**

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Abstract. The article attempts to assess the impact of small business on the revenue side of budgets of various levels. The analysis of the revenue side of the Magadan budget, the consolidated budget of the Magadan Oblast, the consolidated budget of the Russian Federation for 2014-2018 is carried out and the share of tax on total income is determined in them. The analysis showed that the municipal budget depends more on the taxation of small businesses, however, the share of tax revenues paid by small businesses is also small and does not exceed 23%.

Keywords. Small business, budget, tax revenues, total income tax, special tax regimes, tax burden.

Introduction

Small and medium business is the basis for the development of the state economy. Small business is involved in the formation of budgets of all levels by direct deductions to the budget from own revenues, and also helps to collect taxes, creating jobs and being a source of income for the population. Unlike representatives of medium and large businesses, small enterprises regularly and promptly pay taxes. In this regard, the task was set to determine the contribution of small businesses to the formation of the revenue side of budgets of various levels.

Materials and research methods

Evaluation of the impact of small business taxation on the occupancy rate of budgets of various levels is not the subject of many works of domestic researchers. Most often, it is proposed to use separate indicators characterizing the level of taxation in the region, such as a tax rate coefficient [4, p.127], an indicator of the structure of tax revenues [1, p.379], other indicators that can be calculated based on tax statistics [5, p. 241-242]. However, these works do not allow us to comprehensively assess the role of small business in generating budget revenues.

The most detailed and generalized indicators for assessing the effectiveness of the regional system of taxation of small businesses are presented in the article by Perekrestova L.V., Irizepova M.Sh. These authors systematized and formed a set of tax statistics indicators used in assessing the regional tax system [3]. The methodology proposed by the authors is available and allows one to fairly accurately assess the effectiveness of the regional taxation system for small enterprises, including filling the regional budget with tax revenues. However, the authors did not suggest approaches to assessing the impact of small business on the formation of the revenue side of budgets of other levels of the budget system.

For the purposes of our study, the method proposed by N.Zotikov [3] is most suitable, which consistently assessed the contribution of small businesses to the occupancy of the municipal budget, regional budget and the budget of the Russian Federation based on the allocation in budgets of different levels of tax revenues from small business taxation.

Consider the importance of small business in the formation of the revenue side of budgets of various levels on the example of small business Magadan Oblast.

The procedure for generating tax revenues of the local budget and the role of small business will be examined using the example of the budget of the city of Magadan (see table 1) [7].

Table 1
The budget of the city of Magadan, thous. rub.

Indicator	2014	2015	2016	2017	2018	2018 to 2014, %
Income, total	5 888 610,9	5 547 948,8	5 565 134,9	6 066 149,5	6 427 243,4	109,15
of which tax revenues, including	1 814 984,9	1 676 200,9	1 809 353,2	2 114 536,1	2 374 710,3	130,84
gross income tax:	234 082,2	294 290,7	302 484,3	491 732,4	547 793,3	234,02
STII	204 512,5	207 131,7	213 491,1	208 490,1	217 266,2	106,24

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Indicator	2014	2015	2016	2017	2018	2018 to 2014, %
UAT	28 302,7	86 143,0	86 009,8	43 907,95	71 938,7	254,18
PTS	1 267,0	1 016,1	2 983,3	4 810,5	4 734,9	3,7 times
Share of tax on total income, %						
- in the total amount of tax revenues	12,9	17,6	16,7	23,3	23,1	-
- in total revenue	3,98	5,30	5,44	8,11	8,52	-
Share of special tax regimes in the amount of tax on total income, %						
STII	87,4	70,4	70,6	42,4	39,7	-
UAT	12,1	29,3	28,4	8,9	13,1	-
PTS	0,54	0,35	0,99	0,98	0,86	-

According to table 1, there is an increase in revenue for the period of 2014-2018 by 9.15% with an increase in tax revenue by 30.84%. The amount of tax on total income paid by small businesses in special tax regimes increased by 34.02%, including according to STII - by 6.24%; by UAT - by 54.18% and by PTS - by 3.7 times. The share of tax revenues from small businesses is insignificant: in 2018, 23.1% of the total tax revenues and 8.52% of the total income.

Most individual entrepreneurs and legal entities apply STII, which is confirmed by the share of this special tax regime in the total income tax - about 40%, then UAT - 13.1% and the smallest share in PTS - 0.86%.

The procedure for budgeting and the consolidated budget of a constituent entity of the Russian Federation will be considered using the budget example of the Magadan Oblast (see table 2) [8] - [11].

Table 2
Consolidated budget of the Magadan Oblast, thousand rubles

Indicator	2014	2015	2016	2017	2018	2018 to 2014, %
Income, total	23 344 668,8	24 317 019	29 702774	31 089 523,8	33185 117,8	142,15
of which tax revenues, including	12 029 130,0	15 359 347	19 880157	18 012 029,8	19 842751,8	164,96
tax on total income, of which:	469 778,2	480 408,4	499 520,5	282 150,3	308 763,6	65,80
- UAT	526,6	(66,7)	-	0,2	-	-

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Indicator	2014	2015	2016	2017	2018	2018 to 2014, %
- single tax on the STS:	469 251,6	480 475,1	499 520,5	282 150,1	308 763,6	65,80
a) with the object "Revenues"	339 003,8	343 509,6	345 235,4	198 357,9	210 026,9	61,95
b) with the object "Revenues reduced by the amount of expenses"	130 247,8	136 965,5	154 285,1	83 792,2	98 736,7	75,81
c) minimum tax	293,6	312,5	243,5	339,4	671,5	2,3 times
The share of tax on total income, %						
- in total revenue	2,01	1,98	1,68	0,91	0,93	-
- in the total amount of tax revenues	3,91	3,13	2,48	1,57	1,56	-
Share in the amount of single tax at the STS of a facility, %:						
" Revenues "	72,24	71,49	69,11	70,30	68,02	-
"Revenues reduced by the amount of expenses"	27,76	28,51	30,89	29,70	31,98	-
minimum tax	0,06	0,07	0,05	0,12	0,22	-

An analysis of the data in Table 2 showed that in general, the revenues of the consolidated budget of the Magadan Oblast in 2018 compared to 2014 increased by 42.15%, including due to a growth of tax revenues by 65%. The amount of tax on total income paid by small business entities in connection with the application of the special tax regime under the simplified tax system, decreased by 65.80%, including with the object "Revenues" - 61.95%, "Revenues reduced by value of expenses" - 75.81%. In general, the share of small business in the budget revenues of the Magadan Oblast remains insignificant: in 2014 - 3.91%, in 2018 - 1.56%. In the total amount of the single tax in connection with the application of STS in 2018, the single tax prevailing in connection with the use of the "Revenues" object is 68.2%.

Next, we consider the role of small business in generating revenue of the consolidated budget of the Russian Federation (see table 3) [6, p. 509].

Table 3
Consolidated budget of the Russian Federation, bill. rub.

Indicator	2014	2015	2016	2017	2018	2018 to 2014, %
Income, total	26 766,1	26 922,0	28 181,5	31 046,7	36 916,9	137,9
- federal budget	14 496,9	13 659,2	13 460,1	15 088,9	19 454,9	134,2
- consolidated budgets of constituent entities of the Russian Federation	8 905,7	9 308,2	9 923,8	10 758,1	12 392,4	139,2
Tax on the total income,	315,1	347,8	388,5	446,9	520,5	165,2
including consolidated budgets of constituent entities of the Russian Federation	315,1	347,8	388,5	446,9	520,5	165,2
The share of tax on total income, %:						
- in the consolidated budget of the Russian Federation	1,18	1,29	1,38	1,44	1,41	–
- in the consolidated budget of the constituent entities of the Russian Federation	3,54	3,74	3,91	4,15	4,20	–

According to table 3, there is an increase in revenues of the consolidated budget of the Russian Federation in 2018 compared with 2014 by 37.9%. The tax on total income paid by small business representatives is fully credited to the consolidated budget of the constituent entities of the Russian Federation, with its share being less than 5%, and less than 1.5% in the consolidated budget of the Russian Federation.

Table 4 presents the summary data on the receipt of tax on total income in budgets of different levels.

Table 4
The share of tax on total income in budgets of different levels, %

Indicator	2014	2015	2016	2017	2018
Local budget of Magadan	3,98	5,30	5,44	8,11	8,52
Consolidated budget of the Magadan Oblast	2,01	1,98	1,68	0,91	0,93
Consolidated Budget of the Russian Federation	1,18	1,29	1,38	1,44	1,41
Consolidated budget of the constituent entities of the Russian Federation	3,54	3,74	3,91	4,15	4,20

According to table 4, it is seen that the largest tax on total income is recorded in the local budget of Magadan, and the share of this tax is growing in tax revenues of the budget. In the consolidated budget of the Russian Federation, the share of this tax is also gradually increasing. At the same time, in the regional budget of the Magadan Oblast, the share of tax on total income for the analyzed period fell almost twofold. It should be noted that tax revenues from small businesses are generally insignificant and make up no more than 23% of tax revenues of the local budget.

Conclusion

According to the results of our analysis, the share of small businesses that apply special tax regimes and pay tax on total income amounted to:

- in the total amount of local budget revenues (Magadan) - from 3 to 9%, in the total amount of tax revenues of the local budget from 12 to 23%. Moreover, the largest share of special tax regimes is accounted for by STII - more than 80%;
- in the total amount of income of the regional budget (Magadan Oblast) - from 1 to 2%, in the total amount of tax income - from 1 to 4%;
- less than 1.5% in the consolidated budget of the Russian Federation, less than 5% in the consolidated budgets of the constituent entities of the Russian Federation.

In 2019, there were changes in tax legislation regarding representatives of small and medium-sized businesses. We note some of them [12]:

- from 01.01.2019, agricultural producers who are subject to a single tax due to the special tax regime of the UAT will have to pay VAT in the generally established manner. In case income for 2018 was less than 100 million rubles. (excluding tax), the taxpayer had to apply to the tax authority for the abolition of VAT. To do this, they inform the tax office at the place of registration no later than the 20th day of the month from which they planned to receive exemption. In subsequent years, the amount of income is as follows: for 2019 - no more than 90 million rubles; for 2020 - no more than 80 million rubles; for 2021 - no more than 70 million rubles; for 2022 and subsequent years - no more than 60 million rubles;
- From December 31, 2018 tax holidays for some entities that are on the Simplified Taxation System (STS) have ended. From 01.01.2019, the social contribution rate for all companies, except for non-profit ones and those conducting charity activities, was 30% instead of preferential 20%, which means an increase in the fiscal burden on small businesses in 2019;
- from 01.01.2019 the size of insurance premiums for individual entrepreneurs has increased; Until the end of 2019 it will be necessary to pay 36,238 rubles: 6,884 rubles. for compulsory health insurance and 29,354

rubles for compulsory pension insurance. If the income received exceeded 300 thousand rubles, before 01.07.2020 it will be necessary to pay another 1% of the money earned in excess of the specified amount.

For employers, tax limits on deductions to extra-budgetary funds have also increased: the limit of the tax base for calculating payments of pension savings amounted to 1150000 rubles, for social payments - 865 000 rubles. For social payments, when the limit is exhausted, a tax on the amount of excess is not charged for payments to the Pension Fund in the amount of over 1,150,000 rubles. 10% rate is applied instead of 22%. It should be noted that from 2021 the payment rate in the RF PF was supposed to increase by 4%, however, by its letter № 03-15-06/54260 of 08/01/2018 the Ministry of Finance canceled this increase and from 2019 the amount of payments will remain unchanged at 22%;

- in 2019, for representatives of small businesses located on the simplified tax system, the amount of income remained unchanged. Despite the fact that a deflator coefficient is introduced annually in order to change income, its growth is "frozen" until 2020;

- from 01.01.2019, the cancellation of the deduction for the transport tax in the amount of the fee for the damage that heavy trucks cause to federal roads. In this regard, the restriction on accounting for income tax expenses and the entire amount of the fee can be taken into account as part of other expenses;

- from 01.01.2019, the value of the coefficient-deflator (K1) for STII increased from 1.868 to 1.915. Moreover, an individual entrepreneur can use a tax deduction of 18 thousand rubles. when switching to the use of online cash desks;

- in the period from January 1, 2019 to December 31, 2028, in such regions as Moscow, Moscow and the Kaluga Oblasts, and Tatarstan, a new special tax regime for the self-employed population was introduced - a tax on professional income. The main goal of such a pilot project is to bring as many self-employed out of the "shadow" as possible. Individual entrepreneurs and legal entities must pay 6% of income to the budget; exemption applies to taxes such as personal income tax on income that is taxed on professional income tax; VAT (except for "import") and insurance premiums (voluntary transfer);

- from 01.07.2019 the last stage of the transition to online cash registers for the remaining individual entrepreneurs and legal entities is ending.

These changes in tax legislation will lead to an increase in the tax burden and, consequently, to an increase in the share of small businesses in tax revenues of budgets.

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ESSENCE OF THE LAW OF SYNERGY, FEATURES OF ITS USE IN THE MANAGEMENT OF AN ORGANIZATION

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Abstract. In modern Russia, a large number of both external and internal factors influence the efficiency of an organization. The article traces a new specific type of management - synergistic, which is based on self-organization and self-government. The purpose of this article is to identify the nature, significance and specifics of the application of the law of synergy in the management of an organization.

Keywords: synergy, organization, system, efficiency, integrity.

Synergism plays a huge role in various living systems of absolutely all kinds, as well as levels of organization. For a long time he did not receive any worthy evaluation, since he often exists precisely in a hidden, definite form. With the emergence of a completely new specific scientific field under the name of "synergetics", it became possible to form production enterprises of precisely the synergetic type. A new specific type of management also appeared - synergetic, which is based on self-organization and self-government. The use of various methods for predicting the active development of organizations, as modern synergetic systems, also allows you to visualize different scenarios for the development of organizations depending on any external conditions. Thus, the study of the essence of the law of synergy, the features of its use in managing an organization is of great interest today. All this determines the relevance of this topic.

Synergism can be defined as the friendly, joint, interdependent active action of two or more agents, forces, factors in one direction. Modern synergetics is studying the special state of complex systems in the field of unstable equilibrium, or rather the dynamics of their self-organization.

A huge number of external and internal factors influence the efficiency and condition of any modern organization. In accordance with the property of emergence, the active joint action of a number of factors almost always differs from the total amount of separate specific effects. It is this difference, usually called the synergy effect, cooperative effect, interaction factor, that is a quantitative direct expression of synergy. [4]

The paradigm of synergies comes from the recognition that in the development process, the beneficial results obtained by the integrity of an organization are responsible for the well-being of its parts and members. In essence, the doctrine of synergism is an “economic” theory of complexity.

In management, synergies are given great importance. The law of synergy is as follows: any complex dynamic system seeks to obtain the maximum effect due to its integrity; seeks to maximize the potential of cooperation to achieve effects. [6]

For any modern system (biological, technical, social), there is such a specific set of resources in which its potential will always be either substantially greater than the simple sum of certain potentials of resources that are directly included in it (personnel, technologies, computers, etc.), or substantially less. However, it is not only and not so much certain combinations of potentials that are important as their coordinated behavior, as well as mutually supportive relationships.

In modern foreign literature on managerial practice and management, the concepts of “synergy”, as well as “efficiency” are often used precisely as conceptually interconnected. A concept such as “synergy” can also be used in the context of the effectiveness of modern organizations, which is quite widespread today. [7] In general, the relevance of synergy as a particularly important factor in various fields of science, as well as practical activities, is reflected in foreign reference books (encyclopedias and lexicons). We can say that the concept of synergy today is considered at the general scientific level, as well as in special fields of knowledge, for example, in psychology and sociology, in management and economics, in marketing, etc.

Synergy and synergetics are two related concepts, but not identical. They became the founders of the conceptual mechanism, a number of basic concepts used today in science - synergistic approach, synergistic paradigm, synergistic research method, synergistic concept of understanding, cognition of the world and life. Using these concepts, researchers, following continuity, as a whole, continue to explain any phenomena, the behavior of different systems with a lesser degree of inconsistency. [2]

On the other hand, the confirmation by practice of various theoretical models of synergy makes it possible to extend it to all other areas of human activity. There are many definitions of synergy that depend on specialists in the field of activity where they work, for example, business, systems engineering, psychology. The following definitions exist in literature:

Synergy in business is a certain benefit that has been obtained from combining two or more elements (or businesses) so that the productivity of this combination is slightly higher than the sum of any particular elements (or businesses).

Synergy (Greek) is cooperation, commonwealth, a certain joint action, the interaction of different types of energies in a holistic action, entering into partnership with each other. [5]

These definitions, in general, reflect the specificity that reflects the scope of the direct application of synergy in life. Today, a word like synergy has become quite popular. All this is closely related to the fact that three main factors affect the success of a project, and enterprises - are human, organizational, and information resources.

Thus, we can conclude that synergy has its own characteristics, which consist in the fact that when directly fulfilling any conditions, it gives a result that generally exceeds expectations. A modern scientific and practical novelty of synergy may be that it acts precisely as an element of the system, as a specific energy-information system itself, which affects various systems in completely different areas of life (economics, business).

Organizations can be considered the basic formation for society. In general, an organization is a technological, social system based on various principles, which was created to achieve any goal, having all the necessary internal resources to directly support all of its life, characterized by belonging, collective identity of all its members. In general, in fulfilling their specific social function, various organizations ensure the reproduction, active development of a given human community as a qualitatively defined certain social formation. [3]

The effectiveness of modern organizations, understood as achieving a goal, solving a problem with minimal costs, is always determined by the action of various factors. Unidirectionality, coherence and synchronism, other cooperative actions of personnel are a combination of factors that ultimately give a joint effect, which increases the effectiveness of the relevant organizations.

The synergy effect is not only a favorable combination of resources, but also a coordinated behavior, relationships, correlation; in a word, the whole set of different parameters that characterize a complex developing system.

From the standpoint of the modern theory of organization, this law could be called the law of cooperation; cooperation is an organization of forces, agents, processes, resources and other things for the active joint execution of a common cause. Synergism is the ability to evaluate various collaborative effects that are associated with any new product or market. The functional structure of absolutely any effective organization, as a whole, determines such an interaction of its members, as well as diverse potentials, which maximally realizes all the positive combined (synergistic) effects, completely eliminates the negative effects of interaction. In order to use various synergistic joint effects, you need to know the synergistic characteristics of the company, build a development strategy, using synergistic potential. The following types of synergistic effect are distinguished: [1]

1. Synergies of “scale”. Gradually, as the modern organization becomes much more complex, the role of cooperativity, as well as synergy, will only increase.

2. The combination of labor as a combination of diverse efforts. The production and economic principle of the division of labor precisely from the point of view of the law of synergy does not look like a division, but as a union (for example, a conveyor).

3. Synergy of sales. Sellers unite, actively use the same distribution channels, transport, warehouses and personnel to sell different goods.

4. Operational synergy. It makes it possible to use fixed assets highly efficiently, as well as personnel: joint training, fairly large purchases of equipment, as well as transportation from foreign countries, distribution of overhead costs, etc.

5. Investment synergy. First of all, it manifests itself with the active joint use of long-term and short-term loans, production facilities, research, as well as a common technological base, etc.

6. The model of “general goods”. In the modern economy, common goods are always produced precisely due to the interdependent various joint efforts.

7. Formation of a joint favorable environment. A variety of different industry production in any single compact territory makes it possible to apply the effects of synergy and cooperation.

8. Synergies of management. Gradually growing firms tend to experience an acute shortage of competent senior executives. Any improvement in leadership always gives a significant synergy effect.

Synergetics also plays a huge role in the educational process. The implementation of the law of synergy in this area allows us to rationalize the

education process, optimize the use of resources, increase the stability of an educational organization, create a positive psychological climate, both in the educational organization team and among students, to successfully implement the mission and achieve strategic goals.

Thus, the role of synergy as a tool in improving the efficiency of an organization's activity is growing significantly today, since it can clearly reveal the mechanism of interaction of key organization factors, which in turn can lead to the effective functioning of complex economic systems.

Thus, we can draw the following conclusions:

1. Synergy - is a special effect that is achieved through the active interaction of a certain group of factors. Today, in economics and management, synergy is revealed as a gradual increase in the level of activity efficiency directly as a result of joining, combining, integrating, and also merging any separate parts further into an integrated system precisely due to emergence or systemic effect (the emergence of new qualities of a certain received system).

2. The synergy effect in an organization is not only a favorable combination of resources, but also coordinated behavior, bonds, relationships; This is a set of parameters that characterize a complex actively developing system. Today, for each modern organization, it is important to evaluate the synergistic effect with certain changes relating to different areas. The synergy of an organization can significantly reduce the costs of direct management, as well as speed up a certain process of introducing various innovations, optimize the loading of production equipment, and slightly increase the overall sales volume. In addition to improving the basic financial indicators of the company, a synergistic effect can also contribute to an increase in labor productivity and an improvement in climate.

Thus, synergy - is cooperation, coordinated and interconnected actions that can manifest themselves directly in the form of mutually beneficial cooperation and strategic partnership, cooperative interaction and merger.

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**TRANSACTION COSTS IN THE MODERN ECONOMY
OF THE REPUBLIC OF TAJIKISTAN**

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Annotation. In the article, the authors clearly define transaction costs and their classifications. Since the introduction of the concept of transaction costs in economic analysis and in transition economies is a major achievement. Therefore, the recognition of the “non-free” nature of the process of interaction between people made it possible to completely illuminate the nature of economic reality: “Without the concept of transaction costs, which is largely absent in modern economic theory, it is impossible to understand how the economic system works.

Transaction costs also include any losses arising from the ineffectiveness of joint decisions, plans, concluded agreements and established structures; ineffective reactions to changing conditions; ineffective protection agreements. In a word, they include everything that somehow affects the comparative performance of various ways of allocating resources and organizing production activities.

Keywords: transaction costs, non-free, intensive growth, components, tendency, transaction, neoinstitutionalists,

Introduction to the economic analysis of the concept of transaction costs was a major theoretical achievement. The recognition of the “non-free” nature of the process of interaction between people made it possible to completely illuminate the nature of economic reality: “Without the concept of transaction costs, which for the most part is absent in modern economic theory, it is impossible to understand how the economic system works, to productively analyze a number of problems that arise in it, and also to get the basis for making political recommendations.”

Transaction costs could be defined as the costs of economic interaction, in whatever form it takes place.

Transaction costs cover the costs of making decisions, developing plans and organizing future activities, negotiating its contents and conditions when two or more participants enter into business relations; the costs of changing plans, revising transaction terms and resolving contentious issues when this is dictated by changed circumstances; the costs of ensuring that participants abide by agreements. Transaction costs also include any losses arising from the ineffectiveness of joint decisions, plans, concluded agreements and established structures; ineffective reactions to changing conditions; ineffective protection agreements.

In a word, they include everything that somehow affects the comparative performance of various ways of allocating resources and organizing production activities.

The main task of the transition period for the Republic of Tajikistan is intensive economic growth, in which cost reduction plays an important role. Transaction costs allow significant economies of scale. There are constant components in all types of transaction costs, therefore, when information is collected, it can be used by any number of sellers and buyers, therefore, the cost of developing legislation or administrative procedures, which are also transaction costs, does not depend much on how many persons are subject to

The nature of the company, its internal changes attracted the attention of many economists. Therefore, it is quite natural that in the socioeconomic conditions that developed in the first third of the 20th century, economic science faced a task and the need arose to define and introduce a new concept that would ascertain the fact that there are positive losses and costs due to the interaction of economic agents among themselves, and that precisely such interaction does not occur for free, and this "non-free" must be taken into account when determining the effectiveness of both individual firms and the economy ohmiki in general. As such a concept, the concept of transaction costs introduced by Ronald Coase in his work "The Nature of the Firm" (1937) was recognized. [3]

These costs include mainly distribution costs. There are new costs, which he called "transactional" (from the word transaction - transaction). These include the cost of collecting information about prices, consumer preferences and competitors' intentions; negotiation, conclusion and legal support of transactions.

According to K. Arrow, transaction costs in economics are similar to friction in physics. Neoinstitutionalists believe that the function of the market is to save transaction costs, and its main advantage is the tendency to minimize the cost of obtaining information. [1]

Usually there are 5 forms of transaction costs:

1). **Costs of information search** - this refers, first of all, to the costs of searching for counterparties of business transactions and the search for the most favorable purchase and sale conditions (prices);

2). **Costs of negotiating and contracting** - in order to conclude an agreement between contractors, it takes time and money. Negotiations themselves will take a lot of time. Signing a contract, a friendly dinner with the publisher - all this will come at the cost of concluding a contract;

3). **The costs of measurement** - goods have a variety of properties that bring usefulness to their owner. Measurement costs are also associated with the need for the cost of measuring equipment (control scales, personal calculators and even dosimeters, with which citizens, fearing radioactive contamination, prefer to buy vegetables and fruits);

4). **Costs of specification and protection of property rights** - specification and protection of property rights are associated with the costs of establishing the property and the subject of property, the functioning of the judicial system, law enforcement agencies, etc. An example is the activity of many small businesses in the modern Republic of Tajikistan.

In theory, the state's private property rights should be protected by the state, as in any country with a market economy. However, if, for one reason or another, the state copes poorly with this task, then firms resort to alternative methods of protecting their property, i.e. the search for the so-called "roofs" that carry out security for a fee;

5). **The costs of opportunistic behavior** - dishonesty, deceit, information hiding, "calculated efforts to lead astray", as O. Williamson explained to this category, entail significant costs both before and after the conclusion of the transaction. In other words, the identification and punishment of the violator of the contract is associated with costs. Costs are required for counterparties to protect themselves from opportunistic behavior. [6]

Neoinstitutionalists in a market place their rightful place for the firm, and at the same time allocate a new type of costs associated with market relations - transactional. However, they believe that there is a system of public demand and supply institutions. Such institutions of the domestic economy include, for example, the institution of regulation of commercial credit or the institution of arbitration. The absence of an institution regulating com-

mercial credit leads to transaction costs in the form of non-payments, and an arbitration institution leads to transaction costs of non-performance of contracts.

From this we can conclude: the higher the value of transaction costs, the greater the need for institutions. The public demand for institutions is expressed by the value of transaction costs, and the public supply of institutions is determined by the costs of collective action, i.e. the costs of creating and operating institutions. If the transaction costs of the absence of institutions are equal to the costs of collective action, then a state of equilibrium will arise in the market. The concept of transaction costs for our country is new, but in the West, even in the era of early capitalism, in order to reduce costs, merchants united in companies, trying to minimize the risks of trading operations. In our country, a situation comes when enterprises are forced to pool their capital and efforts to overcome imperfect market relations.

S. Malakhov claims that the theory of transaction costs allows us to go on to analyze imperfect markets in general and developing Tajik markets in particular. Having considered the nature of the occurrence of transaction costs in relation to the Tajik economy from the perspective of a neoclassical approach, he proposes to separate the money transaction costs (T) from non-monetary (S) - the costs of search, information and expectations. Unfortunately, modern enterprises do not analyze transaction costs in this regard. [4]

In the period of the Soviet planned economy, state price control prevents the establishment of equilibrium of both monetary and non-monetary transaction costs, in which the minimum set of transaction costs (A) is ensured by the equality:

$$T = S(A \text{ min} = S + T = 2T)$$

The containment of price increases ensured a reduction in cash costs, which led to a disproportionate increase in non-cash costs, i.e. the growth of the set of $TI = A$ (i.e., transaction costs are equal to the minimum set of transaction costs).

Transaction costs are costs (monetary and non-monetary) that appear when making management decisions on the sale of goods (information costs regarding sales markets, customers, suppliers, competitors, selling prices, advertising costs, contracting, etc.).

You can introduce the concept of "marketing costs", which to some extent are synonymous with the concept of "transaction costs". In the literature there are many definitions of transaction costs:

- property exchange costs;

- costs of implementing and protecting contracts;
- the costs of obtaining benefits from the division of labor;

In their composition, J. Bartzel singles out “measurement costs”, J. Stigler - “information costs”, O. Williamson - “costs of opportunistic behavior”, etc.

It should be noted that the concept of transaction costs has entered the language of domestic economic literature recently.

R.I. Kapelyushnikov identifies 5 classes of transaction costs (in fact, they were described by me a little earlier):

1). **The cost of information retrieval** is the arrangement of information before a transaction or contract. Costs in this case are obtained from the time costs, losses associated with incomplete / non-acquired information.

2). **Negotiation costs** - this type of cost is due to a badly concluded, poorly executed transaction. The main instrument for saving these costs seems to us model contracts.

3). **Costs of measurement.** Dimension is the quantification of information. The costs of measuring equipment, conducting their own measurements, the implementation of measures for the safety of the parties from errors, the same losses from errors.

4). **Specification costs and costs of property rights** - these costs are associated with the costs of maintaining the court, arbitration, state bodies; costs necessary to restore violated rights, losses from their poor protection.

5). **The costs of opportunistic behavior** - “Opportunistic behavior” - introduced by O. Williamson - is the concept of unfair behavior that violates the terms of the transaction and thereby causes damage. It can be a lie or a deception. [2]

Such costs represent measurement costs, but do not relate to the result, but to the process - not to the product being transferred, but to the behavior of the counterparties to the transaction.

The costs of “politicization” are the costs, accompanied by decision-making within the organization:

- collective decision-making costs;
- impact costs - centralized decision making.

External effects - appear at any transaction costs and represent the interests of third parties, i.e. “external effects” arise, which are transaction costs.

All transaction costs can be divided into two groups according to the degree of possibility of determining for the company their real value, expressed in monetary terms:

1. Explicit transaction costs: all transaction costs that have a certain market price in money terms and can be reflected in accounting documents, for example, advertising costs, attorney services.

2. Implicit transaction costs: non-monetary transaction costs that cannot be recorded in accounting documents, for example, costs arising from the loss of free time. They can be covered (as well as imputed) due to economic profit from production and sale.

At the beginning of the XXI century, global changes are taking place in the sphere of economic production. Transaction costs are not only the “engine” of the evolution of social institutions, the desire to minimize them contributes to scientific and technological progress.

The scope of transaction costs is, along with economics, politics and sociology, i.e. those types of human activity that are caused by the interaction between individual individuals or their associations.

The characteristics of transaction costs vary from narrow definitions (linking transaction costs to individual activities and costs arising from the conclusion of a transaction) to broad ones.

The economic losses of the company from the existence of administrative barriers to doing business, introduced by regulatory acts of state (federal and regional) and municipal authorities, are composed of two components:

1). Direct population **losses** from rising retail prices, associated with the need for business entities to bear unproductive costs, aimed at overcoming administrative barriers and thereby being distracted from value creation processes;

2). Indirect losses associated with the underproduction of value (and gross domestic product) due to inefficient use of resources caused by imperfect market structures and weak incentives to develop production due to low level of competition; decrease in production volumes, i.e. the volume of supply in the market also manifests itself in an increase in the price level, which would be lower if the supply were relatively higher.

By their economic nature, these losses are made up of two components: firstly, unproductive transaction costs associated with the need to overcome artificial administrative barriers, and secondly, reduce the efficiency of use of available resources. The magnitude of direct population losses from rising retail prices (type 1) conceals both the transaction component (the additional costs of producers and traders are passed on to the buyer) and the “efficiency” component caused by the low level of supply.

Indirect losses of society (type 2) only partially affect the welfare of the population, expressed in the reduction of taxes from which the wages of public sector employees are financed, as well as in the reduction of the wages of workers employed in underperforming organizations. At the same time, indirect losses, as noted, can be reflected in higher prices, as entrepreneurs in the current Tajik market can raise prices without risking immediately to face demand constraints due to the low level of competition in most domestic markets.

Based on this, we can conclude the above words by the fact that the direct basis for the occurrence of direct losses for the population from rising retail prices is official and shadow payments that business entities are forced to make to formally comply with the rules that establish administrative barriers to business. Since, these payments, by their economic nature, represent a variety of transaction costs.

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**ACCOUNTING LONG-TERM ASSETS IN THE BUDGETARY
INSTITUTIONS OF THE REPUBLIC OF TAJIKISTAN**

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Annotation. The article considers the accounting of long-term assets in budgetary institutions of the Republic of Tajikistan. Particular attention is paid to the issues of accounting reform of budgetary institutions of the Republic of Tajikistan in order to bring them in accordance with IFRS. The authors highlighted the methodology of accounting for long-term assets in accordance with a single chart of accounts.

Keywords: budgetary organizations, asset, short-term financial assets, long-term financial assets, single chart of accounts, International Financial Reporting Standard.

In the Republic of Tajikistan, a lot of work has been done to improve the budget system and budget process.

As you know, the legislation in the field of accounting for public sector organizations is undergoing changes, which today are only the beginning.

Starting from 2012, budget organizations are switching to the application of International Financial Reporting Standards. On this issue, a number of instructions, regulations, technical guidelines were adopted by the Ministry of Finance of the Republic of Tajikistan. In addition, new forms of financial reporting and instructions for its application have been adopted.

At this stage, budget accounting and reporting are regulated by the Instruction on accounting in budgetary institutions dated December 26, 2000, No. 157 and the Instruction on the procedure for preparing and presenting annual and periodic financial statements in accordance with the standards of financial reporting in the public sector of Tajikistan (SFOGST) budget organizations of April 9, 2015, No. 204.

For several decades, budgetary institutions have used the chart of accounts, which is very similar in structure to its counterpart for commercial organizations. In accordance with the order of the Ministry of Finance of the Republic of Tajikistan dated 13.06.2012, No. 40, the Unified Chart of Accounts and the Instruction for the Application of the Unified Chart of Accounts for entities of the general government sector of the Republic of Tajikistan, including the Treasury of the Ministry of Finance of the Republic of Tajikistan, were approved.

The new chart of accounts is integrated with the budget classification, including

including the classification of operations of the general government sector, which includes the economic classification of income and expenses. As a result, any business transaction with budget property and liabilities is subject to classification. Thus, a deeper analytical accounting is provided, and the revised budget classification itself allows to provide high-quality information.

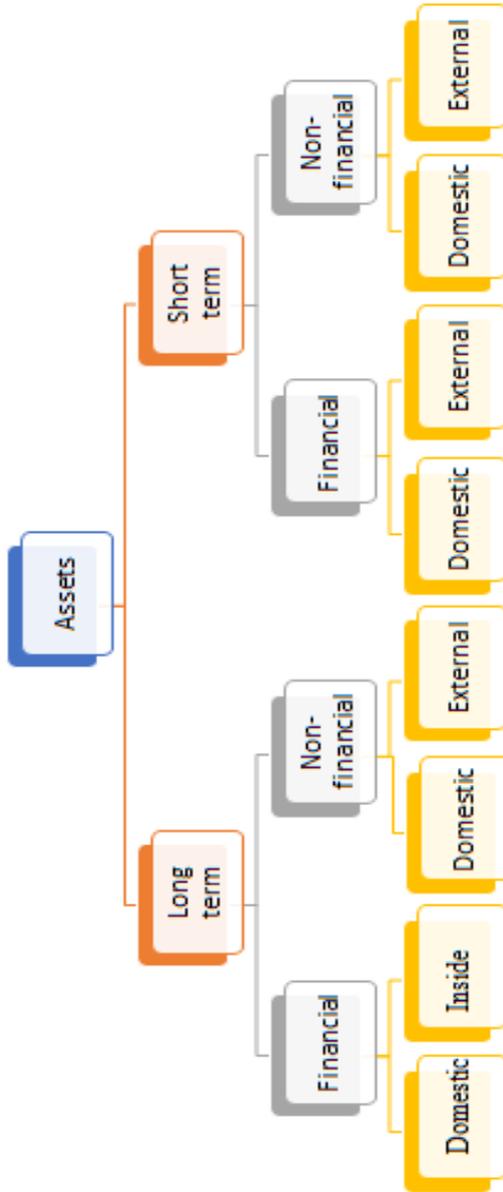
According to International Financial Reporting Standards, assets are controlled by the entity resources that have arisen as a result of past events and from which the receipt of economic benefits or service potential is expected.

Assets that are used to provide net cash flows are referred to as “future economic benefits”. Assets that are used to produce goods and provide services in accordance with the objectives of the entity, but which do not directly provide net cash inflows, are referred to as “service potential”. [2, 51]

According to the Unified Chart of Accounts for organizations of the general government sector of the Republic of Tajikistan, assets consist of asset accounts classified as long-term and short-term, which, in turn, are classified as financial and non-financial. In addition, financial assets are classified as internal and external.

In budgetary organizations of the Republic of Tajikistan, the assets section includes the following sections: (Fig1)

- Short-term financial assets – domestic;
- Short-term financial assets – external;
- Short-term non-financial assets;
- Long-term non-financial assets;
- Long-term financial assets – domestic;
- Long-term financial assets – external;



Picture 1.

The classification of assets into “internal” and “external” is based on whether a liability is made by the resident or non-resident, respectively. In other words, whether the counterparty is a resident or non-resident of the Republic of Tajikistan, respectively.

An asset should be classified as short-term if it meets any of the following criteria:

- a) it is intended to be sold or sold, or intended to be consumed during the normal operating cycle of the entity;
- b) it is intended primarily for trading purposes;
- c) it is expected to be implemented within twelve months after the reporting date; or
- d) it is cash or cash equivalents.

All other assets should be classified as non-current. In budgetary organizations, all long-term assets, in turn, are divided into:

- 1) long-term non-financial assets
- 2) long-term financial assets

Under the definition of long-term non-financial assets, it is customary to understand objects that are owned or used by budget organizations and bring them one or another amount of economic benefit.

“Long-term non-financial assets” is classified into: [3, 26]

- Fixed assets;
- Accumulated depreciation of fixed assets;
- Fixed installation tools;
- Investment property;
- Accumulated depreciation of investment property;
- Construction in progress;
- Biological assets;
- Accumulated depreciation of biological assets;
- Intangible assets;
- Accumulated depreciation of intangible assets;
- Unproduced assets;
- Accumulated depletion of natural resources;
- Accumulated depreciation of non-produced intangible assets;
- Values;
- Accumulated impairment of assets.

“Fixed assets” is intended for accounting of fixed assets, which include tangible assets intended for repeated use in the production or delivery of goods and services, for rental or for administrative purposes, and which are expected to be used for more than one reporting period .

"Accumulated depreciation of fixed assets" is intended to reflect the amount of accumulated depreciation of fixed assets and shows the degree of depreciation.

"Fixed assets for installation" is intended to account for acquired fixed assets until they are ready for operation. For example, an acquired fixed asset is in transit or in stock. Some basic means for readiness for operation require installation, assembly of its parts and attachment to the foundation or supports, to the floor, etc.

"Investment property" is intended for the accounting of real estate that generates income in the form of remuneration.

"Accumulated depreciation of investment property" is intended for depreciation and accounting for the accumulated depreciation of investment property.

"Construction in progress" is intended for accounting of objects with an incomplete construction cycle in case of construction of the object by the organization itself.

"Biological assets" is intended to account for biological assets obtained from agricultural activities, for the purpose of their sale or donation or for the purpose of their transformation into agricultural products or into additional biological assets. Agricultural activities include livestock, forestry, crop cultivation, cultivation of gardens and plantations, floriculture, aquaculture (fisheries).

Accounting for biological assets implies accounting during the period of their growth, degeneration and reproduction, as well as accounting for agricultural products only until the moment of their collection (for subsequent accounting, the "Reserves" account is used).

"Accumulated depreciation of biological assets" is intended to accrue depreciation and the amount of accumulated depreciation of biological assets.

"Intangible assets" is intended to account for produced (self-created) intangible assets, such as software, websites, copyrights, patents, motion pictures, etc.

"Accumulated depreciation of intangible assets" is intended for accrual and accounting of accumulated depreciation of produced intangible assets.

"Non-produced assets" is intended for the accounting of non-produced tangible and intangible assets. Non-produced tangible assets represent natural assets such as land, subsoil resources and other natural resources.

"Accumulated depletion of natural resources" is intended to accrue and account for the amount of accumulated depletion of natural resources. Depletion is the reduction in the cost of subsoil resources, uncultivated biological resources or water resources due to the extraction of part of the corresponding asset.

"Accumulated depreciation of non-produced intangible assets" is intended for accrual and accounting of the amount of accumulated depreciation of non-produced intangible assets.

"Values" are manufactured goods of significant value that are acquired and stored mainly as a means of accumulation over time and are mainly not used for production or consumption. It is expected that over time, their real value will increase, or at least not decrease, and their quality under normal conditions will not deteriorate over time.

"Values" is divided into:

- a) precious metals and stones;
- b) works of art and antiques;
- c) jewelry;
- d) other values.

"Accumulated impairment of assets" is intended to account for the accumulated impairment of long-term financial assets. Impairment refers to a decrease in the usefulness of an asset to the entity that controls it.

Long-term financial assets are assets that have a useful life of more than one year, are acquired for use in the activities of the enterprise and are not intended for resale. [4, 83]

The subsection "Long-term financial assets" is divided into:

- a) long-term financial assets – domestic;
- b) long-term financial assets – external.

The subsection "Long-term financial assets - internal" is intended for accounting of long-term financial assets arising as a result of transactions with internal counterparties, i.e. with residents of the Republic of Tajikistan. The subsection "Long-term financial assets - internal" includes the following categories:

- Long-term investments;
- Discounts and premiums on long-term investments;
- Long-term receivables;
- Reserve for doubtful debts.

"Long-term investments" is intended to account for long-term investments made in companies or organizations that are residents of the country. "Discounts and premiums on long-term investments" is intended for accounting discounts and premiums on long-term investments made in companies - residents of the Republic of Tajikistan.

“Long-term receivables” is intended for accounting receivables for settlements with buyers and customers - residents of the Republic of Tatarstan for assets sold to it, work performed and services rendered with a maturity of more than one year. And also, taking into account the amount of rental income for the assets leased to tenants - residents of the Republic of Tajikistan for financial rent for the coming periods.

“Allowance for doubtful debts” is intended to account for the allowance for doubtful debts for long-term receivables of residents of the Republic of Tajikistan.

The subsection "Long-term financial assets - external" includes the following categories:

- Long-term investments;
- Discounts and premiums on long-term investments;
- Long-term receivables;
- Reserve for doubtful debts.

We can say that the purpose and accounting of these accounts is similar to the purpose and accounting of long-term financial assets - internal. Thus, the classification and accounting of assets in budgetary institutions of the Republic of Tajikistan, carried out by a single chart of accounts for entities of the public administration sector of the Republic of Tajikistan, corresponds to the main aspects of IFRS.

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FORESIGHT TECHNOLOGIES IN REGIONAL ECONOMICS AND PUBLIC-PRIVATE PARTNERSHIPS

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Abstract. The article discusses the features of the modern stage of economic development, characterized by the formation of knowledge of an intensive economy. The ambiguity of the economic situation in various regions of the country is emphasized. Modern regions of the Russian Federation are a reflect of new socio-economic processes in which the formation and development of a national innovation system and the digital economy take place. A huge role in this process belongs to business and public-private partnerships. The author focuses on considering the situation in the Novosibirsk region. The study of this phenomenon was carried out on the basis of a sociological study.

Keywords: region, innovation, business, science, digitalization.

A fundamental feature of the modern period of development of the Russian economy is the transformation of its technological basis. The use of foresight in the economy of the most advanced regions. After all, foresight is a prediction of the future, both technological and social. The most advanced regions today are gradually entering the growth phase of a new technological order. They form the core of a new technological structure. They are increasingly using nano-, bio-, digital, engineering technologies that transform all sectors of the economy. And a huge role in connection with the lack of funds to finance these transformations belongs to the public-private partnership with entrepreneurship. The economy of cooperation is gradually becoming the key to the structural adjustment of society. Such cooperation is greatly facilitated by territorial clusters and technology parks. Creating an innovative infrastructure solves the problems of reducing the risks of entrepreneurs operating in the most technologically important and new areas of the economy. Novosibirsk belongs to the region with a huge concentration of both high-tech industries and a high level of entrepreneurial activity. In connection with these, the purpose of this article is to consider the possibilities of interaction between business, government and scientists to turn the region into a territory of technological breakthrough.

The author relied in his work on a system-structural sociological study conducted by the financial company Bank Ugra in the spring of 2017, in which he took part. Survey of managers of 70 small and medium-sized enterprises and a telephone survey of city residents provided data for a formalized questionnaire.

In the region, a significant number of SMEs are engaged in innovation activities. Their innovative development opportunities greatly expand in technology clusters, which allows to achieve effective results quickly. There are three technology clusters in Novosibirsk. Technology cluster Akademgorodok became one of the three leaders in the Russian Federation. It is focused on instrumentation, high-tech equipment, information and telecommunication technologies, nanotechnology. Rosnano, having provided significant assistance to the creation of the Akademgorodok infrastructure, participates in many of its programs. But, like most of the Rosnano projects, they are expensive and their products are in weak demand. Since 2011, the production of nano-ink for high-tech digital printing has been launched here. And although their innovative structure exceeds foreign equivalents, sales are low. A similar situation is characteristic to innovative hybrid trolley with a bus on lithium batteries. It was developed on the basis of an improved model of Rosnano, by Liotech, Irbis and Arstern companies. This transport means is also poorly demanded on the market due to the high price, which is twice higher than the cost of a regular trolley bus. Even Novosibirsk, in dire need of a new modern transport, has bought just two such trolley buses.

Medical Technology cluster, which is implemented on the basis of the model of public-private partnership is the newest in Novosibirsk His task is to introduce screening methods of treatment and personal medicine. On the basis of the Koltsovo science town a Bio-technology cluster as well operates on the same basis. The analysis shows that the creation of technology clusters in Novosibirsk is a good example of an interaction of regional authorities, scientists and entrepreneurship. But the share of funds of business sector in the total expenditure on research and development is insufficient.

The Bio-technology cluster was created on the basis of the Vector SSC. In the framework of this organization, there are 6 biotechnological firms that are implementing the most advanced scientific developments. They produce small batches of original products, which increases their competitiveness through exclusivity. In Bio-technology cluster as in other technology cluster in Novosibirsk, there is a preferential tax system that attracts business. The Institute for Small Business Support has been

founded in Koltsovo, there also is a regional business incubator providing companies in the initial stages of development with space, the most successful of which have become residents of Academpark and Skolkovo. In technology clusters and business incubators, there is a constant increase in jobs [National rating 2017.P.80].

In the Novosibirsk region, along with Moscow and Tomsk, there is one of the highest indicators of national expenditure on research and development, in GRP percentage it exceeds the national one more than by two times. (Rating, 2017, p. 35). But the research intensity of the GRP is low throughout Siberia, it amounts to only 8 rubles per 1 thousand rubles of GRP, while in the Russian Federation it is 13 rubles in average [Untura 2014. P.229]. In terms of growth in nominal GRP, the Novosibirsk region is inferior to Russia in general. If across the Russian Federation from 1999 to 2010 a nominal GRP grew by 16.6 times, in the Novosibirsk Region - only by 14 times [Ershov 2013.P. 189]. Although in 2019, the GRP increased to 1,084.6 billion rubles, which corresponds to 15th place in the all-Russian rating of subjects of the Russian Federation.

The GRP growth and the increase in the level of regional economic development are promoted by clusters that have become one of the tools for import substitution. They allow to identify interrelated territorial and sectoral structures, coordinate their activities, and provide the best opportunities for the exchange of innovations. The most modern pharmaceutical cluster (biopharmaceutics) has been formed in Novosibirsk, which economic growth rates exceed the growth rates of industrial production in the Novosibirsk Region by 3, 8 times. In the region CTI pilot clusters are located. The pharmaceutical cluster of the Novosibirsk region includes 249 firms, with the number of people employed by them - 3838 people. Their revenue is equal to 222.6 billion rubles. It is higher only in clusters of the Moscow region - 9.5 trillion. rubles, and St. Petersburg and the Leningrad region combined - 11, 5 trillion. rub. [Zemtsov etc., 2016.P. 39].

Novosibirsk also has a IT cluster. It is organized on the base of «SibacademSoft», an enterprise established by a group of IT companies with the support of the Government of the Novosibirsk Region and the Siberian Branch of the Russian Academy of Sciences. The association unites representatives of large business, small innovative companies, scientific organizations. Only for the period from 2013 to 2015 with the participation of Sibacadem Soft, more than 30 integration cluster projects were implemented [Information Territorial Cluster P.8]. A new industrial medical-technological cluster has been formed in Novosibirsk, an

instrument-making cluster and a cluster of agricultural machinery manufacturers are also functioning. But for the prosperity of clusters, an even greater inflow of investments and improvement of the production and social infrastructure, broader ties at home and abroad are needed, on which the regional authorities and entrepreneurship should concentrate their efforts.

The economy transition to the innovation mode largely depends not only on entrepreneurship, but also on the authorities' readiness for such cooperation, on the susceptibility of the economy to new technologies. Today, in Novosibirsk region a combination of new industries and traditional structures, where partial modernization has just begun, is presented. This leads to low quality products and high costs.

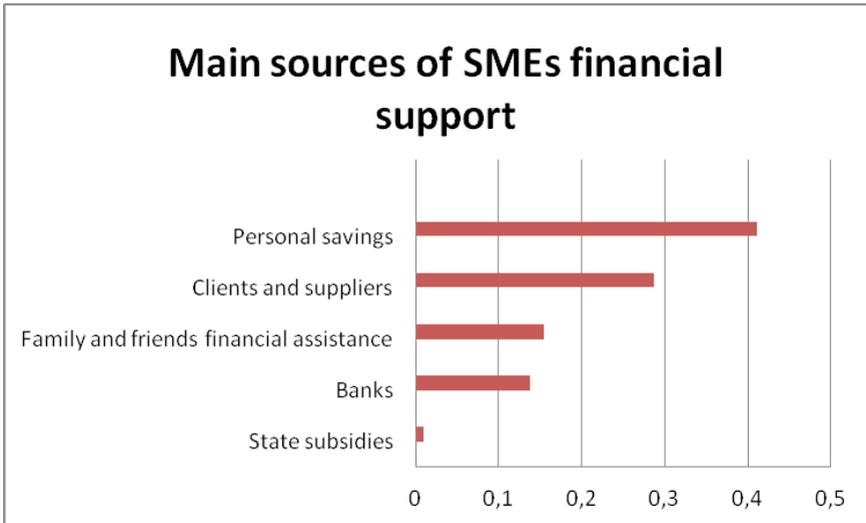
Low technological base of enterprises hinders the release of modern high-quality products. The former regional authorities did not take effective steps to prevent the bankruptcy of not only the Experimental Plant, but also machine-building enterprises, as well as JSC Universal, which carried out road works according to modern standards. Unfortunately, in the region mostly companies that could "negotiate" with inefficient institutions have survived. The analysis shows that this is a clear example of the obvious rupture of the management tools of the previous administration and the chosen innovation strategy of territorial development. The region needs not only the creation of fundamentally new industries that produce innovative products, but also the modernization of old ones.

Industry has only 18% in the economy of the Novosibirsk region. However, large part of it is characterized by technical backwardness, which becomes an impressive obstacle for the activity of innovative entrepreneurship. Currently, the region has a economic development model peculiar for Russia, where, along with the release of small batches of the most modern innovative products, real estate, financial activities, science, education, culture, and agriculture play a huge role. The Novosibirsk region is present in all authoritative studies, it is included in the first group of Russian Federation constituting entities (from 4 groups) by the value of the Russian regional innovation index, where it occupies 11th place [Innovation Development Rating 2017 P.19].

Currently, in the Novosibirsk region, despite the good condition of the investment climate, a high level of entrepreneurial activity, the volume of innovative products is insufficient to make the region a leading region. One of the reasons for this phenomenon is that Novosibirsk entrepreneurs do not have enough credit facilities, which is demonstrated in chart No. 1.

Chart number 1.

The main sources of Novosibirsk SMEs financial investments



Source: Sociological research data

Chart shows that personal funds of entrepreneurs, as well as funds of suppliers, family, and friends form the main source of investments in Novosibirsk Region SMEs. Banking financing is used by less than 15% of entrepreneurs. Government subsidies play a minor role, despite the existence of loans to SMEs under the guarantee of a development fund. Unfortunately, the former regional authorities provided financial support and provided tax incentives not to SMEs, but to representatives of large businesses in the first place. For example, JSC Siberian Anthracite is a coal company that, not producing innovative products, enjoys large regional tax incentives. This tendency is studied in the article of Y.V. Simachev, M.G. Kuzyk, N.N. Zudin [Simachev, Kuzyk, Zudin 2017 P. 77]. We must not forget that large enterprises do not need innovative development, they increasingly seek to monopolize the economy and hinders the effective implementation of innovations.

The development of SMEs in the Novosibirsk Region is also delayed for lot of time is spent on obtaining permits, connecting to resource supply systems, market entering barriers are high, and production infrastructure is expensive. The lack of well-established contacts with other regions also has a negative effect on the innovation system of the region, whether its

pretense will allow not only to bring innovation ideas to the market faster, but also to use competitive advantages. Regional authorities do little to promote the export of SME products. In early 2000 there was a growth in exports from the Novosibirsk region. Since 1999, in 2010, it has grown 7.7 times in dollar terms, against 4.5 times in the Siberian district as a whole. [Ershov 2013 P. 196]. But in recent years, exports have declined significantly, due to poor information about local innovative products, insufficient links with foreign partners and inefficient logistics. Innovative SMEs in the Novosibirsk Region are experiencing significant difficulties due to limited access to foreign technologies. After all, it is sometimes more effective to use publicly available ones, as it is practiced in China. For example, the implementation of comprehensive openness a model allowed to quickly revive the economy of the northeastern provinces of China [Zhang, Yudin 2017 P.157]. This dictates the need for businesses and authorities to explore foreign markets more actively.

The region needs corresponding human capital for a better development of its innovative potential. A sociological study showed that many innovative enterprises lack the staff of a required qualifications, but they use less than 20% of their human capital. Analysis of the activities of many companies in the region provides a conclusion that they do not sufficiently benefit from the knowledge of employees. Material assets prevail over intellectual in work assessment, employees do not work according to the unified rules typical of the digital economy. All this demonstrates the low quality of management in companies, which reduces their competitive advantage. The salary of employees in many companies is not only low, but also does not depend on their personal contribution; employees are not involved in the management process. Unfortunately, this trend is typical not only for Novosibirsk entrepreneurship, but as Henry Inkinen writes, having analyzed the activities of more than 100 companies in different parts of the world, it is characteristic to other emerging markets [Inkinen 2015].

An unbalanced regional innovation policy of the Novosibirsk Region authorities has little effect on the living conditions of the population, on the transport infrastructure, where costs are high due to its underdevelopment. In Novosibirsk there are modern medical centers that perform unique but expensive services, as well as polyclinics with low level of diagnostics. The city faces a catastrophic shortage of preschool institutions, schools work in two shifts. According to statistics, in Novosibirsk region wages are one of the lowest in Siberia and expenditures per capita are the lowest in Russia [Ershov 2013 P.204]. Whereas it is well-known that with low labor costs, business is not interested in innovation.

The results of a sociological survey also testify to the insufficiency of funds for the purchase of essential goods. According to surveys of residents, low wages are one of the painful points of the population, along with low level of medical care, bad roads and poor transport accessibility in many areas. This was stated not only by entrepreneurs, but also by scientists, teachers and other residents of the city. Bad roads, especially in winter, which are almost never cleaned, permanent traffic jams negatively affect the cohesion of the economic space. Such important unresolved problems are indicative of flaws in the regional administration policies. Each region should have a flexible management model and respond quickly to all the challenges of the population and the economy.

Building such a model is possible only with the support of entrepreneurship, science and society - this is the model of the "smart city" to which Novosibirsk has adopted. It is aimed at the developing stable urban environment, innovation in the service sector, increasing the competitiveness of companies, and involves the widespread use of information technology with a feedback from residents. Digitalization allows entrepreneurship to work with documents faster and interact digitally. As a result of a new technological wave, digitalization process covers the entire global socio-cultural and economic space, penetrating virtually all industries before our very eyes ... [Yudina, Tushkanov 2017 P.194). Although the legal base for concluding electronic contracts for business is not fully formulated.

Thus, the hypothesis that regional characteristics of Novosibirsk entrepreneurship development, high level of its entrepreneurial activity, significant concentration of high-tech industries in the region and regional economic development are preconditions for its formation as one of the main centers of the innovative economy of the country headed by the authorities in close cooperation with scientists and civil society is confirmed. The study proved the legitimacy of this hypothesis, elimination of significant shortcomings in the innovation policy of Novosibirsk entrepreneurship and authorities provided.

This survey reveals tensions in Novosibirsk innovation system, first of all, the lack of synchronization, balance of various aspects of the region's innovative development, sufficient expenses of the business sector for research and development, good coordination of innovation projects with neighboring regions and foreign countries. It has been revealed that the development of SMEs is hindered by prohibitively high taxes, administrative barriers, and inefficiency of certain tax benefits. Obtaining permits for business and construction requires a lot of time, despite the fact that since 2018 there has been a positive trend in this process.

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INTELLECTUAL CAPITAL MANAGEMENT IN ORGANIZATIONS

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Abstract. This article discusses a conceptual model in which the intellectual capital management system (ICM) has a special impact on the company's performance, providing a more active innovative activity. Using this model of intellectual capital management allows you to form the stages of intellectual capital management and shows a positive relationship between intellectual capital and organizational effectiveness. This article will encourage the study of new assets that have an impact on the efficiency of the company's production processes, which in turn can help managers develop new best strategies for making management decisions.

Keywords: intellectual capital, human capital, Structural capital, Client capital, managerial intellectual capital.

Introduction

In recent years, large companies have seen a transformation of their business to knowledge as a source of wealth compared to other tangible and physical assets. Knowledge has become the new engine that controls wealth - as many large companies say: "Knowledge is our most powerful production engine."

According to the results of many studies, the relevance of knowledge to the activities of companies is emphasized. This is done in order to recognize and develop knowledge management (intangible assets) as an important aspect in company management. At the heart of all the activities of companies depends on creativity, various offers of edge products and the provision of unique services to create competitive advantages. (Kamath, 2015).

In this regard, a statement is formed that knowledge is a source of economic value, and higher productivity comes from their intellectual capital (IC). This phenomenon has contributed to the emergence of the concept of intellectual capital, which is popular in the current era of the knowledge economy.

The concept of intellectual capital

The results of many studies of intellectual capital (IC) have been attracting wide attention all the time; various management literature emphasizes the special importance of intellectual capital management. For example, Chen (2008) defined IC as “the aggregate reserves of all types of intangible assets, knowledge, etc. in innovation at the individual level and organization level within the company.”

Liu (2010) defined IC as “integrating the sources of knowledge and cognitive ability of companies to increase competitive advantage”. From this definition, it can be said that IC is defined as “the sum of all the knowledge that a company is able to use in the management process to gain a competitive advantage”.

Most authors in the structure of IC distinguish three types of structural elements:

1. **Human capital** is “the sum of knowledge, skills, abilities, experience, relationships, wisdom, creative abilities, obligations, etc. that belong to a person”.

In addition, human capital is considered the main element in the structure of intellectual capital, which acts as a driving force for successful companies (Li & Chang, 2010; Chahal, & Bakshi, 2014). Moreover, human capital does not belong to the company and cannot be imitated.

2. **Structural capital** is defined as “stocks of organizational capabilities, organizational commitments, knowledge management systems, remuneration systems, information technology systems, databases, management mechanisms, operational processes, a management philosophy, organizational culture, etc. which is controlled by the company.” (Wang et al. 2014).

3. **Client capital** was defined as “the amount of the company's interactive capital relations with customers, suppliers, network members and partners, which allows it to create wealth and gain competitive advantages over competitors” Client capital is also defined as relational capital (intangible asset), which focuses on developing, creating and maintaining good relations with any company, individuals or groups that may affect the position of the business in the market. For this reason, it is especially important that the company seeks to harmonize its interests with the interests of its interested parties, in order to maintain competitiveness and market leadership. Ntayi (2012).

Intellectual capital management

the results of many studies in the field of IC management prove that IC management is of particular importance for large companies in making management decisions in practice. Thus, there is a need for company management to develop training programs for employees in order to increase the efficiency and competence of intellectual capital in establishing economic value.

Figure 1 shows the stages of intellectual capital management:

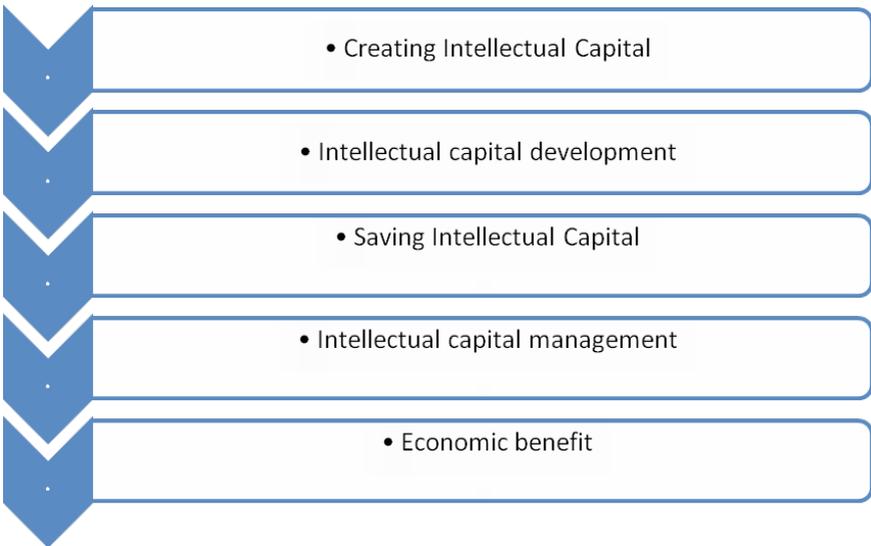


Figure 1 - Intellectual capital management (author)

It is believed that investing in intellectual capital by attracting employees with high intellectual abilities and creative skills to manage complex processes in the company and achieve goals, as well as intangible resources and competencies, is more conducive to achieving and maintaining higher results than investments into material resources. Chang, C. H., & Chen, Y. S. (2012).

Thus, the development of intellectual capital occurs through the development of knowledge and investment in the human mind to create new ideas, as well as the development of innovative opportunities for company employees. Additional stimulation of the management system by providing an effective environment for the growth of intellectual capital will contribute to increasing the economic value of the company.

Maintaining a multi-level creative process in the company by ensuring a healthy environment, systemic connections, stimulating and implementing employee training systems will also contribute to the creation of new ideas, global developments.

Depending on the goal of the company, the amount of intellectual capital and its quality, economic value is created. The IC management system provides information on what investments are necessary to achieve the goal in certain situations. The use of intellectual capital helps to increase the efficiency of investments made at a certain time and in the right facilities.

Evaluation of the effectiveness of intellectual capital management. Ilyin E.V., Gosteva O.V, (2017).

Table - 1

Component aspects	Human capital	Structural capital	Client capital
Tasks	The development and enhancement of knowledge	Regulation of Innovation Processes	Improving the position of the enterprise in the market, its relations with consumers
Solutions	To collaborate with employees, revealing their creative potential and using their capabilities, skills as efficiently as possible	Form a management mechanism based on an innovative strategy and an appropriate project approach	Commercialization of Intellectual Assets
Indicators	Indicators of creative activity; number of workers in R&D	Updatability indicators; dynamic indicators of the innovation process	Intangible assets

Conclusions

The main goal of any company is to make a profit. The company's management needs to know which specific investments will affect the achievement of the goal. Intellectual capital management is used as a measurement by which the amount of intellectual capital can be determined. This approach allows you to decide on the effectiveness of investment in intellectual capital.

Currently, in the era of high technology management, business success is no longer achieved simply due to a healthy financial situation or the creation of innovative products, but is achieved at the expense of human resources.

Therefore, managerial intellectual capital is necessary for the growth of efficiency and competitiveness of the company.

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FEATURES OF MEZZANINE FINANCING IN RUSSIA

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Abstract. This article highlights the advantages and disadvantages of the mezzanine financing institution. A comparison of financial instruments: bank loans, mezzanine financing and direct investments was made. The main characteristics and classification of mezzanine financing are presented, due to the peculiarities of Russian legislation and the realities of the Russian business environment. The directions of mezzanine financing development in Russia are highlighted.

Keywords: mezzanine financing, mezzanine investments, project financing, own funds, loan financing.

The history of the concept of mezzanine financing dates back over 40 years, but in Russia this type of borrowed financing is considered new. Over the past five years, mezzanine financing has been actively mastered by large Russian banks. Mezzanine (mezzano) – intermediate, medium. In the world financial practice, the concept of mezzanine financing is used to characterize investment schemes that occupy an intermediate position between direct investment into company capital and debt financing [2].

Developed countries began using mezzanine financing in the 1970s. The first organizations that began to use this tool were insurance and credit organizations, as well as some investment companies [5]. Further, the use of mezzanine financing was extended to finance growth, new acquisitions, restructuring and repurchase of shares. These are namely the areas with an increased risk of a deal, as a result of which difficulties arise in raising funds through conventional bank lending.

The economic crisis of 2007-2008 gave a certain impetus to the development of mezzanine financing by attracting financial institutions [6]. In modern conditions, mezzanine investors are insurance companies, investment and hedge funds and commercial banks.

We highlight the advantages of mezzanine financing:

- equity is concentrated among several participants, which means lower cost of capital for the company itself;
- the owners retain control over the company, since the interest of a mezzanine investor is to generate income on investments, and not to earn on increasing the value of shares;

At the same time, it is impossible not to highlight the negative features of mezzanine financing:

- high cost and greater complexity, compared to bank lending clearance due to the personal structuring of each transaction and higher rates;
- stringent requirements for the management team, transparency and reporting of the borrower;
- difficulty of early exit of the investor, especially in case of financing small and medium-sized businesses.

Russian companies attract capital from various sources. Comparative characteristics of financial instruments: bank credit, mezzanine financing and direct investments are shown in table 1.

Table 1—Comparative characteristics of financial instruments

Index	Mezzanine financing	Direct investment	Bank loan
Target rate	Up to 50% of the share capital	–	10-12%
Target return	20-25%	30-35%	12-15%
Participation in activities	Direct	Direct	Indirect
Security	Pledge of a controlling stake Secondary Pledge of Assets	–	Liquid assets
Term of financing	5-10 years	5-7 years	1-5 years

World experience shows that mezzanine financing is carried out through the following tools:

1. Mezzanine loan. Subordination of mezzanine debt is realized through provision to the creditor of the right of subsequent retention or pledge of property with conclusion of inter-creditor agreements [7].

2. Financing with registration of “tacit” participation of the investor, when the investor acquires a share in the borrower’s company, but does not assume any responsibility to the creditors of the company [8].

3. Financing against issuance of convertible bonds, which provide for fixed interest payments and repayment of the principal amount at the end of the financing period with possibility of the investor acquiring the shares of the borrowing company at a predetermined price instead of repaying the principal amount.

4. Financing against issuance of bonds with warrants on the shares of the borrower's company, which can be traded separately from the bonds [3].

In Russian economic literature, mezzanine financing is understood as a type of loan lending provided in conditions of an increased level of transaction risk, with the volume of attracted investments exceeding 250 million rubles and with a financing term of 5 to 10 years.

This financial instrument combines such features of a bank loan as repayment, maturity and payment; as well as equity of direct investments, namely: participation in the growth of the value of equity.

The increased risk for mezzanine investors is offset by additional profitability that can be realized through options in relation to a predetermined package of ordinary shares in the project, a fixed increased interest rate paid after the implementation of the investment program and the acquisition of preferred shares.

The terms of the mezzanine lending transaction are determined exclusively on an individual basis for each client, depending on his needs and the features of the object of financing.

Currently, mezzanine financing is in its infancy in Russia; only large Russian banks act as mezzanine investors [4]. Based on a generalization of domestic practice, the authors identified seven types of mezzanine financing in Russia (table 2).

Table 2—Classification of mezzanine financing in Russia

Type of mezzanine financing	Characteristic	Customer advantage	Objectives
Equity participation	Acquisition by the bank of a share in the capital of a company with the right to buy back, but without obligation	Increase in financing and decrease in the share of equity	Funding of business development with an obligation for the client to hold a liquidity event within an agreed period
Pre-project financing	Providing financing at an early stage of the project	Raising funds before project financing	Preparing an investment project to receive project financing
Pay Once	Providing financing with repayment and payment of 100% profit at the end of the term	Minimum load on the cash flow of a company or project for a borrower	Financing business development

Process Management and Scientific Developments

Type of mezzanine financing	Characteristic	Customer advantage	Objectives
Joint mezzanine	Investments in a separate class of shares with the obligation of the client to repurchase and conclude a shareholder agreement	Decrease in the share of equity in the project	Project financing Purchase / Business Development Refinancing Recapitalization
Joint ventures	Creation of joint ventures (JVs) with the participation of Sberbank Investments for the implementation of investment projects or acquisition of assets	Decrease in the share of equity (including sale of assets for deconsolidation in favor of the JV)	Project financing Purchase of a business and / or assets Real estate leaseback sale
Loan with warrants	Providing a subordinated loan with conclusion of an additional income instrument (warrant)	Attracting additional financing at a high debt load of the company	Project financing Purchase / Business Development Refinancing Recapitalization
Venture financing	Financing innovative companies with high growth potential	Attraction of borrowed financing before breaking even Break-even	Purchase / Business development Financing the company's operations

Of all the above mentioned forms in modern Russia, mezzanine lending is more common.

The legal relationship for provision of a mezzanine loan in Russia is characterized by the fact that the credit part of the transaction, which guarantees the lender receipt of current profitability, is drawn up between the lender and the borrower by concluding a loan agreement and signing security documentation.

Speaking about the problems of mezzanine financing development, it should also be noted, that the mechanisms of requirements for obligations in their classical form have not yet been developed in Russian law. The concept of subordinated credit in Russian legislation is used in relation to credit organizations only [5].

Conclusion. Mezzanine financing has advantages for the investor and the borrower. Due to the peculiarities of the legislation of the Russian Federation and lack of uniform practice on many key issues, Russian participants in mezzanine transactions actively use English law institutions. At the same time, despite the difficulties, there is a gradual increase in the volume and quality of such transactions, which allows us to look with optimism at the future of mezzanine financing in the Russian Federation, as well as expect more complex mezzanine transactions and improvement of the regulatory framework for the implementation of this effective financial instrument.

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MODELS FOR FORECASTING THE EXPECTED LIFE OF THE POPULATION OF THE RUSSIAN FEDERATION AND GERMANY

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Abstract. A set of statistically significant regression models ($R^2_{\text{speed}} > 0,9$; $F_{cr} > 100$; for b -coefficients, the ratio $b_i/\sigma_{b_i} > 2$; response function - Life expectancy) was constructed to predict the dynamics of the life expectancy of the population of the Russian Federation and Germany. For the first time, a statistically significant effect on the increment of the life expectancy of the country's population was found and confirmed for the first time by increments of a group of factors-independent variables and an estimate of the lag value was made.

Keywords: standard of living of the population, subjects of the Russian Federation, regression models, statistical significance

Introduction

Various aspects of the problem of forecasting and increasing the life expectancy of the country's population are considered in [1-5]. The article presents the original results of studies related to the identification of determining factors, the construction and evaluation of statistical characteristics of the quality of forecast models and the quality of the forecast of the life expectancy of the population of the Russian Federation and Germany. The initial information for the research was the World Bank data on the dynamics of indicators characterizing the socio-economic development of the countries of the world.

1. Stages of the study. The study was carried out in three stages. At the first stage, a preliminary selection of the required subset of factors from the set of high power, including more than 1000 factors, was carried out ([6, 7 method was used].). The second stage consisted of two operations: the first operation included the use of an expert survey to isolate and rank each expert group of his chosen group of factors

affecting the output indicator - life expectancy. In the second operation, step-by-step refinement of the ranking (ordering) of factors was carried out, identification of the minimum composition of determining factors and construction of forecast models. After the second stage, the initial composition of factors decreased on average by an order of magnitude. And finally, at the third stage, a comparative analysis of the statistical quality characteristics of the constructed regression models of different structures and with a different composition of factors was performed. The article presents the results of the third stage of the study of life expectancy.

2. The answer to the most important question: Which of the many sufficiently large power factors (> 1000) have a decisive influence on the life expectancy of the population, to what extent and with what lag?

As a result of studies using the methods of [8, 9], for the first time the content (with a *quantitative assessment of the degree* of influence) on the life expectancy of the population of the group of determining factors was found, substantively and statistically confirmed and the lag value was determined. The construction of regression models was performed using the initial information in *relative* units (the ratio of the numerical values of the indicators for the years of the period under consideration).

The following are the formed composition of *independent variables* in regression models, statistical estimates of the degree of influence of increments of variables on the response function (life expectancy) with an indication of the lag value.

For the Russian Federation:

1) Model: $Y_{11} = b_1 \cdot X_{11}$, where:

Y_{11} – relative increment (for three years) of life expectancy of the population of the RF;

X_{11} – relative increment (for one year) of per capita domestic government spending on health, PPP (current international \$).

Statistical characteristics of the quality of the model:

$$b_1 = 0,93; \quad b_1 / \sigma_{b_1} = 33,98; \quad R^2 = 0,99; \quad R^2_{\text{speed}} = 0,9; \quad F_{cr} = 1154,5.$$

2) Model with X_{12} : $Y_{11} = b_1 \cdot X_{12}$, where:

Y_{11} – relative increment (over three years) of life expectancy of the population of the RF;

X_{12} – relative increment (over two years) of per capita domestic public health spending, PPP (current international \$).

Statistical characteristics of the quality of the model:

$b_1=0,83$; $b_1/\sigma_{b_1}=22,03$; $R^2=0,98$; $R^2_{\text{speed}}=0,89$; $F_{cr}=485,5$.

For Germany:

1) Model: **$Y_{12}=b_1 \cdot X_{11}$** , where:

Y_{12} – relative increment (over three years) of life expectancy of the German population;

X_{11} – relative increment (*for one year*) of per capita domestic government spending on health (at current prices).

Statistical characteristics of the quality of the model

$b_1=0,96$; $b_1/\sigma_{b_1}=40,7$; $R^2=0,99$; $R^2_{\text{speed}}=0,88$; $F_{cr}=1650,9$.

2) Model with **X_{12}** : **$Y_{12}=b_1 \cdot X_{12}$** , where:

Y_{12} – relative increment (over three years) of life expectancy of the German population;

X_{12} – relative increment (*over two years*) of per capita domestic government spending on health (at current prices). Statistical characteristics of the quality of the model:

$b_1=0,91$; $b_1/\sigma_{b_1}=34,1$; $R^2=0,99$; $R^2_{\text{speed}}=0,88$; $F_{cr}=1163,1$.

3) Model with **X_{13}** : **$Y_{12}=b_1 \cdot X_{13}$** , where:

Y_{12} – relative increment (over three years) of life expectancy of the German population;

X_{13} – relative increment (*for one year*) of the Export of commercial services (at current prices).

Statistical characteristics of the quality of the model:

$b_1=0,94$; $b_1/\sigma_{b_1}=38,6$; $R^2=0,99$; $R^2_{\text{speed}}=0,88$; $F_{cr}=1492,1$.

4) Model with **X_{14}** : **$Y_{12}=b_1 \cdot X_{14}$** , where:

Y_{12} – relative increment (over three years) of life expectancy of the German population;

X_{14} – relative increment (*over two years*) of GDP per worker (in constant US dollars in 2011).

Statistical characteristics of the quality of the model:

$b_1=1,003$; $b_1/\sigma_{b_1}=110,45$; $R^2=0,99$; $R^2_{\text{speed}}=0,88$; $F_{cr}=12199,7$.

Conclusion

The calculations showed that the main influence on the relative increase in life expectancy of the population of the Russian Federation and Germany is exerted by the increment in the value of domestic public spending on health care, GDP per worker (in constant US dollars in 2011) and the value of the Export of commercial services (in current prices). This conclusion, allowing us to *optimize the planning and distribution of budget expenditures* of the state, is fully confirmed by a **content** analysis.

3. Regression models for predicting life expectancy of the population with an assessment of the characteristics of consumer quality.

Note 1. The response function (life expectancy) is presented in absolute units (years), and all independent variables are presented in relative units (relative increment for the period: for one, two or three years). The consumer quality characteristics of the constructed models are estimated by the indicators used in statistics: b/σ_{b_i} , R^2_{speed} . In the models presented below, only the composition of the independent variables changes with the response function unchanged - life expectancy.

Models for predicting life expectancy of the population of the Russian Federation.

1) The forecasting model has the form:

$$Y01 = b1 * X1 + b2 * X11, \text{ where}$$

Y01 – Life expectancy of the population of the RF for the period from 2006 to 2017 (absolute values);

X1(Y11) – relative increment (for three years) of life expectancy of the population of the RF (in 2015);

X11 - relative increment (per year) of Domestic public health spending per capita, PPP (current international \$).

Statistical characteristics of the quality of the model:

$$b1 = 80,19; b2 = -11,23; b1 / \sigma_{b1} = 22,64; b2 / \sigma_{b2} = -3,4;$$

$$R^2 = 0,99; R^2_{\text{speed}} = 0,9; Fcr = 19665,05.$$

2) **Model with X12:**

Y01 – Life expectancy of the population of the RF for the period from 2006 to 2017 (absolute values);

X1(Y11) – relative increment (over three years) of life expectancy of the RF population;

X12 – relative increment (over two years) of per capita domestic public health spending, PPP (current international \$).

Statistical characteristics of the quality of the model:

$$b1 = 70,65; b2 = -7,16; b1 / \sigma_{b1} = 37,27; b2 / \sigma_{b2} = -4,14;$$

$$R^2 = 0,99; R^2_{\text{speed}} = 0,9; Fcr = 24841,11.$$

3) **Model with X13:**

Y01 – Life expectancy of the RF population for the period from 2006 to 2017 (absolute values);

X1(Y11) – relative increment (over three years) of life expectancy of the RF population;

X13 – relative increment (over two years) of per capita domestic government spending on health (at current prices).

Statistical characteristics of the quality of the model:

$$b1 = 73,17; b2 = -3,8; b1 / \sigma_{b1} = 78,07; b2 / \sigma_{b2} = -5,49;$$

$$R^2 = 0,99; R^2_{\text{speed}} = 0,9; Fcr = 36637,4.$$

Models for predicting life expectancy of the population in Germany.

1) The forecasting model has the form:

$Y02 = b1 \cdot X1 + b2 \cdot X11$, where

$Y02$ – Life expectancy of the population of Germany for the period from 2008 to 2017 (absolute values);

$X1(Y12)$ – relative increment (over three years) of life expectancy of the population of Germany (to 2015);

$X11$ - relative increment (for one year) of per capita domestic government spending on health (at current prices).

Statistical characteristics of the quality of the model:

$b1 = 85,88$; $b2 = -5,85$; $b1 / \sigma_{b1} = 42,93$; $b2 / \sigma_{b2} = -3,02$;

$R^2 = 0,99$; $R^2_{\text{speed}} = 0,87$; $Fcr = 147425,4$.

2) Model with $X12$:

$Y02$ – Life expectancy of the population of Germany for the period from 2008 to 2017 (absolute values);

$X1(Y12)$ – relative increment (over three years) of life expectancy of the population of Germany;

$X12$ – relative increment (*for one year*) of the Export of commercial services (at current prices).

Statistical characteristics of the quality of the model:

$b1 = 85,32$; $b2 = -5,19$; $b1 / \sigma_{b1} = 42,84$; $b2 / \sigma_{b2} = -2,76$;

$R^2 = 0,99$; $R^2_{\text{speed}} = 0,87$; $Fcr = 134020$.

3) Model with $X13$:

$Y02$ – Life expectancy of the population of Germany for the period from 2008 to 2017 (absolute values);

$X1(Y12)$ – relative increment (over three years) of life expectancy of the German population;

$X13$ – relative increment (over two years) of per capita domestic government spending on health (at current prices).

Statistical characteristics of the quality of the model:

$b1 = 84,24$; $b2 = -4,03$; $b1 / \sigma_{b1} = 44,16$; $b2 / \sigma_{b2} = -2,32$;

$R^2 = 0,99$; $R^2_{\text{speed}} = 0,87$; $Fcr = 115090,8$.

4) Model with $X1(Y12)$:

$Y02$ – Life expectancy of the population of Germany for the period from 2008 to 2017 (absolute values);

$X1(Y12)$ – relative increment (over three years) of life expectancy of the German population; Statistical characteristics of the quality of the model:

$b1 = 79,85$; $b1 / \sigma_{b1} = 393,15$; $R^2 = 0,99$; $R^2_{\text{speed}} = 0,89$; $Fcr = 154566,5$.

5) Model with X14:

Y02 – Life expectancy of the population of Germany for the period from 2008 to 2017 (absolute values);

X14 – the relative increment (over two years) of GDP per worker (in constant US dollars in 2011).

Statistical characteristics of the quality of the model:

$b_1=80,1$; $b_1 / \sigma_{b_1}=106,58$; $R^2= 0,99$; $R^2_{speed}=0,87$; $Fcr=115090,8$.

6) Model with X15:

Y02 – Life expectancy of the population of Germany for the period from 2008 to 2017 (absolute values); **X15** – relative increment (over two years) of per capita domestic government spending on health (at current prices).

Statistical characteristics of the quality of the model:

$b_1=75,3$; $b_1 / \sigma_{b_1}=85,5$; $R^2= 0,99$; $R^2_{speed}= 0,89$; $Fcr=7311,3$.

3. Simulation for evaluating the error of the response function - the life expectancy of the country's population. Using the methods described in [10] and performing simulation, it is easy to estimate the error of the response functions of the constructed regression models for predicting the life expectancy of the population of the Russian Federation and Germany.

CONCLUSION. The studies allowed us *to build regression models for predicting the life expectancy of the population of Russia and Germany with high consumer quality ($R^2_{speed}>0,9$; $Fcr>>100$; in b– coefficients ratio $b_i/\sigma_{b_i} >>2$; response function – Life expectancy) for the first time *to confirm the statistical significance of the influence on the increment of the life expectancy of the population of the Russian Federation and Germany of the increment of the group of determining factors with different lag values.

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**LEADERSHIP CONCEPT IN RUSSIA:
IMPLEMENTATION EXPERIENCE, PROBLEMS**

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Annotation. This article discusses the specifics of management in Russia, factors affecting its formation. The forms of influence of American and Japanese management on the Russian are highlighted. The main disadvantages of Russian management and possible solutions are considered.

Keywords: leadership, Russian management, problem, foreign management.

There are many different national management models, they are formed due to the prevailing values of the people, the peculiarities of mentality, economic development, sociocultural factors. The Russian management model was formed in the same way. This model is currently in its infancy. Indeed, before the collapse of the USSR, the dominant principles of the people were equality, the formation of a bright future, but now everything has changed, now the main incentive is personal material benefit.

Russian management, of course, has its own characteristics. The lack of global experience, behind which there is a high ability to see the deep processes taking place both within the organization and in the external environment, is due to the fact that the management traditions of the Soviet era were radically different from the style that existed at that time in Western companies and that Russian management as the managerial layer was to be formed in a fairly short time, bypassing the experience of Soviet and post-Soviet times.

Features characteristic of modern Russian management are:

- hard authoritarianism in management;
- centralization of power;
- dualism in the behavior of domestic managers;

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- the prevalence of administrative management methods, which were based on power, strict subordination to a superior person and sanctions or penalties.

Many Russian organizations require a new leadership style. Leaders in Russia are mainly straightforward and strict managers, guided by a rigid hierarchy in relations with subordinates. Attracting, promoting and encouraging employees based on their personal and organizational qualities are the main characteristics of the management system. Despite this, in Russia there is still no flexibility at the upper levels of management in organizations, managers cannot take into account the influence of factors from outside, and, according to these influences, adjust and change the company's strategy.

The formation of the Russian management model took place under the influence of the American and Japanese models, which, in turn, are diametrically opposite.

However, the Russian model has a number of features characteristic of the American style, and there are also elements of the Japanese style of personnel management. These signs are listed below.

1. Similarities to the American model:

- Individual decision making process. There is no collegial way to make decisions. But unlike their American counterparts, employees do not take the initiative, they have no opportunity to express their opinion on what is happening, just as there is no way to make suggestions for improving the work.

- When moving up the career ladder, work experience and age are not decisive.

- Remuneration of employees in the same position, may differ by two to three times depending on personal performance indicators.

2. Similarities with Japanese models

- The possibility of training, American management does not imply staff training, as it is believed that the employee is obliged to invest his own funds and increase the level of professionalism.

- Social guarantees. I can dismiss from the American company for the slightest offense. They are very loyal to employees who have long been working in the company. And most importantly, there is little where else in the world there is the possibility of being on leave to care for a child up to 3 years old.

The leader in Russia chooses for the most part adjectives that carry a negative meaning, which indicates that his attention is not focused on the interests of employees, but on the goals set and their achievement.

Russian leaders feel like a fish in water, either in a favorable situation or in an unfavorable situation, while American leaders are most effective in the interim. The effectiveness of task-oriented leaders in bipolar situations is determined by the fact that the environment is stable. Intermediate situations are characterized by the urgent need for effective communication, which is why relationship-oriented leaders are most successful here.

As for the analysis of management styles based on the theory of “path-goal”, the American management model is more aimed at achieving goals and supporting employees, as company employees are professionals, competitive people, with developed motivation, who literally live their work. For Russian management, however, there is inherent policy guidance, in which case the employee receives clear instructions that he will follow for a pre-agreed remuneration. In no case can it be considered that there are strict demarcations of leadership, the “path-goal” theory considers the application of various types of leadership to various situations, which contributes to the development by managers of new methods of motivating subordinates

Consider what objective difficulties for the formation and development of management exist today in Russia.

1. Lack of qualified management personnel

Despite the fact that in recent years a manager’s specialty has been introduced in Russian universities, it is too early to talk about solving this problem.

First of all, in Russia there are not enough top managers who are able to effectively manage the company in the current conditions of a market economy [3]. For competent management, the accumulated experience and practical skills are very important, which university graduates who have studied in the specialty “management” do not possess.

For a qualitative leap in this area, it is necessary to: change the psychology of employees (and first of all, managers), improve the level of qualification of the managerial level, increase their personal potential, radically review the business philosophy in Russia.

2. The corruption of the economy

All management links of the country can be divided into 2 large groups:

- Managers (managers) of state structures;
- Managers of private organizations and companies.

At the same time, if in the west managers of state structures and material goods are completely separable from each other, in Russia, on the contrary, large government orders pass through officials, settling in their pockets, and as a result make them top managers. At the same time, the development of the private sector and the introduction of Russian private companies into the international market has not become a priority for the economy in Russia.

3. The lack of productive interaction between the top manager and the owner of the company

Russia is characterized by such a feature as a lack of understanding and conflicts between the top manager and the owner of the company. As a result, the manager is dismissed, and the problem of management effectiveness in the organization remains unresolved. Moreover, the efficiency of the company is reduced, a competent specialist is lost, who, in turn, is deprived of space and is forced to build a career anew.

The reason for the disagreement in this case most often lies in the following. While the owner is interested in maximizing profits at each stage of the company's development, the top manager is committed to implementing strategic goals, realizing that achieving strategic heights is much more important than immediate profit, and this is much more profitable in the future. Also, the owner does not always fully understand the nuances of the production process, demanding profit at intermediate stages, for example, and often sets not very clear goals.

The manager, in turn, having a huge degree of responsibility, is endowed with very limited powers. In cases where both the top manager and the owner are interested in the strategic development of the company, the organization will succeed, and cooperation will be mutually beneficial and fruitful.

4. Access to top management of employees without special education

In Russia, very often there are cases when one of the employees who has climbed the career ladder, but who does not have a special education in management (management), comes to company management.

However, it is important to understand that management is an entire industry that has its own specifics and characteristics. Especially when you consider that the higher the position, the less technical skills are required for the manager, but at the same time, the need for the development of specific knowledge to effectively manage the whole organization increases [2]. Accordingly, the head of senior management goes from decision-making to managing decision-making processes.

In Russia, such a problem is still relevant - an employee comes to the leadership of the organization, who, holding a high managerial position, remains at the same level in his thinking style and approaches to solving problems. As a result, such a top manager often avoids making managerial decisions, dealing only with technological problems. Top management should be aware that its task is to manage the processes of development and decision-making in general [4].

In addition to the above most significant problems, there are other difficulties in the field of management. For example, as before, the methodological and theoretical basis for using management in practice has not yet been developed. Moreover, the existing improved Western principles often do not work in Russian conditions. Of course, this does not mean that it is not necessary to study the theory and practice of foreign management, but it is always necessary to be aware of the differences in managing a company in our country and in the West. That is why, before introducing innovation in the country, it is important to adapt it to the specifics of the Russian economy and mentality. Here are some more important problems: lack of residual attention to corporate culture, lack of sales skills, lack of crisis management specialists, inability to use risk management techniques, fear of innovation.

Despite the many problems in Russian management, some of which we examined, it is worth noting that with a professional and balanced approach, you can always find compromises, find the optimal solution in the situation, avoid many problems in management, and most importantly - improve the quality and effectiveness of management.

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BASICS OF ENGLISH PHONETICS. LETTERS AND THEIR COMBINATIONS REPRESENTING DIPHTHONGS

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Abstract. The article is devoted to the study of the problem of graphic spelling of diphthongs in educational activities of the individual entrepreneur in English classes. The authors identify the main ways of graphic spelling of the phonemes, namely letters and combinations of letters used in the formation of the sounds in question. The study aims to meet the needs of learners as well as teachers in describing the ways of graphic spelling of English sounds.

Keywords: diphthongs, educational activities, English, graphic spelling, individual entrepreneur

In 2012, the Russian Legislature adopted *Federal Act "About Education in the Russian Federation"* [8]. Under the Act, none but educational institutions, organizations carrying out education and individual entrepreneurs are entitled to render educational activities [8. Article 21]. The Act stipulates that individual entrepreneurs render educational activities directly or indirectly by employing pedagogical workers [8. Article 32]. The educational activities of individual entrepreneurs within the framework of teaching English cover a very diverse target audience that includes pre-school children, students of secondary and higher educational institutions, individuals, representatives of legal entities. These groups are currently presented by citizens of the Russian Federation, the CIS and foreign countries.

The year of 2015 initiated our research which was planned that same year, done in 2015-2018 and approved in 2018-2019 at *FBGO VO Tyumen State Institute of Culture and In. Yaz. – Foreign Languages, Interpretation and Translation Center (Individual Entrepreneur – Shilikov S.I.)*. In English classes, we observed the students experience phonetic and spelling problems while learning English words containing one and the same letter or a combination of the same letters pronounced differently in definite cases, e.g. the vowel letter *a* in the following words: *after* – [a:], *age* – [ei], *ago* – [ə], *all* – [o:], *ant* – [æ], *Bologna* – [jə], *climate* – [i], *parent* – [ɛə], *watch* – [ɔ]; the combination of vowel and consonant letters *our*: *sour* – [sauə], *tumour* – [ə], *courtesy* – [3:], *concourse* – [o:], *tour* – [uə]; the combination of consonant letters *ch*, e.g. *chef* – [ʃ], *chess* – [tʃ], *chorus* – [k], *sandwich* – [dʒ].

The relevance of the research work arose in the background of insufficient coverage of the declared topic in the educational process carried out by individual entrepreneurs in the Russian Federation. The introductory [10], introductory and phonetic courses [6], English phonetics [15] and phonology manuals [14], [20] at that time did not allow us to find irrefragable answers to all questions of the students regarding the multiple ways of graphical spelling of vowel and consonant phonemes. That demand prompted us to study the problem thoroughly.

The material of the research work consisted of various texts taken for our consideration from pieces of literature, periodicals, the Internet. We also dealt with business correspondence, films, advertising; explanatory [5], [7], [17] and on-line dictionaries [11], [12], [13]; guides to contemporary English pronunciation [16], [18], [19]. We examined the parts of speech and their transformations regarding tense, voice, number, case, degree, mood categories. It seemed natural for us to view abbreviations, acronyms, interjections and loan words, paying particular attention to such toponyms [3] as the names of cities, continents, countries, days of the week, months, nationalities, people's names, patronymics and sur-names, rivers, salads, social networks, seas, stars, states, wines, etc.

In this article, we endeavour to compile and systematize the ways of graphical spelling of diphthongs ([au], [ɔɪ], [iə], [əʊ], [aɪ], [uə], [ɛə], [ei]) [2], [4], [6] omitting other 12 vowel (10 monophthongs, 2 diphthongoids) and 24 consonant sounds [9], [10].

The vowel sound [aʊ] can be represented by combinations of English letters *au* (e.g. *Saudi Arabia* – [saudiə'reibiə]), *ou* (*tousle* – ['tauzl] or ['tauzəl]), *ough* (*plough* – [plau]), *ow* (*scowl* – [skaul]). The sound [əʊ]

can be placed in the zero (*Ow* – [əʊ]), initial (*out* – [aʊt]), middle (*house* – [haʊs]) and final (*brow* – [braʊ]) position of words. The diphthong [aʊ] is represented by four combinations of letters (*au, ou, ough, ow*). In two cases, this phoneme is formed in graphic spelling by combinations of vowel letters (*au, ou*) and in two cases – by combinations of vowel and consonant letters (*ough, ow*). For detailed information on diphthongs and letters and letter combinations representing them, we refer our readers to Table 1 below.

The vowel sound [ɔɪ] can be represented by combinations of letters *oi* (*moist* – [mɔɪst]), *ois* (*Illinois* – [ɪliˈnɔɪ]), *oy* (*deploy* – [dɪˈplɔɪ]). The sound [ɔɪ] can be placed in the initial (*oyster* – [ˈɔɪstə]), middle (*avoid* – [əˈvɔɪd]) and final (*destroy* – [dɪˈstrɔɪ]) position of words. The diphthong [ɔɪ] is represented by three combinations of letters (*oi, ois, oy*). In two cases, this phoneme is formed in graphic spelling by combinations of vowel letters (*oi, oy*) and in one case – by a combination of vowel and consonant letters (*ois*).

The vowel sound [iə] can be represented by the letter *e* (*query* – [ˈkwɛrɪ]) and by combinations of letters *ea* (*ideal* – [aɪˈdɪəl]), *ear* (*sear* – [sɪə]), *eer* (*veneer* – [vɪˈnɪə] or [vəˈnɪə]), *eir* (*weird* – [wɪəd]), *eo* (*theory* – [ˈθɪəri]), *eou* (*hideous* – [ˈhɪdiəs]), *ere* (*adhere* – [ədˈhɪə]), *eu* (*linoleum* – [lɪˈnəʊliəm]), *hea* (*gonorrhoea* – [gɒnəˈrɪə]), *ia* (*guardian* – [ˈgɑːdiən]), *iar* (*peculiar* – [pɪˈkjuːliə]), *ie* (*nutrient* – [ˈnjuːtriənt]), *ier* (*pierce* – [pɪəs]), *io* (*oblivion* – [əbˈlɪvɪən]), *ior* (*warrior* – [ˈwɔːriə]), *iou* (*tedious* – [ˈtiːdiəs]), *ir* (*souvenir* – [suːvəˈnɪə]), *iu* (*premium* – [ˈpriːmiəm]), *ya* (*Libya* – [ˈlɪbiə]). The sound [iə] can be placed in the zero (*ear* – [iə]), initial (*earshot* – [ˈɪəʃɒt]), middle (*material* – [məˈtɪəriəl]) and final (*fear* – [fɪə]) position of words. The diphthong [iə] is represented by one letter (*e*) and 19 combinations of letters (*ea, ear, eer, eir, eo, eou, ere, eu, hea, ia, iar, ie, ier, io, ior, iou, ir, iu, ya*). In 10 cases, this phoneme is formed in graphic spelling by combinations of vowel letters (*ea, eo, eou, eu, ia, ie, io, iou, iu, ya*) and in nine cases – by combinations of vowel and consonant letters (*ear, eer, eir, ere, hea, iar, ier, ior, ir*).

The vowel sound [əʊ] can be represented by the letter *o* (*rodent* – [ˈrəʊdnt] or [ˈrəʊdənt]) and by combinations of letters *aoh* (*pharaoh* – [ˈfɛərəʊ]), *au* (*sauté* – [ˈsəʊteɪ]), *eau* (*plateau* – [ˈplætəʊ]), *eou* (*Seoul* – [səʊl]), *ew* (*sew* – [səʊ]), *hau* (*haute couture* – [əʊtkʊˈtʃuə], [əʊtkʊˈtʃuə] or [əʊtkuːˈtʃuə]), *ho* (*Rhode Island* – [rəʊdˈaɪlənd]), *ˈho* (*table d’hôte* – [ˈtɑːblˈdəʊt] or [ˈtɑːbəlˈdəʊt]), *oa* (*float* – [fləʊt]), *oe* (*foe* – [fəʊ]), *ol* (*folk* – [fəʊk]), *oo* (*brooch* – [brəʊtʃ]), *ou* (*soul* – [səʊl]), *ough* (*dough* – [dəʊ]), *ow* (*mellow* – [ˈmeləʊ]), *owe* (*owe* – [əʊ]).

Table 1 – Ways of Graphical Spelling of Diphthongs

#	Vowel Phoneme	Vowel Letters and their Combinations	Combinations of Vowel and Consonant Letters	Consonant Letter	Combination of the Apostrophe, Consonant and Vowel Letters
1.	[aʊ]	au, ou	ough, ow		
2.	[ɔɪ]	oi, oy	ois		
3.	[iə]	e	ear, eer, eir, ere, hea, iar, ier, ior, ir		
		ea, eo, eou, eu, ia, ie, io, iou, iu, ya			
4.	[əʊ]	o	aoh, ew, hau, ho, ol, ough, ow, owe		'ho
		eau, au, eou, oa, oe, oo, ou			
5.	[aɪ]	i, y	eigh, ig, igh		
		ei, ey, eye, ie, ui, uy, ye			
6.	[ʊə]	u	ewer, oor, our, uar, ueur, ure		
		ua, ue, uou			
7.	[ɛə]	a, e	air, aire, are, ayor, ear, eir, er, ere		
		ae, ai			
8.	[eɪ]	a, e, é	ag, aig, aigh, eig, eigh, er, et, uet	h, j, k	
		ae, ai, ay, ea, ee or ée, ei, ey, oa			

The sound [əʊ] can be placed in the zero (*Oh – [əʊ]*), initial (*own – [əʊn]*), middle (*note – [nəʊt]*) and final (*polo – [ˈpəʊləʊ]*) position of words. The diphthong [əʊ] is represented by one letter (o), by 15 combinations of letters (*aoh, eau, au, eou, ew, hau, ho, oa, oe, ol, oo, ou, ough, ow, owe*) and by one combination of the apostrophe, a consonant and a vowel letters (*'ho*). In seven cases, this phoneme is formed in graphic spelling by combinations of vowel letters (*eau, au, eou, oa, oe, oo, ou*), in eight cases – by combinations of vowel and consonant letters (*aoh, ew, hau, ho, ol, ough, ow, owe*) and in one case – by a combination of the apostrophe and letters (*'ho*).

The vowel sound [aɪ] can be represented by the letters *i* (*grime – [graɪm]*), *y* (*ply – [plaɪ]*) and by combinations of letters *ei* (*skein – [skaɪn]*), *eigh* (*height – [haɪt]*), *ey* (*geyser – [ˈgaɪzə]*), *eye* (*eye – [aɪ]*), *ie* (*tie – [taɪ]*), *ig* (*benign – [bɪˈnaɪn]*), *igh* (*knight – [naɪt]*), *ui* (*disguise – [dɪsˈgaɪz]*), *uy* (*buy – [baɪ]*), *ye* (*bye – [baɪ]*). The sound [aɪ] can be placed in the zero (*l – [aɪ]*), initial (*either – [ˈaɪðə]*), middle (*neither – [ˈnaɪðə]*) and final (*verify – [ˈverfaɪ]*) position of words. The diphthong [aɪ] is represented by two

letters (*i, y*) and by 10 combinations of letters (*ei, eigh, ey, eye, ie, ig, igh, ui, uy, ye*). In seven cases, this phoneme is formed in graphic spelling by combinations of vowel letters (*ei, ey, eye, ie, ui, uy, ye*) and in three cases – by combinations of vowel and consonant letters (*eigh, ig, igh*).

The vowel sound [ʊə] can be represented by the letter *u* (*rural* – [ˈrʊərəl] or [ˈrʊərəl]) and by combinations of letters *ewer* (*skewer* – [ˈskjʊə]), *oor* (*moor* – [mʊə] or [moː]), *our* (*dour* – [dʊə]), *ua* (*septuagenarian* – [septjʊədʒɪˈnæriən]), *uar* (*Stuart* – [ˈstjʊət]), *ue* (*fuel* – [fjʊəl]), *ueur* (*liqueur* – [liˈkjʊə]), *uou* (*sumptuous* – [ˈsʌmptʃʊəs] or [ˈsʌmptʃjʊəs]), *ure* (*obscure* – [ɒbsˈkjʊə]). The sound [ʊə] can be placed in the middle (*gourmet* – [ˈgʊəmeɪ]) and final (*poor* – [pʊə]) position of words. The diphthong [ʊə] is represented by one letter (*u*) and by nine combinations of letters (*ewer, oor, our, ua, uar, ue, ueur, uou, ure*). In three cases, this phoneme is formed in graphic spelling by combinations of vowel letters (*ua, ue, uou*) and in six cases – by combinations of vowel and consonant letters (*ewer, oor, our, uar, ueur, ure*).

The vowel sound [ɛə] can be represented by the letters *a* (*pharaoh* – [ˈfɛərəʊ]), *e* (*wisteria* – [wɪsˈtɛəriə]) and by combinations of letters *ae* (*aerodynamics* – [ɛərədaɪˈnæmɪks]), *ai* (*dairy* – [ˈdeəri]), *air* (*fair* – [fɛə]), *aire* (*questionnaire* – [kwɛstʃəˈnɛə]), *are* (*welfare* – [ˈwɛlfɛə]), *ayor* (*mayor* – [mɛə]), *ear* (*forebear* – [ˈfoːbɛə]), *eir* (*their* – [ðɛə]), *er* (*concierge* – [kɒnsɪˈɛʒ]), *ere* (*therefore* – [ˈðɛəfoː]). The sound [ɛə] can be placed in the zero (*air* – [ɛə]), initial (*area* – [ˈɛəriə]), middle (*whereas* – [wɛəˈræz]) and final (*where* – [wɛə]) position of words. The diphthong [ɛə] is represented by two letters (*a, e*) and by ten graphic combinations of letters (*ae, ai, air, air, are, ayor, ear, eir, er, ere*). In two cases, this phoneme is formed in graphic spelling by combinations of vowel letters (*ae, ai*) and in eight cases – by combinations of vowel and consonant letters (*air, aire, are, ayor, ear, eir, er, ere*).

The vowel sound [eɪ] can be represented by the vowel letters *a* (*slate* – [sleɪt]) and *e* (*elite* – [eɪˈliːt]), by the consonant letters *h* (*PhD* – [piːɪtʃˈdiː]), *j* (*J.F Kennedy* – [dʒɛɪfˈkɛnɛdi]) and *k* (*KGB* – [keɪdʒɪˈbiː]), by the French letter *é* (*protégé* – [ˈprɔːtʒeɪ]) and by combinations of letters *ae* (*Gaelic* – [ˈgeɪlɪk]), *ag* (*champagne* – [ʃæmˈpeɪn]), *ai* (*maim* – [meɪm]), *aig* (*campaign* – [kæmˈpeɪn]), *aigh* (*straight* – [streɪt]), *ay* (*relay* – [riːˈleɪ]), *ea* (*steak* – [steɪk]), *ee* or *ée* (*matinee* – [ˈmætiːneɪ]), *entrée* – [ˈɒntreɪ] or [ˈɑːntreɪ]), *ei* (*abseil* – [æbsɛɪl]), *eig* (*reign* – [reɪn]), *eigh* (*freight* – [freɪt]), *er* (*foyer* – [ˈfɔɪeɪ]), *et* (*gourmet* – [ˈgʊəmeɪ]), *ey* (*fey* – [feɪ]), *oa* (*gaol* – [dʒeɪl]), *uet* (*bouquet* – [buːˈkeɪ]). The sound [eɪ] can be placed in the zero (*Eh* – [eɪ]), initial (*eight* – [eɪt]), middle (*tame* – [teɪm]) and final (*bay* – [beɪ]) position

of words. The diphthong [eɪ] is represented by six letters (*a, e, h, j, k, é*), three of which are vowels and three are consonants, five are English and one is French, by 17 graphic combinations of letters (*ae, ag, ai, aig, aigh, ay, ea, ee, ée, ei, eig, eigh, er, et, ey, oa, uet*). In nine cases, this phoneme is formed in spelling by combinations of vowel letters (*ae, ai, ay, ea, ee, ée, ei, ey, oa*) and in eight cases – by combinations of vowel and consonant letters (*ag, aig, aigh, eig, eigh, er, et, uet*).

The research allowed us to work out and prepare for publishing a guide-book of drills containing lists of words formed by means of ABC letters and their combinations used to denote the English sounds.

The results of the scientific analysis persuade us that the presented material can be effective in the educational process rendered by teachers at educational institutions, organizations carrying out education and by individual entrepreneurs when explaining the articulation of English phonemes via graphic spelling of letters and their combinations to students. Demonstrating the data of the study to learners can facilitate their understanding the problem of English alphabet letter combinations representing the sounds used in the formation of lexical units [1] while practicing the pronunciation [19].

We assume that the ways of graphic spelling of the phonemes presented by us are not exhaustive because it is impossible to cover the whole spectrum of English language due to its constant development.

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**THE TEACHING OF A.M. VERBOV ABOUT THE LARYNX
OF THE SINGER IN THE LIGHT OF MODERN VOCAL-PEDAGOGICAL
SCIENCE**

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Abstract. In the offered article the theory of position of a throat at a fonation offered by the singer and the anatomist A.M. Verbov in 1931 is considered. Basic positions of a throat, their functional features and a possibility of inclusion of scientific conclusions of A.M Verbov in methodical tools of the teacher-vocalist come to light. A.M. Verbov's theory is compared with scientific developments of this subject by modern scientists and also selection of technological means is determined by realization of necessary training of a throat.

Keywords. Anatomy of a throat of the singer, correlation communications of position of a throat and nature of sound formation, methodical management of position of a throat in singing.

The classical methodology of teaching academic singing dates back more than one century. It is based on the empirical method of accumulating techniques. Even when attempts were made to scientifically study the singing apparatus in the 60s of the 19th century, the empirical method, which is called the “as if” method in modern pedagogical space, still remained the main one.

In Russia, the first attempts to scientifically substantiate empirical experience were made in the 1920s by the State Institute of Musical Sciences (HYMN). In the Resolution of the 1st All-Russian Conference of Vocal Scientists and Teachers of HYMN it was recommended: “To recognize as desirable the application of only those practical teaching methods that can be theoretically explained To instruct HYMN to organize a Commission to develop a unified terminology in the field of vocal art, as far as possible, scientifically substantiated”[9].

Behind the “scientific groundlessness” of teaching methods, one can see the techniques of emotional-figurative influence on the vocal apparatus. But the HYMN Decisions could not exclude the empirical method, it continued to exist, work efficiently and remains so to this day. The efforts

of scientists, who are nevertheless trying to uncover the secrets behind the flight, sparkling sound and provide this flight and brilliance, were not in vain. Researches by scientists: Academician V.P. Morozov, N.D. Andguladze, R. Uusson, F.F. Zasedatelev, N.A. Bagadurov, S.M. Sonki and others undoubtedly enriched pedagogical science and practice, since understanding the physiology of the vocal process allows the teacher to confidently achieve the desired result.

The famous pianist and teacher Y. I. Milshtein said: "What they don't understand, they don't master. Accurate, sharp and deep knowledge is what we lack. Without such knowledge, there can be no penetration into the essence of an executable work" [6, p. 108]. These amazing words are quite applicable to vocal pedagogy. After all, without the appropriate knowledge it is impossible to build an apparatus, of any type, from flying to vocal. The case with the vocal apparatus is even more complicated, as it involves the individual work of the teacher with material, the "schemes" of which he does not see.

The criteria for the organization of the educational process, which should be the core of professional pedagogy, determine the need for a deep understanding of the functioning of such a complex structural system as the singing apparatus. These are - *biological feasibility, acoustic efficiency and energy efficiency*. In vocal and pedagogical art, these are the main identification milestones by which the correct operation of the entire functional system of the singing apparatus is determined. For this purpose, we will consider precisely those methodological settings of A. Verbov, which in pedagogical practice are defined as paramount - they primarily include the doctrine of the larynx and, associated with the position of the larynx, the nature of sound when singing.

Alexander Verbov (1861–1940), singer, bacteriologist, reviewer of the Kislovodsk Opera, member of the Russian Balneological Society in Pyatigorsk; studied singing with the artist of K.A. Maureli Italian opera in St. Petersburg participated in opera productions as a singer and violinist; being a scholarship holder at a music school, he attracted the attention of I.P. Pryanishnikov, who completed his vocal education. Verbov was given the opportunity "to listen close and watch the singing of such luminaries of Italian vocal art as Masini ...". This auditory experience may have played a decisive role in the author's thinking and his impeccable understanding of singing technology. He was aware of research works in the field of physiology and anatomy of the voice, had access to medical journals, was familiar with the works of Garcia, Stockhausen, Zasedatelev, Musehold, etc. All this affected Verbov's pedagogical, research and authorial work in the field of singing.

In the doctrine of the position of the larynx when singing, we will consider two sides of the question: 1) in what position can the larynx be when singing: in low, high, neutral? 2) what position of the larynx corresponds to biological expediency, providing acoustic efficiency and energy efficiency?

The book of A. M. Verbov "Voice-setting technique" was published in 1931 and, as V. I. Sadovnikov (professor at the Moscow Conservatory) testified at that time, "It is superior in its scientifically sound content to everything that has so far been written about the technique for processing of singer's voices. Verbov, as a doctor and singer, analyzing the work of the muscular system of the vocal apparatus during singing phonation, gives educators and students quite accurate, based on knowledge of anatomy, physiology and acoustics, instructions for stimulating muscle action that promote proper voice formation" [2, p. 3]. The works of many authors of that period, including F. Zasedatelev and A. Musehold, thoroughly describe the muscles of the larynx, but there is not one, as Verbov says, "an exact indication for excitation to the action of muscles", therefore the question of the position of the larynx in singing was considered as an individual decision of a teacher or singer, consistent with a sense of comfort.

Only with the development of vocal science and as a result of empirical observations, the low position of the larynx was recognized as the most appropriate. True, there was no consensus on the degree of lowering of the larynx. Verbov also confirms this fact, agreeing with the assertion of F. Zasedatelev that "It remains to dwell on the indifferent low position of the larynx" [cit. 2, p. 9]. As an anatomist, Verbov gives evidence that in the low position the larynx, compared with the high, is not constrained by the powerful muscles of the lower jaw and the upper cervical vertebrae protruding forward. The low position of the larynx opens up a wide space in the pharyngeal cavity, which "provides the strength and volume of the voice" [2, p. nine]. Verbov claims: "There are many who say and write that the larynx should be kept low. But no one has definitely written about how to do this and what for" [ibid.].

It should be noted that before the release of Verbov's book, the books of Pryanishnikov (1903), O. Seffery (1914), S. Sonki (1912), F. Lamperti (1925), K. Mazurin (1902-1903) and several other authors were already published and, practically, the most important question was the question of phonation breathing. S. Sonka's statement on the question of interest to us, we can say, is a summation of the generally accepted opinion about the larynx, which, as was believed, should not be given too much attention. Researcher of the work of S. Sonka - E. Sharma writes that the maestro suggests not paying special attention to the position of the larynx, since "any violence against the larynx when making a singing sound is extremely harmful. Both

forcibly lowering it, and raising and holding it in a constantly high position can only lead to negative results. For the delivered voice is the result of observing a whole complex of conditions, and a lower or higher position of the larynx is only one of the conditions" [cit. to 9, p. 107]. S. Sonka emphasizes that lowering or raising the larynx during singing should be voluntary.

Sadovnikov, reviewing Verbov's work, writes: "Not only does the author of the book describe the physiological functions of known muscles, he also indicates in the most accessible form for everyone the method of mastering their actions, which results in a positive effect for sound formation" [2, p. 4].

We emphasize- this is what a vocalist needs to have: *a method of mastering the actions of muscles*. Following Verbov's research, we understand that a singer can affect the muscles of the larynx only intuitively, "by guess, without the possibility of using his eyes to verify the correct position of his singing organ".

So, we will consider the anatomical positions deduced by Verbov in the functioning of the larynx during singing.

Verbov considers that muscle of the larynx, which is not mentioned in the writings of previous authors and is the object of his research. This is the *hyoid-sternum muscle*. The whole value of this muscle is that it is attached to the hyoid bone, which has a very important, according to Verbov, biological value, because: "The movements of the hyoid bone up and forward towards the chin are made by reducing the hyoid-chin muscle (we will not bring them Latin names, because in the work of the teacher it does not have practical significance - V.D.). If at the same time the muscle of the lingual-chin contracts, then the hyoid bone will move from its late position up and forward and pull the thyroid cartilage of the larynx behind it, and the tongue will move forward, and its end may even protrude from the mouth. If, after this, the hyoid-sternum muscles contract, they will pull the hyoid bone back down to the sternum, and the tongue and larynx will return to their original position. Thus, the hypoglossal sternum muscles, *contracting, simultaneously pull the hyoid bone and tongue down* and at the same time give the larynx the ability to stay in its calm low position, remaining in it all the time while these muscles are in shortened condition" [2, p. 10].

The author of the article was forced to give a fully voluminous anatomical explanation, since this is precisely the essence of the fact that simply knowing the anatomical structure still does not give the teacher the opportunity to work on a particular muscle. So Verbov believes that the mention of Zasedatelev in his work about the *thyroid-sternum muscle*, which lowers the larynx, is valuable in itself, but it is impossible to act on this muscle, since: "It has no indicator for when it is in motion" [2, p. 10].

So S. Sonki, when examining the dead larynx, pulled the right muscle with tweezers to check the nature of its movement [8, p. 45].

All the skill of the teacher lies in the knowledge of the presence of that “tweezers” with which he can pull the muscle.

Let us consider how Verbov proposes to implement his own, new for his time, anatomical study as a methodological technique. Namely: he advises to go to the mirror to feel the hyoid bone with thumb and forefinger, then: “When the tongue is protruded, this bone will slip up from under the fingers, and when the tongue is inserted far back, it will slip down from the fingers” [3, p. 12]. Thus, according to Verbov, the singer, “alternately protruding and retracting the tongue back,” can master the muscles for lowering the hyoid bone. And Verbov’s summary is: “*By lowering the hyoid bone*, we thereby contribute to the passive lowering of the larynx. Consequently, we have a practical technique with which we can lower the larynx freely, without tension” [ibid.].

It seems to the author of this article that Verbov put “a cart before the horse”: as we understood, the hyoid bone itself does not lower the larynx. Since all processes are controlled by the brain, the first thing the singer does, is wishes to *lower his tongue to lower his larynx*. And the brain performs this muscle movement: the tongue, going down, indirectly lowers the hyoid bone. No matter how much the singer wants to lower the hyoid bone, it will not fall, unless the tongue reflexively reaches down.

A very important point in this method of lowering the larynx is that “the bottom of the oral cavity begins to noticeably lower (*and not the lower jaw*)” [ibid., P. 10. - Kursiv V.D]. Verbov’s very important statement is still relevant today, since even famous singers substitute these two concepts: “lowering the larynx” and “not opening the mouth,” which leads to a breakdown in the correlation of the three components of the phonation process: biological, energy, and acoustic. The importance of the position of the mouth for the singer was also noted by K. Mazurin: “The mouth should be kept half open so as not to lose air unproductively [5, p. 80], and - “The position of the mouth is an important point. It is best to consider the mouth and its parts as a set for resonance and, accordingly, to compare the oral cavity with the room. ... And open it so that the hole matches the thickness of a little finger” [ibid., P. 332]. And this position of the mouth will correspond to the correct lowering of the larynx, and therefore to the correct energy and acoustic activity of the phonation apparatus.

Now let's see what modern scientists say about the position of the larynx. Let us turn to the works of academician V. P. Morozov, who believes that "Finding the optimal position of the larynx is an extremely important vocal and pedagogical problem" [7, p. 179], therefore, the methodical installation on the lowered larynx should be carried out by the teacher, and as a methodical method it is proposed to make a yawn, which naturally lowers the larynx, before starting to sing. In addition, academician Morozov emphasizes that the lowered larynx helps to form the HSP (high singing formant), which makes the singer's voice bright and flighty (we emphasize again - acoustic efficiency). In his laboratory at the Moscow Conservatory, Academician Morozov studied the voices of many famous singers, scientifically confirming and subjectively found patterns, and the first scientific research of A. Verbov.

The famous Russian scientist L. Dmitriev in his book "Fundamentals of Vocal Methodologies" [4] gives the larynx primary importance, since the initial singing sound arises in it, which should have certain qualities, formed by the level of acoustic and aerodynamic characteristics, depending on the volume of the pharyngeal canal, which in turn, is regulated by a decrease or increase in the larynx.

Thus, according to modern science, highly professional singing is impossible to achieve without lowering the larynx.

Studying the voices of many singers by the laryngographic method, Dmitriev came to the conclusion that "... a singing set with excellent voice quality is not the same for all singers. From this it follows that the professional quality of the sound of the voice is determined not by the singing installation of the larynx, but on the contrary, by various, always individual levels of the position of the larynx" [4, p. 177]. And, as a result, it invites the teacher to search for the best sound quality, once again giving scientific confirmation to the phrase that exists in the vocal environment that "the singer's voice is in the teacher's ear".

The assertion that there is no single larynx installation for all is due to the fact that the sizes of the pharynx area are different for everyone and it is naturally impossible to indicate the specific number of centimeters by which the larynx should be lowered. But you can specify a specific place. And for this, the author has developed a certain technique that will ensure that any singer lower his larynx precisely to his rational position. This is an exercise in singing with a closed mouth (mooring), but having one mandatory feature: while singing this exercise, the bridge of the nose should be clamped as if the singer was angry; the larynx (tongue) drops to its lowest position (the area of the jugular fossa) when it is felt

that the air is blocked; then the larynx is gradually lead up to the first moment of air release. Fixing the jugular fossa with the index finger helps to quickly remember the position of the larynx. True, some educators and researchers write that “the larynx is a mined zone”, but practice shows that this is not entirely true - not only is it possible to work with the larynx, but it also needs to be able to work, and excellent results are not long in coming. The practice of the author of the article showed the great effectiveness of this technique.

It is possible to summarize all the foregoing by quoting the words of D. L. Aspelund, who argued that "one should not exaggerate the natural science side of vocal and pedagogical theory and obscure the scientific significance of performing and pedagogical experience" [1]. After all, as Lev Landau said: “The supreme judge of any physical theory is experience. Any practice will bring to life its theoretical confirmation”.

Based on this statement, an author with many years of practical research [3] can confidently say that with various types of voices and with some anatomical features, *the larynx has only one destination - the level of the jugular fossa*, where the thickening of the vagus nerve is located, which gives the singer the opportunity to have some sensation of holding the larynx in this position. This extremely low position provides all the advantages of the voice associated with the largest volume of the epiglottis.

Improving the process of teaching a specialty is impossible without further innovative pedagogical work on the creation of techniques that optimize the process itself. Achievements in the research of modern pedagogical science allow the teacher-vocalist to conduct his activities using professional knowledge that objectifies empiricism. We agree with the words of Yu. N. Tyulin that the book of A. Verbov “has long become a bibliographic rarity, but still causes great interest from the vocalists. Maybe something in it seems controversial and deserves reevaluation. But mainly, despite its small volume, this book is a valuable contribution to Soviet musical science, paving new paths in vocal methodology” [2, p. 51].

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FLEXIBILITY FORMATION OF YOUNG GYMNASTS

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Abstract. The article is devoted to the flexibility formation and mobility in joints of young gymnasts in primary training groups. It is known that when performing exercises to develop flexibility, it is important to use the most effective and efficient methods. There are several methods for flexibility formation: passive static, active static, passive dynamic, active dynamic, antagonistic, agonistic, and the PNF method. It should be noted that this article considers a study in which, when performing exercises with an elastic band, such methods of flexibility formation as antagonistic and agonistic were used.

Keywords: flexibility formation methods, artistic gymnastics, flexibility, exercises with elastic tape, initial training.

Introduction. Artistic gymnastics in the 21st century is a combination of the highest technical complexity of competitive programs, their almost perfect quality, dynamism, compositional and aesthetic harmony performed by leading gymnasts.

An extremely high level of complexity of movements, their ligaments and combinations, the requirements for the artistry of their performance in competitive compositions of gymnasts originates at the stage of initial training of athletes [3].

The flexibility formation and stretching take a leading place in almost all types of physical activity. Flexibility is one of the five basic physical qualities of a person [5].

The level of sportsmanship in gymnastics largely determines flexibility. Lack of flexibility complicates and slows down the process of mastering motor skills, limiting the manifestations of strength, speed and coordination abilities, reduces the efficiency of work, increasing the likelihood of injuries of the musculoskeletal system of athletes. Therefore, flexibility is a fundamental physical quality [3].

The choice of effective and efficient methods for the flexibility formation remains one of the urgent problems of sports training, since the development of flexibility ensures the successful mastery of specific exercises in all types of gymnastics all-around.

Mastering many exercises in gymnastics is impossible if the athlete does not have high mobility in the joints [1,2,3].

Purpose of our study is to determine the effectiveness of using the antagonistic method of flexibility formation of young gymnasts (6-7 years) old using elastic bands.

Object of study is the educational process of gymnasts (6-7 years old) in primary training groups.

Subject of research: methods for the flexibility formation with the use of elastic bands of gymnasts (6-7 years old) in primary training groups.

To achieve the goal of the study, we solved the following tasks:

1. To identify the initial level of flexibility formation of gymnasts (6-7 years old) of primary training groups.
2. To select exercises using elastic tape aimed at flexibility formation of gymnasts of primary training groups.
3. To conduct a comparative analysis of the antagonistic method for the flexibility formation of gymnasts at initial training.
4. To determine the effectiveness of using the antagonistic method.

The following traditional research methods have been applied: analysis of scientific literature, control tests, pedagogical observation, pedagogical experiment, methods of mathematical statistics.

Discussion and results. Before starting the experiment, the level of flexibility development was assessed using control exercises in two groups of gymnasts of 10 people each. Subsequently, all gymnasts took part in a pedagogical experiment. The following control exercises were used as criteria characterizing the flexibility formation: twine left, twine right, longitudinal twine, tilt ("fold"), bridge, hold the right (left), hold the right (left) to the side, hold the left (right) back. The results of the initial level of flexibility formation (before the experiment) in the control and experimental groups are presented in table 1.

Table 1 - the Initial level of flexibility formation in the control and experimental groups

Control exercises	Groups	Statistical values			
		X	σ	t	p
Twine left (centimeters)	Control	16,2	2,1	0,9	>0,05
	Experimental	17	1,7		
Twine right (centimeters)	Control	14,3	2,4	0,5	>0,05
	Experimental	13,8	2,1		
Longitudinal twine (centimeters)	Control	14,6	3,5	0,4	>0,05
	Experimental	14,1	2,5		
Tilt ("crease") (centimeters)	Control	-6,5	2,3	0,2	>0,05
	Experimental	-6,3	2,3		
Bridge (centimeters)	Control	59,4	2,1	0,1	>0,05
	Experimental	59,5	1,9		
Hold right (left) (angular degrees)	Control	85,5	7,6	0,1	>0,05
	Experimental	85	8,2		
Holding right (left) to the side (angular degrees)	Control	88,5	3,4	0,2	>0,05
	Experimental	88	6,3		
Holding left (right) back (angular degrees)	Control	72,5	7,5	0,3	>0,05
	Experimental	73,5	8,2		

When comparing the indicators of the level of flexibility formation of gymnasts (6–7 years old) by the beginning of the experiment, it turned out that no statistically significant differences were found between the control and experimental groups ($p > 0.05$). It follows that these groups are homogeneous.

In our study, an experiment was conducted in which gymnasts (twenty people) of the initial training groups of the first and second years of study (6-7 years old), who were involved at the Department of Theory and Methods of Gymnastics at the MSAPE and having the same initial level of flexibility development, took part. For the experiment, we selected 29 exercises using elastic band with strong resistance (elastic bands have several levels of elasticity; usually there are three levels of resistance: strong, medium and weak): tilts to the right and left, "fold", twine left, twine right, longitudinal twine, "puffs", retention and other exercises. The control group,

when performing exercises, used the agonistic method of flexibility formation (muscles are stretched under the action of external force (in this case, under the body's own weight and elastic band tension) as in the passive static method, then the tension of antagonist muscles is performed (3-5 s.) [4]). In the experimental group, exercises were performed by the agonistic method (muscles passively stretch after exertion (3-5 s.) [4]).

For the control and experimental groups, we developed complexes from selected exercises. The complexes were included at the end of the main part of the training session (classes were held three times a week for an hour and a half). The duration of each complex is 10-15 minutes. As a rule, 5-7 exercises were included in the developed complexes. Each exercise was performed for 30 seconds.

After five months, we re-evaluated the level of flexibility formation of gymnasts using the same control exercises.

The results of the level of flexibility formation after the experiment in the control and experimental groups are presented in table 2.

Table 2 - The level of flexibility formation in the control and experimental groups after the experiment

Control exercises	Groups	Statistical values			
		X	σ	t	p
Twine left (centimeters)	Control	9,8	1,3	3,6	<0,05
	Experimental	6,7	1,4		
Twine right (centimeters)	Control	7,8	1,3	2,3	<0,05
	Experimental	6,2	1,1		
Longitudinal twine (centimeters)	Control	8,4	1,4	2,3	<0,05
	Experimental	6,4	1,4		
Tilt ("crease") (centimeters)	Control	2,9	1,8	2,3	<0,05
	Experimental	6	1,7		
Bridge (centimeters)	Control	52,6	1,4	2,2	<0,05
	Experimental	50,4	1,5		
Hold right (left) (angular degrees)	Control	96,5	2,6	2,1	<0,05
	Experimental	103	2,4		
Holding right (left) to the side (angular degrees)	Control	100	2,3	2,5	<0,05
	Experimental	108	2,8		
Holding left (right) back (angular degrees)	Control	85,5	2,9	2,2	<0,05
	Experimental	94,5	3,1		

When comparing the results, we found that the two groups significantly increased the level of flexibility formation, but the gymnasts who performed the exercises with the elastic band by the antagonistic method had a higher level of flexibility formation after the experiment than the group of gymnasts who included agonistic exercises in the training method. The experimental group exceeded the indicators of the control group and in each control exercise showed statistically significant increase in indicators ($p < 0.05$).

Conclusion

An analysis of the scientific and methodological literature showed that the issue of flexibility formation of young gymnasts has not been adequately studied, so an attempt was made to choose complexes of special exercises aimed at developing flexibility in the hip, shoulder joints and spine of gymnasts of 6-7 years old of initial training groups. When comparing the indicators of the level of flexibility formation of gymnasts of initial training groups before the experiment, it turned out that in the experimental and control groups these indicators are approximately homogenous and have no statistically significant deviations.

The results of a comparative analysis of the antagonistic and agonistic methods confirmed the assumption that performing exercises with elastic tape to develop flexibility in gymnasts of initial training groups of 6-7 years old with the antagonistic method is more effective than using the agonistic method.

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ELECTIVE COURSE OF SINGLE COMBATS IN THE SYSTEM OF EDUCATION OF STUDENTS

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Annotation. In this article information is described about engaging in a physical culture with the use of elective course of single combats, in the system of physical education in institution of higher learning.

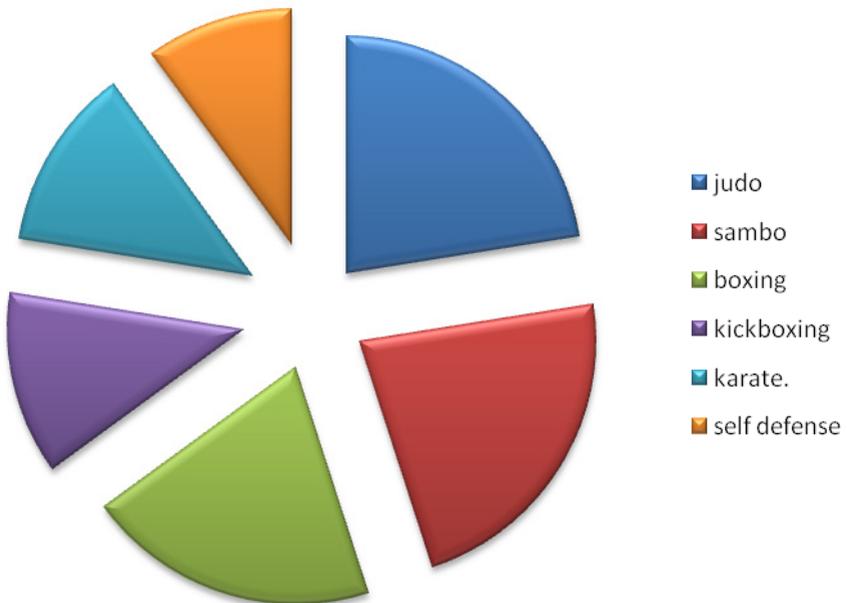
Keywords: the Physical culture, single combats, health, student

In the system of physical education of students of the Kazan national research technological university there is a row of elective courses sent to development of physical internalss, motive abilities, skills and decision of tasks of the professionally applied physical preparation depending on the profile of specialty. And because in our Institution of higher learning many visitors study from other regions and foreign guys from the countries of Asia, where such types of sport as single combats, national fight are widely widespread etc., therefore one of most highly sought in a physical culture is elective course of single combats. It is necessary to mark that from for preparations to ЕГЭ and introductory tests greater part of young people to entering institution of higher learning engaged in no types of sport, and begin to occupy only in institution of higher learning. Consequently, there is wide possibility of selection in sporting sections, where it maybe to attain high sporting results in later age. It behaves to many types of single combats (judo, sambo, boxing, karate etc.), to the power types of sport and many other [1]. Use of elective course of single combats, in the system of physical education of students causes large interest among young people, because there is all-round development of physical qualities of students, forming of requirement in the healthy way of life, harmonious development of personality, education of responsibility and professional self-determination, comes true, in accordance with the individual capabilities of student.

Engaging in a physical culture it will be the more effective, than clearer students realize the aims of elective courses on a physical culture and personality value of such employments. In connection with aforesaid, with the purpose of study of opinion of students of technological Institution of higher learning about the visit of elective course of single combats we conducted the questionnaire questioning. The questionnaire worked out by us included 5 questions of open type. In this research 40 students took part from the first for the third course of visitant the elective courses of single combats.

The first task of our research was a study of opinion of students in relation to the visit of this course. Analysis of answers for a question "Why did you choose an elective course on single combats?" testifies that most students consider engaging in single combats healthy and body (78 on the second place is foot-pace availability to the gymnasium (22%).

During our research opinion of students was also studied of that, what types of single combats they give preference. Greater part of respondents chose judo and sambo for 9 persons, boxing 8 persons and for 5 polled students chose a kickboxing and karate. At the same time of 4 students chose a self defense (pic 1).



Picture -1

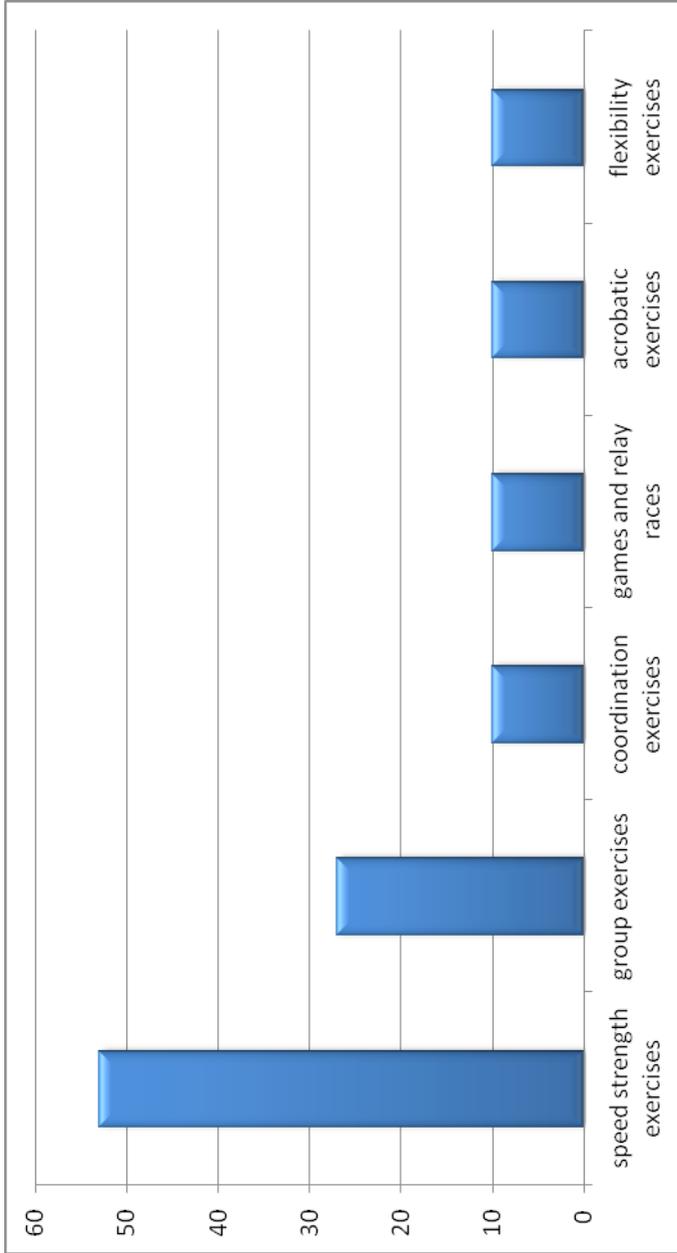
The choice of students is explained by the fact that judo is the most famous and popular type of martial arts in the world, which includes throws and retention. And also judo is based on the principle of unity of mind and body and differs from other martial arts in the lesser use of physical force when performing various technical actions. Sambo, on the other hand, is a martial art resulting from the combination of Japanese judo technique with the technique of nationally distinctive types of wrestling [2,3,4]. The introduction of various forms and means of organizing self-defense courses can bring diversity and emotionality to physical education classes at a university.

A study of respondents' opinions about whether it is enough to study 2 times a week showed that respondents (65%) consider the number of classes insufficient and suggest increasing to 3-4 times a week, 35% of respondents arrange a course 2 times a week.

One aspect of the study was the question of how students evaluate their physical fitness. It turned out that a little more than half of the respondents - 55%, rate their physical fitness as good, 26% of the respondent's rate their physical fitness perfectly, and 19% think that their physical fitness is low.

To the question "Determine the rank of the exercises necessary for martial arts," most students answered that the development of speed-strength abilities is the most important quality for students (53%), in second place are group exercises (performed in pairs or as a team (27%), the third - coordination exercises, flexibility, games and relay races, acrobatic exercises for 10% of the respondents (pic 2).

Thus, based on the above material, it is necessary, first of all, that students can engage in those types of physical exercises that interest them. to supplement the training process with methodological recommendations for the elective martial arts course, in which the program material is saturated with complexes of speed-strength exercises, group exercises (performed in pairs or a team), as well as outdoor games and relay races and new self-defense programs. A necessary condition for the effective implementation of the training process is a smooth and adequate transition from the stage of general physical preparation to the subsequent stages of special physical training and special training.



Picture -2 rank of the exercises necessary for martial arts

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**INNOVATIVE ACTIVITY
AT PRESCHOOL EDUCATIONAL INSTITUTION:
MANAGEMENT AND METHODOLOGICAL ASPECTS**

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At present, an integral component of the activities of a modern preschool educational institution is the introduction of innovations. As an essential element in the development of education, innovations are expressed in the trends of accumulation and implementation of innovations in the educational process, which together leads to qualitative changes in its substantive and technological aspects [2].

The main trends in the development of education in the Republic at the present stage actualize the problem of interaction between teachers and parents, the formation of informed parenting. The efforts of the state and society are aimed at stabilizing the situation, providing social guarantees on the protection of the rights and interests of minors.

The transition of the preschool educational institution to the development mode required updating the existing management system. The management of the innovation process should be carried out systematically and "comprehensively", in the context of the holistic development of the educational institution [4, 136] and include various aspects of activities with teachers, pupils and parents as subjects of the

innovation process. As a result of designing the renewal process in an educational institution, a management system model was developed, on the basis of which an optimal structure for managing innovative activities was created, taking into account a systematic approach and a program-oriented management principle. The most important criterion for the effective management of innovation is a clearly developed innovation strategy. The teaching staff is focused on the continuous development and improvement of the educational process, the functions of participants in innovative activities are distributed taking into account personal, business qualities, professional requests and the needs of teachers.

A system of scientific, methodological, psychological and pedagogical, information support of innovative work, increasing the professional competence of project participants has been developed.

As a result of certain transformations, in order to manage, regulate and coordinate the actions of participants in innovative activities in the preschool educational institution, the following were created: the Coordinating Council, a creative group, at the meetings of which the activity is reflected, the results of monitoring studies, the difficulties and problems that arise, the effectiveness of measures are being developed, recommendations, content of project activities. The implementation of such managerial functions as: planning, organization, stimulation and control, allows to achieve a high level of innovation in an educational institution [3, 150]. The model of this management mechanism functions due to the improvement of the management structure, innovations in working with teaching staff:

- creating a system of continuing education and self-education of teachers;
- development by teachers of individual programs of pedagogical search;
- individualization of forms and methods of methodological work, depending on the level of professional skill of teachers;
- the use of active teaching methods for teachers.

Comprehensive psychological and pedagogical support ensured the phased development of professional competence of teachers. At educational trainings and seminars, the tasks were solved for teachers to master communication methods, develop teamwork skills, develop and develop research competencies, psychological culture, prevent emotional burnout, etc., using active coaching methods, problem situations, brainstorming, problem-oriented tasks.

The innovative pedagogical culture of the project participants was improved in the process of individual planning, participation in the work of the pedagogical council "Innovative activity - the formation of an effective parenthood model", work in the creative group, and pedagogical workshops. One of the factors for improving the quality of the educational process was the work of the ongoing seminar "Partnerships with the family as a factor in the formation of effective parenthood", the variety of forms of work with personnel: workshops, discussions, training in practical skills, solving pedagogical situations, team building, exchange of views, individual and thematic consultations, creative reports.

Monitoring of pedagogical activity allows the head to coordinate and adjust the content of innovative activity, to direct and track the achievements of innovative teachers. Innovative competence is manifested in the creation of methodological products, educational projects, portfolios, the development of multimedia presentations, methodological recommendations, the subjective position of teachers is to increase the level of research culture, generalize advanced pedagogical experience.

The ongoing diagnostic work with pupils to study the formation of the volitional sphere, personal and emotional well-being of children, made it possible to determine the pedagogical and psychological guidelines in the work of all project participants, and contributed to the development of favorable parent-child relations in the degree of formation of subjective-personal factors of conscious and responsible parenthood.

One of the criteria for the effectiveness of the implementation of the innovation process is the organization of meaningful cooperation with parents. The expected results of introducing innovations in working with parents in a preschool institution: increasing the level of pedagogical and legal competence of parents, increasing parental activity, establishing close contact with each family, coordinating the educational impact on the child, generalizing the positive experience of family education. Particular attention is paid to children in socially dangerous situations. The priority area for specialists to work with families in this category is the search for forms and methods of special psychological and pedagogical interaction. Practice has shown pedagogical passivity of parents, incompetence in questions of education and training of children; the presence of well-established attitudes, stereotypes, values, attitudes and behaviors of parents mediated by their own personal experiences. These facts determine the objective need for them to form an informed parenthood mainly "through" the child, enrich their social experience, preserve their biological family, eliminate family troubles and optimize child-parent interaction, create a sustainable motivation to maintain a healthy lifestyle, and develop a psychological culture. In work with parents effective were:

- training programs "We are together";
- the functioning of the parent club "Sails of Hope", focused on parents seeking to improve their pedagogical competence;
- Parent conference "Happy parents - happy children" with the active participation of parents in the discussion and development of decisions regarding their parental position in the educational process;
- joint activities of adults and children, as a partnership form of organization of communication in the process of activity.

Based on certain criteria, the degree of parental involvement in the educational process is revealed. The dynamics of awareness of the parental position is expressed in the growth of the coefficient of activity of parents' participation in the functioning of the educational institution.

In the context of the formation of a modern model of preschool education, as a result of systematic management activities, the cooperation of the participants in the innovation project, a positive image of the institution of preschool education is formed, which is confirmed by examples of demonstration and broadcasting of innovative experience: messages, presentations, open events, exhibitions, publications in the mass media, posting materials on the work of educational institutions on the website of the preschool institution.

Thus, an important component of the implementation of an innovative project in preschool education was the use of effective management mechanisms aimed at the phased development of professional competence of teachers by increasing their motivation for self-development and innovative, creative search [1, 31], the introduction of new approaches to the educational process that provide full development of children in the conditions of partnership interaction of a preschool educational institution and family.

The existing management system in the preschool institution ensured a favorable psychological microclimate in the team, the growth of teachers' creative activity, increased motivation for the successful implementation of the goals and objectives of innovative activity and, in general, improved the quality of the educational process in the educational institution.

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THE ROLE OF MODELING IN THE DEVELOPMENT OF COHERENT SPEECH OF SENIOR PRESCHOOLERS

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Abstract. The article deals with the problem of development of coherent speech of senior preschool children. The author reveals an effective method of working with children – modeling, in which the children's skills of coherent speech are formed, allows them to successfully overcome the shortcomings in its development.

Keywords: The teacher, coherent speech, speech development, modeling, preschool educational organization, methodical reception.

It is well known that the behavior and way of thinking of a significant part of adolescents is characterized as antisocial, not corresponding to the rules and norms, moral principles and values. A statement of this fact determines the search for the causes of asociality, the identification and characterization of the factors that determine the manifestation of a destructive personality development, and then there is a need to develop psychological and pedagogical recommendations to overcome the child's asociality, encouraging him to self-re-education.

The problem of psychological readiness has now become relevant, since in the modern world not only the social space has changed, but the child himself has changed. So D.I. Feldstein writes that these changes in children occur under the pressure of a chaotic stream of information that comes from the media and overlaps the knowledge received from educators. [3, p. 30]

The development of speech is becoming an increasingly urgent problem in our society. The declining level of culture, the widespread dissemination of base literature, poor, illiterate "speaking" from TV screens, aggressive and primitive speech, propagated by television commercials, Western films and cartoons - all this helps to bring a language catastrophe, which is no less dangerous than environmental.

One of the main tasks that preschool educational institutions solve is the development of the speech of preschool children. The problem of the development of speech among preschoolers was reflected in the writings of such famous teachers as E.I. Tikheeva, F.A. Sokhin, G.M. Lyamina, O.S. Ushakova, N.F. Ladygina. The patterns of speech development of preschoolers were studied by A.N. Gvozdev, L.S. Vygotsky, D. B. Elkonin, A.A. Leont'ev et al. The development of coherent speech in preschool children are discussed in detail in the works of MS. Lavrik, T.A. Ladyzhenskaya, F.A. Sokhina, A.M. Borodich, T.B. Filicheva et al.

For the development of coherent speech, a method such as modeling is best suited. Modeling is a technique where the use of circuits is used. A model is a diagram of a phenomenon, reflecting its structural elements and relationships, the most significant aspects and properties of an object. In models of connected speech utterances, this is their structure, content (properties of objects in the description, the relationship of the characters and the development of events in the narrative), means of intertext communication.

However, at present, despite the traditional declaration of the need for the development of coherent speech, in older children of preschool age this problem has not been sufficiently studied in pedagogy.

The approaches to studying the development of coherent speech of a preschooler were influenced by studies carried out under the guidance of F.A. Sokhina and O.S. Ushakova (G.A. Kudrina, L.V. Voroshnina, A.A. Zrozhevskaya, N.G. Smolnikova, E.A. Smirnova, L.G. Shadrina). The focus of these studies is the search for criteria for assessing speech connectivity, and as the main indicator they highlighted the ability to structurally build text and use different ways of connecting between phrases and parts of different types of connected sentences, see the structure of the text, its main compositional parts, their relationship and interdependence. Thus, the preschooler begins to master the text as a specific model [1, p. 74].

But, despite the sufficient degree of knowledge of the problem of developing the ability to tell preschoolers, one of the aspects of this problem that has not been sufficiently developed is the development of the ability to tell preschoolers using modeling.

First of all, this is the problem of using techniques that help the child understand the process of building the text and comprehend the content that is reflected in this text, although this is due to the intellectual and speech development of the preschooler. The most important technique that helps in the development of coherent speech is modeling, but the use of modeling is usually addressed in order to develop the logical thinking of a preschooler, it is used in teaching certain types of stories, and there is no system for working with the ability to tell using modeling [2, p. 65].

Modeling enables preschool children to better navigate the storytelling. It is interesting to use modeling when compiling riddles and poems. In addition to coherent speech, imagination also develops in this case.

An analysis of the psychological and pedagogical literature revealed a contradiction between the features of the speech development of an older preschool child and the theoretical justification for the use of modeling in teaching older preschool children the ability to tell, between the needs of practice in using modeling in the development of coherent speech and the lack of pedagogical technologies oriented to modeling in work on the formation of preschool skills in the field of text.

Thus, modeling is a technique where the use of circuits is used. A model is a diagram of a phenomenon, reflecting its structural elements and relationships, the most significant aspects and properties of an object. In models of connected speech utterances, this is their structure, content (properties of objects in the description, the relationship of the characters and the development of events in the narrative), means of intertext communication. When teaching preschoolers to retell literary works, their attention is specially drawn to the theme (content) of the work, so that they penetrate the moral aspects of the work, they form ethical ideas and moral feelings. And when using methodological techniques for the development of coherent monological speech, they contribute to the formation of moral behavior.

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**ORGANIZATIONAL CULTURE
OF THE UNIVERSITY AND ITS DEVELOPMENT**

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Annotation. The article is devoted to the development of a creative personality at the university through the prism of the organizational culture of the university. The development of students' creative activity will help in further professional activities in the conditions of the modern labor market.

Keywords: creative personality, organizational culture of the university, the development of organizational culture.

Student creativity today is indicative of the successful operation of the higher education institution in the training of specialists. Organizational culture, being a complex of common and shared by all subjects of teaching and educational activity such as values, norms, beliefs, acts as an important integration factor influencing the creative activity of students. The article deals with the problems of development of creativity and the creative activity of students of universities in the light of the development of the organizational culture of the university. By means of students' poll from Tyumen leading universities the main problems in the organizational culture of the university were identified impeding the development of creativity and creative activity of students: the low level of students' awareness of the directions of creative activity in university; mismatch of curricula and extra-curricular activities, aimed at the development of creativity and creative activity, offered by modern universities, needs and demands of students; low motivation of teaching staff for the implementation of innovative methods in the educational process; the absence of clear guidelines from the administration of the educational institution, aimed at the implementation of methods and forms of learning, contributing to the development of crea-

tivity and the creative activity of students; low prestige of scientific research creativity and extracurricular activities programs offered by institutions of higher education ; the practical lack of active methods in students' training; the negative attitude of the administration and faculty to the students participation in creative activities of the university.

The main goal of higher education is the development of creative personality through the development of organizational culture, which affects the creative potential of students, accelerates their social adaptation to the requirements of the modern labor market (Hayrullina N.G., Belonozhko L.V.) [4,399]. The organizational culture of the university contributes to the formation of norms, values of students, formation of moral and psychological climate in the collective, forms customs and traditions of the university, affects the organization of the educational - innovative and educational process of the university and the corporate image of the university. Creative activity of students is an activity aimed at optimal realization of creative potential for the purpose of education and development of socially significant qualities of creative personality. The study of ways of development of creative potential of students became the subject of research carried out at the Tyumen State University, Tyumen Industrial University, Tyumen State Medical University. The aim of the study was to evaluate the creative activities of university students and the impact of the university 's organizational culture. It was necessary to understand the impact of the organizational culture of the university on the development of students. The objectives of the study were:

- a) what is the motivational system of student values;
- b) what is the role of faculty of the university in the development of creative potential of students in the process of study;
- c) what kind of marketing and communication events are held at the university.

Creative activity of students - an activity aimed to optimum realization of creative potential, with the aim of education and development of socially significant qualities of the creative person. The creative potential of the student is the integrative quality of the person, reflecting the best feasibility of creative powers in the process of interaction with the subjects of the organizational activities of the university within the organizational culture of educational institution [2, 3].

It is important to know what is the motivational component aimed at developing the creative potential of student youth. Speaking about the creative activity of students, it is meant primarily to engage in research work. For 12.3% of students the occupation of research work is prestigious, for 17.4% believe that the occupation of research is necessary for their future

career. 28.9% rated science a boring occupation, and 30.6% of students thought it was a waste of time. More optimistic students spoke about participation in various circles, studios, sports sections, studios. 49% of students believe that participation in the listed additional educational activities is an effective way to build a career ladder.

Speaking about the development of creative potential of future specialists, it is important to know how students assess professional and personal qualities of faculty. When asked what qualities the teacher should have, respondents replied as follows (3 items from the proposed ones were suggested):

- 78.2% believe that the teacher should be professional, know his subject well;

- 71.4% of students believe that the teacher should be able to explain the material clearly;

- 62.7% of respondents consider that relations between students and teachers should be democratic.

Next, you can note the following ranking of items:

for 51.2% of students it is important that the teacher is fair;

for 49.8% students, the teacher must have a sense of humor;

for 27.4% students believe that the teacher should be able to organize a creative environment in classes;

for 12.3% of students at the university, believe that the teacher should be demanding.

To the question whether teachers of your university possess these professional and personal qualities, answered as follows: - 18.9% of students believe that teachers of their university are professional, democratic, know how to clearly explain the material, know how to create a creative environment in classes. This category of students believe that these teachers have a sense of humor, they are fair. But 38.3% of respondents believe that only half of teachers of their university have these qualities. And 20.1% - in general believe that teachers do not possess these qualities.

As recent research shows, in the development of the organizational culture of the university, the creation of a favorable image of the university, which is included in the concept of corporate development, is of great importance. We will agree with the opinion that the image forms the opinion and reputation of others about this university [1]. The Tyumen State Medical University uses marketing communication events, such as the festival "Physical Culture and Sports-Second Profession of a Doctor," students and teachers of the university are participants of the fitness Competition of the Ural and Siberia "Time of Science and Fitness."

So, analyzing the studies conducted in Tyumen universities, we can conclude that the relationship between the creative activities of students and the organizational culture of the university is very relevant. One of the important areas of the educational-innovative-educational process is the development of types of research work. Most of the respondents noted that they feel support for their activities from the leadership of the university. This is the merit of the university faculty (57.2% of students believe that creative people work in the university). Thus, the creative activity of students is in close interaction and interaction with the organizational culture of the university.

Among the activities for improving the organizational culture of universities aimed at enhancing students' creativity, are the following:

1) measures to improve the moral and psychological climate among teacher's, and student's groups: team building training, and conflict management; joint (teacher, teachers, teacher-students) outings, hiking, holidays.

2) measures to improve the qualifications of teaching staff:

- conducting courses aimed at the development of knowledge and skills of teachers applying active and problem-oriented teaching methods;
- organization of trainings.

3) measures to implement a unified strategy of the university, to ensure the development of creativity and creative activity of students:

- development of special programs aimed at improving the creative activity of students;
- creation of guidelines addressed to teaching staff, declaring the value of the development strategy of cultivating creativity among students;
- active promotion among both teaching staff and students of the value and prestige of the student's creativity.

For the successful development of the university, it is necessary to improve all types of creative activity of students, especially the research activities of students, as well as the development of the corporate image of the university.

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FORMATION OF FOREIGN LANGUAGE COMMUNICATIVE COMPETENCE AMONG ELEMENTARY SCHOOL STUDENTS IN A NOMADIC SETTING

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Abstract. The article is devoted to the issues of teaching a foreign language in the conditions of nomadism, in particular, the formation of communicative competence in primary school students. For the effective formation of this competency, teachers need to choose the appropriate tools suitable for training in nomadic conditions. Such a tool can be active and interactive learning technologies.

Keywords: active and interactive technologies, communicative competence, nomadic conditions.

In the context of the national language policy, in accordance with the Decree of the Government of the Republic of Sakha (Yakutia) dated September 6, 2002 № 456, a subprogram “Language Education for Schoolchildren in the Republic of Sakha (Yakutia)” was developed, which denotes the development of foreign language education in general educational institutions and proposes a set of additional measures aimed at improving the conditions for teaching foreign languages. The organization of teaching foreign languages in secondary schools is carried out on the basis of the federal state educational standard and sample programs in foreign languages [3]. In modern conditions of teaching foreign languages, there is a need to understand the great importance of enhancing the speech activity of younger students. With the introduction of the Federal State Educational Standard for Primary Education in the “portrait of a gradu-

ate of primary school”, one of the personal characteristics of students are goodwill, the ability to listen and hear, express one’s opinion, substantiate one’s position, that is, communicative competence must be formed [2]. In this regard, the issue of the formation of foreign language communicative competence in primary school students in a nomadic school becomes very relevant.

The practice of teaching foreign languages at school has shown that students often cannot clearly express their thoughts, their speech is not expressive and figurative. Some of them are afraid to enter into a conversation, they cannot correctly ask a question or defend their opinion reasonably. Others - do not know how to listen to the interlocutor.

The need for communication provides high motivation and valuable attitude of younger students to foreign-language communicative activity.

For the success and effectiveness of this activity, it is necessary to select the appropriate means so that foreign-language communicative competence is formed among elementary school students both in the classroom and in extracurricular activities, in particular in the nomadic school. Such a tool can be active and interactive learning technologies.

“Interactive learning - is a learning model in which the teacher and students interact throughout the entire learning process, constantly monitoring the learning activities of students and focused distributed monitoring is implemented” [6]. The definition of interactive learning of E.V. Korotaeva, proposed in the training manual "Educational technology in the cognitive activity of students" is close to the definition of T.G. Trusova,. Such teaching here is understood as “a joint process of cognition, where knowledge is obtained in joint activities through dialogue, the students' logogue between themselves and the teacher” [4]. B.M. Bim-Bad defines interactive learning as “learning based on the student’s interaction with the learning surroundings, the learning environment that serves as an area of learning experience” [1].

In the article “Pedagogical conditions for the organization of interactive learning” A.A. Strunina determines interactive learning as: “learning through reflection of actions in the course of mastering the subject content, methods and strategies of interaction in a communication situation” [5]. V.A. Reshetnikova in her work “Interactive teaching methods in the system of modern secondary vocational education” gives the following definition of interactive learning: “Interactive learning is a special form of organization of the educational process, the essence of which is the joint activity of students in the development of educational material, in the exchange of knowledge, ideas, ways of activity” [7].

In this regard, the goal of our study is the theoretical justification and identification of the effectiveness of active and interactive learning technologies in the formation of foreign language communicative competence in younger students in the classroom in a nomadic school.

The object of research is the process of teaching a foreign language in a nomadic school.

The subject of the study is the formation in younger students of a foreign language communicative competence in a nomadic school through active and interactive technologies.

Scientific works of such domestic and foreign scientists as I.A. Zimnyaya, E.I. Passov, G.V. Rogova, V.V. Safonova, D. Hymes, A. Holliday, A.V. Khutorskoy and others are also devoted to the formation of foreign-language communicative competence.

The practical significance of the study lies in the fact that the complex of Even games developed by us for the formation of foreign language communicative competence in younger students in the classroom in a nomadic school can be used by teachers of foreign both nomadic and general educational schools.

The study was conducted on the basis of MBEE “Sebyan-Kuel NEGMS named after P.A. Lamutsky” Kobiai ulus of the Republic of Sakha (Yakutia). This school is a national Even school. According to the Concept of school language education, the national-regional education system of the Republic of Sakha (Yakutia) is responsible for ensuring the conditions for the self-realization of an individual, regardless of his ethnicity, for organizing a common spiritual space based on mutual respect for the language and culture of different peoples living in the territory Republic of Sakha (Yakutia). The purpose and objectives of linguistic intercultural multilingual education in schools of the Republic of Sakha (Yakutia) are the formation of a linguistic personality and the development of multilingual communicative competence of schoolchildren, necessary for communication in their native, Russian and foreign languages [3]. The study involved students in grades 2-4, a total of 58 students.

To conduct trial training, we developed a complex of Even games, which included the following games:

- games related to production skills and life: deer games, “Deer and the shepherd”, games with running and jumping, running with mavut, tug of a stick;
- playing with a ball made of grass by the children themselves;
- games in the defenders of the region: games with tiyun, archery;
- training games with small items from improvised natural materials (pebbles, ropes, bones, sticks).

The vocabulary of everyday communication was taught on topics such as “Greetings”, “Toys”, “Animals”, “Dishes”, “Colors”, “Counting”, which they subsequently used in their foreign language speech.

According to the results of the final control, students showed results with an increased quality of the level of formation of foreign language communicative competence. The use of active and interactive methods in teaching a foreign language in the conditions of nomadism has the following advantages: enriches the content of the educational process; increases the motivation for learning English from students; provides close collaboration between teacher and students; Helps diversify English lessons provides the feasibility of mastering educational material for students of different levels of training; creates the opportunity to use improvised natural materials as visual supports.

These methods also add an element of novelty to the learning process, especially in the conditions of nomadism, but also contribute to achieving better results with less time and effort. The rational use of these tools makes the process of teaching a foreign language more effective and attractive.

Based on the foregoing, we can conclude that a number of factors influence the effective formation of foreign language communicative competence in elementary schoolchildren in the conditions of nomadism:

- differentiated, activity-oriented and personality-oriented approaches to the formation of foreign language communicative competence, taking into account the individual characteristics of younger students;
- accounting for the psychological and age-related characteristics of primary schoolchildren;
- application of active and interactive teaching methods in foreign language classes.

In conclusion, it should be noted that this study is not complete. It is planned to further develop communicative competencies among students in accordance with increasingly complicated topics, as well as develop guidelines for the formation of foreign language communicative competencies for English teachers working in nomadic schools.

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INTERCULTURAL COMMUNICATION IN THE CONTEXT OF THE DIALOGUE OF WORLD CULTURES

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Abstract. World cultures interact according to the laws intrinsic to them, while remaining relatively independent, diverse. In the process of intercultural communication, all cultures are involved in the global communicative space, the nature and characteristics of communication in which are determined by the means and methods of information transfer, the subjects of communication. Forms of intercultural communication are constantly updated in accordance with sociocultural changes taking place in the world community. Intercultural communication promotes transformations with pragmatic or spiritual value for the further evolution of society.

Keywords: World cultures, intercultural communication methodology, mentality, mastering the values of world culture.

In the XXI century, education and science have become one of the decisive factors of effective international communication. Scientific and technological progress, cultural and professional level of society, active exchange of information, highly qualified specialists, promising scientific technologies and research are the basis of economic success in many countries of the world. Intercultural communication is an intercultural dialogue, in the process of which all cultures are drawn into a global communicative space, in which the nature and characteristics of communication are determined by the means and methods of information transmission, the subjects of communication, its objectives and a number of other reasons.

The desire to understand foreign cultures and the behavior of their representatives, to understand the causes of cultural differences and coincidences exists for as long as there is a cultural and ethnic diversity of mankind. As old as the desire to understand other cultures is the desire not to take into account other cultures or to consider them as unworthy, appreciating the bearers of these cultures as second-class people, considering them barbarians who have neither culture, nor personal qualities, nor any or human dignity.

Intercultural communication as a science originated in the forties of the twentieth century in the United States. Intercultural communication is direct contacts between people and their communities, or indirect forms of communication: language, speech, writing, electronic communication.

American researchers L. Samovar and R. Porter invested in the concept of intercultural communication features of intercultural communication and the problems that arose between representatives of different cultures.

In the book "Language and Culture", E. M. Vereshchagin and V. G. Kostomarov define intercultural communication as "an adequate understanding of two participants in a communicative act belonging to different national cultures".

Expert cultural expert, ethnoconflictologist, Doctor of Cultural Studies A. P. Sadokhin formulates the concept of intercultural communication as "a combination of various forms of relations and communication between individuals and groups belonging to different cultures".

The philosopher, culturologist V. S. Bibler noted that intercultural communication seems to generate "a new universal society of culture, a special sociality, or rather a form of free communication of people in the force field of the dialogue of cultures."

Generalizing, we can formulate the concept of "Intercultural communication" as the exchange of information and cultural values, mutual understanding in the communication of representatives of different cultures; as a form of communication between individuals, groups, States belonging to different cultures, aimed at constructive dialogue, equal interaction, taking into account their identity and originality.

Intercultural communication was initially formed on the basis of the integration of sciences such as anthropology, sociology, psychology, linguistics, folklore, which presuppose the possession of knowledge and practical methods of studying various aspects of human interaction. In the process of joint work of the founders of intercultural communication, the theories and methods of the humanities were mixed, giving intercultural communication an integrative character, which has become and remains basic in it.

In the XIX and XX centuries, the idea of transmitting information and evaluating the effectiveness of the communication process was first addressed by the Russian mathematician and specialist in probability theory A. A. Markov (1856-1922), who paid attention to solving communication problems; American electronic engineer Ralph Hartley (1888-1970), who did a lot for the development of information theory and the founder of cybernetics, American mathematician and philosopher Norbert Wiener (1894-1964).

Intercultural communication today is a completely logical reality, which reflects the needs of modern society, world development. American anthropologist and cross-cultural researcher Edward Hall, together with linguist D.L. Trapper in 1954 released the book "Culture as Communication", which first proposed the term intercultural communication (cross-cultural, interethnic, intercultural interaction), which defined it as an ideal goal that a person should strive to adapt to his surroundings in the best possible and effective way. to the world.

In the process of its life, mankind is constantly forced to turn to either its past or the experience of other cultures; no culture can fully function in isolation from the cultural achievements of other peoples. The objective basis for intercultural communication is the difference between cultures, emerging in the process of formation of each ethnic culture. In any culture, traditions and norms are formed that regulate all areas of human thinking and behavior and affect interpersonal relationships. Education, upbringing, historical memory, traditions, customs and language develop a system of orientations that helps people successfully cope with life's problems. Each person reacts to the outside world in accordance with the peculiarities of their culture, often unconsciously, since cultural norms are part of their personality. Awareness of the peculiarities of their own culture occurs in contact with people who in their behavior are guided by other cultural norms; such interaction causes discomfort or conflict situations.

Ideally, intercultural communication is a process of peaceful coexistence of different cultures, excluding oppression, infringement of dignity, forced assimilation and discrimination. Historically, entire peoples and cultures disappeared from the face of the earth, when stronger ethnic groups subordinated the weak, deprived them of cultural identity. The processes of integration, globalization and expansion of the spheres of intercultural interaction have covered almost all spheres of human activity. Each nation borrows from the world culture that meets its spiritual needs, strengthens the self-assertion of the national culture, emphasizing its individuality and uniqueness.

World cultures interact, influence each other on the basis of intercultural communication according to their intrinsic laws, while remaining relatively independent, diverse, they constantly collide in a single information space. The strengthening of integration leads to the growth of cultural consciousness, connect different in their history, traditions, language, religion, cultural societies, in the communication of representatives of which, there are difficulties due to differences in mentality. Gradually, three methodological approaches to the study of intercultural communication emerged: functional, explanatory and critical. These approaches are based on different ideas about human nature, human behavior, and the nature of human knowledge.

The functional approach developed in the 1980s; it is based on the methods of sociology and psychology. According to this approach, the culture of any people can be described and predicted possible actions in communication and behavior. Comparing the cultural differences of the interacting parties can predict the success or failure of their communication. The result of the functional approach was the theory of communication adaptation, which States that in situations of intercultural communication, people often change their models of communicative behavior, adapting to the models of communication partners. A change in communication style occurs when partners do not see much difference between themselves and the interlocutor. Developing between the interlocutors calm or indifferent relations, facilitate the process of communication, contribute to consensus.

At the end of the twentieth century, an explanatory or interpretive approach developed. The essence of it is that the world around a person is not alien to him, because created by people. Proponents of the explanatory approach consider culture as a human environment created and changed through communication. The explanatory approach makes it possible to understand and describe a person's activities, but it is impossible to predict or influence his behavior. Intercultural communication is based on cultural values and ideas of communicating groups.

The critical approach is focused on the conditions of communication, emerging situations, the environment, etc. Followers of the critical approach are interested in the historical context of communication. Intercultural communication is seen by them as a field of struggle, a place where there is always a dominant force that determines cultural differences and the nature of communication. The critical approach analyzes not the personal intercultural interactions of communicants, but the mass media: TV shows, videos, periodicals, which form the modern culture.

Each culture has its own vision of the world, lifestyle, mentality, and at the same time they are perceived as the only possible and acceptable, which when confronted with another culture, a different worldview leads to severe conflicts, which can be overcome only by comparison, the search for similarities and differences, deep study of cultures. Cultural barriers also arise in the conditions of communication in one language, when there is a misunderstanding between the communicants due to different levels of culture, belonging to different social layers of society. Emerging language barriers are overcome relatively easily, as each language has its own clear rules, grammar, dictionaries and phrasebooks;

foreign accent often amuses than irritates, it does not create psychological stress in communication. Cultural barriers, in comparison with language, are not so obvious, but are perceived very painfully, leading not only to misunderstanding, but also to serious conflicts. Intercultural communication requires the participants of the communicative act to overcome not only language barriers, but also barriers that are non-linguistic in nature, reflecting the ethnic and socio-cultural specificity of perception of the world, national peculiarities of thinking and even used in communication specific gestures.

In the context of the dialogue of cultures, spiritual and moral values occupy one of the leading places in intercultural communication. The difference of cultures is manifested in the established traditions, life views, behavior; it is the ability to understand and accept this difference, preserving ethnic, national and universal values that is important in intercultural communication. Social, political and economic upheavals on a global scale have led to mass migration of peoples, their resettlement, collision, mixing, which inevitably causes a conflict of cultures. The behavior of migrants often irritates the indigenous people of the country, is regarded as an attack on culture, attempts to change the system of values, morality of the host country.

In intercultural communication, there are many problems associated with the difference in expectations and prejudices of its participants belonging to different cultures, aware of the differences in cultures. Intercultural differences can be interpreted as differences between verbal and nonverbal codes in the specific context of external and internal communication, since each participant in cultural contact has its own system of rules. The internal context of communication is knowledge, values, cultural identity and individual characteristics of the individual, the mood with which the communicant enters into communication, the psychological atmosphere of communication. The external context of communication is the time, place, conditions of communication that determine the communicative process. A communicant who is on his territory feels more comfortable, as he freely navigates in the space of his own culture compared to a representative of another culture.

The diversity of cultures in the world persists despite integration and globalization processes, which only strengthen the desire of cultural communities to resist their unifying influence. World experience shows that the most successful strategy for achieving high intercultural communication is to preserve one's own cultural identity while mastering the culture of other peoples.

Development of values of world culture, perception of one culture by representatives of another, development of the person, acquisition of knowledge is carried out by means of reading. "Intelligence is manifested not only in knowledge, but in the ability to understand another. The intellectual, getting to another country, studies its history, art of this country, museums of this country. Instead of the experience of one person, he receives the experience of numerous people who, mainly through books, transmitted their knowledge, their vision of the world"[2, p. 237]. Through reading there is a knowledge of the content of books, assimilation, "grasping" of the author's thoughts through graphic signs. Reading, as a special subsystem of the reproduction of the spiritual communications of society, introduces a person to the past, present, future at the level of knowledge, emotions, sensations. This multidimensional perception determines the influence of the book on the reader, and with it the upbringing of his mind and heart.

Globalization, the media, and the intensive development of the entertainment industry supplanted reading as a prestigious source of socially significant information and as a means of cognition, entertainment, and relaxation. The acuteness of the problem of reducing the loss of interest in reading and its consequences - a decrease in the level of general cultural and professional competence of the population, the inability to understand and accept not only other cultures, but also unfamiliar areas of their own culture, are realized in developed countries and are taking measures to counter these trends. The development of technology, modern vehicles allow you to quickly reach any country, but the lack of knowledge of the culture, customs of the state can negate the attempts of communication. For successful communication at all levels from political to domestic it is necessary to understand the differences between cultures, their manifestations. Intercultural communication is characterized by the fact that when meeting representatives of different cultures, each of them acts in accordance with their cultural norms, while a single culture is not a homogeneous structure. There are group deviations from the generally accepted standards of thinking and behavior in a particular culture, but, varying within acceptable limits, they get along in this culture. The study of other cultures, their characteristics, patterns of their functioning and development enriches a person, transforms his attitude towards the world and other people, and can drastically change his attitude towards life situations. Forms of intercultural communication are constantly updated in accordance with sociocultural changes taking place in the world community, which is associated with the difficulty of understanding the general and special different cultures, languages, and ways of professional communication.

Intercultural communication is focused on improving the social system, aimed at overcoming emerging contradictions, resulting in transformations that have pragmatic or spiritual value for the further evolution of society.

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RUSSIAN FOLK COSTUME ROLE IN THE GENESIS OF CULTURAL FORMS OF THE CENTRAL BLACK SOIL ZONE

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Abstract. In this article the authors explore the features of the folk costume of the Central Black Soil Zone regions. Special attention is paid to the analysis of typical features of the Russian costume. The author believes that regional differences revealed in some elements of the Russian folk costume of the Black Soil Region make it possible to consider it a unique phenomenon of cultural diffusion.

Keywords: Russian folk costume, folk tradition, the Central Black Soil Zone, population heterogeneity, regional differences, cultural diffusion.

Introduction

The Russian folk costume is a unique and inimitable monument of the spiritual and material culture of the peoples of Russia. Genesis peculiarities of the Russian folk costume are directly related to the heterogeneity of the class and ethnic groups inhabiting the territory of Russia. Apart from differences in worldviews and economic structures, they also had different starting points to enter the cultural and creative activity on the making of the folk costume traditions. Such factors as the geographic environment and climate also played a big role in shaping the Russian folk costume traditions. There is no denying that local cul-

tural and historical and social processes also contributed to the formation of special features of the Russian folk costume decor. Thus, local sociocultural communities living in one state but occupying different positions in geographic, climatic, and cultural aspects, were the creators and custodians of the traditions of the national Russian costume as a system integrity.

Material and methods

Research of the Black Soil Region national costume traditions proves the absence of unified fixed templates. The Black Soil Zone population today witnesses a big amount of cultural and everyday life characteristics connected both with the history of the Black Soil Region and local traditions of the territory under study, and with natural and geographical features. These factors had a great influence on the material and spiritual culture of the peoples inhabiting Black Soil Zone regions, including clothing traditions. It is important to note here that the Russian folk costume generally has a unique, unmatched figurative and stylistic character. Not only does it differ from the costumes of other nations, but it also varies from settlement to settlement in the regions. In addition, with all its general integrity and uniformity, the Russian folk costume even within one locality can show significant variations in style and decor. We will show it taking design and decorative-artistic decoration varieties of the Russian national costume of the Black Soil Region as an example.

Theory

The shirts of the folk costume of Tula, Ryazan, and Kaluga provinces consisted of several panels (three or four), with the seams in the front and on the sides [2, p.217]. In those provinces tunic-like shirts with slanting and straight shoulders (*poliks*) were widespread. The upper part of such shirts consisted of three one-piece panels. The central panel, forming a shoulder line, was bent fillingwise, and a cut was made along the fold line for convenience while putting the shirt on over the head. Two more panels joined the sides of the central cloth, functioning like sleeves (straight armscye sleeves). The sleeve design is interesting: triangles were cut from the bottom of sleeve panels, which were then attached to the upper parts of the sleeves, thus expanding the sleeves under the armpit and forming inserts (gussets).

In Kaluga province shirts with straight «*poliks*» were widely used. They were made of four panels (two panels in the front and two in the back), which were assembled around the neck. Sleeves were solid panels, complemented by underarm gores. Often the sleeves were made wide,

gathered at the wrist and hemmed with cuffs. The hem of the shirt was decorated with an original woven pattern, and later on with a full cross or half-cross technique embroidery. In girls' shirts the entire lap was covered with embroidery, while women's shirts had it only in the front, as the back and the sides of the dress were covered with a homespun woolen skirt (*"poneva"*). The bottom part of elderly ladies' shirt was not decorated at all [2, p.218]. But in Ryazan and Tula provinces shirts with slanting *poliks* were widespread. The shirts differed according to the placement of *poliks*: in the older version of the shirt the *polik* was inserted into the cuts of the panel, in the more modern version - between two panels.

In Orel province, the folk costume consisted of a shirt, a homespun woolen skirt (*"poneva"*), an apron, neck ornaments, a belt, shoes and a hat, the latter being unusual and original in shape, color and texture. The headdress in the costume of Orel province was a crimson heavy silk bonnet with a headband decorated with gold threads and pearls. A two-tier fan, made of colored pleated ribbons and held upright on a frame, was placed on top of the bonnet. The frame was a wreath of artificial feathers and flowers. Another fan decorated the rear, placed over its back part, with ribbons fastened on top. The shirt was made of factory cotton and had a turn-down collar. Around the collar there was a one-sided tucking. The unique ornament of the shirt was created by woolen embroidery of green, pale yellow and purple stripes. The shirt had openwork sleeves, decorated with a colored ribbon garland, which was sewn on the hem of the sleeves. Above the garlands of colored ribbons, the sleeves were intercepted by garters, thus creating the effect of lapping over the interception and making the lower decorative part of the sleeve fall like a fan. On the sleeve hem and the seams where the sleeves were attached to the top, as well as along the edge of the collar, a narrow factory lace was sown on. The costume had shoulder pads which were rectangles with rounded corners made up by ribbons. The homespun woolen skirt was buttoned up and had eyelets. The upper section was pleated. The apron was made of purple cashmere, with a wide ornamental bottom part (with galloons, colored ribbons, and a fringe). A purple cashmere belt had colored ornamental ends (ribbons, a fringe, and gold lace). The red color of the belt was accentuated by the dark blue of the skirt *"poneva"* skirt. The good vibes of the costume were created by a colorful combination of large planes of red, a white shirt, a dark blue *"poneva"* and a yellow color. Add a touch of green here and an integral color composition was created [2, S.225]

The costume of Kursk province reveals a merge of the outfit of the most ancient population of the province and Polish-Lithuanian immigrants. Women wore a shirt, a skirt, a “*poneva*”, and an apron. *Sarafans* were made from thin black home-woven wool. The upper part of the *sarafan* was embroidered with woolen colored threads and sparkles, and various colored stripes of satin, brocade, and cashmere decorated both the top and the bottom. Women's shirts often had sleeves longer than the arms with long narrow cuffs at the ends. Sometimes wide sleeve hems were pleated and fastened with cuffs. Shirts were also pleated around the neck. The shirt's décor was a red cross-stitch pattern combined with the white lace overlaying a red calico. Beads were used as hanging decorations [9, p. 369]. The belt was a woolen, woven, striped girde with fringed ends. The headband was made of colored cotton chintz . Shoes were made of leather. The costume was colorful, and the abundance of color and various decorative elements did not break up the image completeness. The unifying beginning was the dark color of the *sarafan*, giving it integrity and graphic expressiveness. On the other hand, the dark background of the *sarafan* highlighted its decor, which was in harmony with the red color of the shirt and headband.

The clothes of Voronezh province residents were made from hemp, woolen and nettle fabrics. Hemp was a widespread crop in the black soil zone of Russia. Hemp oil was eaten and was known long before sunflower oil. In the folk costume, the color of clothes was of great importance, color symbolism expressing people's aesthetic perception. In Voronezh folk costume there were three obligatory colors - white, red and black. Black - the color of the land and peace - was one of the most beloved in Voronezh province. Black was a joyful color of farmers, and black fabrics for making girls' *sarafans* and outerwear, as well as black embroidery on the sleeves testify of traditions going deep into ancient culture. Voronezh historians believe that this is a tribute to the black soil which fed peasants [6].

Results

So, in the Black Soil region, for all its integrity and uniformity, the Russian folk costume shows significant differences in style and decor. If we go on a historical excursion to the settlement of the Black Soil Region, it can be noted that people coming to the Black Soil Zone from different parts of the Russian state brought their unique cultural and everyday traits. Living together, they continuously exchanged elements of their culture, which left a significant impact on the life and culture of the Black Soil Zone population.

Discussion

Research into the history of the Black Soil region shows that representatives of the Abashevskaya ("Indo-European") archaeological culture might, according to V.P. Zagorovsky, have lived on the territory of the Black Soil Region in the Bronze Age [4, p.87]. In the Iron Age, the Black Soil Zone was inhabited by Baltic peoples of the Yukhnovskaya, Bondarikhinskaya and Kolochinskaya cultures. At the turn of our era, such peoples as Sarmatians appeared in the steppes of the Black Soil region, and their descendants were the Alans, who later recognized the authority of the medieval state of Khazars. Subsequently, after the defeat of the Khazars, the Pechenegs settled on the territories of the Black Soil Zone. They were a union of tribes formed as a result of mixing of Samara and Finno-Ugric tribes with nomadic Turks. In 1032 the town of Kursk was founded, and in 1146 that of Elets. Later on, due to the raids of the nomads, the lands decayed and became known as the "northern end of the Wild Field". Permanent local population was practically non-existent, and mostly nomadic Nogais settled there. And in the XV century some of the regions of the Black Soil Zone became part of the Grand Lithuanian Principality Jagoldai. Ya.Ye. Vodarsky writes that as the Muscovite State was getting stronger at the end of the 16th century, the Black Soil Region turned into an area on the southern border of the state, where a system of fortresses was introduced. In 1585 the frontier Voronezh was built, in 1596 - Belgorod, in 1593 - Stariy Oskol , in 1594 - Valuyki. It was from the end of the XVI century that the intensive populating of the Black Soil Region began.

Thus, Black Soil Zone regions are notable for the heterogeneity of the population, which significantly affected the Russian folk costume traditions. The costumes of the Balts and the Pechenegs who were the most ancient population of those provinces, as well as Polish-Lithuanian immigrants' costumes, all merged to give their features to the costumes of Tambov, Belgorod and Kursk provinces. Voronezh region is characterized by a great diversity in traditions of the Russian folk costume due to chaotic populating of the region at the end of the XVI century. Voronezh Region, or the "Wild Field", was populated by offspring of boyar clans, service class people, artillerymen, archers, Circassians (emigrants from the Ukraine), as well as free Cossacks. Starting from the XVIII century, the lands of Voronezh province were bestowed to Russian noblemen, to the boyars and other notable people. Mass immigration of serfs and state peasants started, both as whole villages and separate families from Ryazan, Tambov, Moscow, Orel, Kursk provinces, as well as from the Ukraine [3, p.267].

Conclusions

Thus, there is a connection between the shaping and development of the traditional Russian folk costume of the Black Soil region and the sociocultural characteristics of the region. It reveals itself through interaction of various cultures of peoples who have once inhabited the territory of the Black Earth region. Analysis of specific features of the Black Soil Zone Russian folk costume and the historical and cultural significance of the Russian folk costume traditions allows us to consider it as a unique phenomenon of cultural diffusion. Synthesis of various types of arts and crafts of local groups inhabiting the Black Soil Region allowed its costume to convey regional variations of traditional embroidery, cut and ornament patterns, and the use of jewelry and materials typical of the Black Soil Region traditional dress.

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Illustrations



Pic.1 Traditional female costume worn in the village of Grachevka of Usmansky district of Lipetsk Region (it belonged to a well-to-do peasant Maria Efimovna Kudinova). Consists of: 1. Skirt – poneva decorated with lace. 2 – Jacket with lace on buttons. 3 – Bashlyk (head-dress). Owner: Verzilina S.V., village of Grachevka, Usmansky district.



Pic. 2 Author's doll dressed in the costume of Kolybelskoye village of Lipetsk region (author: Sukhanova V. Ya.)

CHINESE PALACE IN THE CONTEXT OF FRENCH ART

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Abstract. This article discusses the reminiscences of French art, reflected in the architecture of the Chinese Palace and the decor of its interiors. French art, leading the artistic process of that time, became one of the sources of inspiration for the architect of the Chinese Palace, Antonio Rinaldi, and his porphyry customer Catherine II, passionate about the ideas of the Enlightenment. The country palace of the Empress, like the mansions of the Parisian nobility, is full of clarity, harmony of architectural solutions, light bizarre scenery of Rococo and fantasies on the theme of the East. Chinoiserie organically enters the interiors of the palace, in particular, the Bugle - bead room is its magnificent example. It is believed that the Italian artist is the author of the images on bugle - bead panels, but the analysis of iconography allows us to speak of French authorship, which organically complements its French context in the interiors of the Chinese Palace.

Keywords: French art, Chinese palace, Bugle - bead room, Bugle - bead panels, chinoiserie.

The Chinese palace in Oranienbaum (a suburb of St. Petersburg) was conceived by the Grand Duchess Ekaterina Alekseevna. She began to implement plans for the construction of the palace before her accession to the throne, but becoming empress, Catherine II greatly accelerated the process. The palace is actively being built and designed as a representative, parade and ceremonial in the 60s of the XVIII century. Then Russian art almost universally relied on European.

About the Chinese Palace, as a work of European masters, writes A.N. Benoit [1], raising questions of its belonging to a particular school. In the works of the Soviet period written by A.S. Dakhnovich [2], M.G. Voronov [3], V.G. Klementyev [4], the Chinese Palace is regarded as a work of Italian masters: the architect Antonio Rinaldi and the artists who designed his

interiors. Only A.S. Dakhnovich, describing the panel of the Bugles Cabinet, attributes the authorship of motives to them to the French author J.-B. Pilman. So far, none of modern scholars have supported this version (we can only talk about versions, since the authorship document has not yet been found). So S.B. Gorbatenko gives authorship to the Italian artist, although on the question of the architecture of the palace he suggests turning to French prototypes [5].

Indeed, the European art of the New Age grows out of the confrontation of Italian and French. Italy, weakened by the wars for European domination, is losing its former influence on the artistic process. The last serious achievement of Italian art can be considered the appearance of the Baroque style. In France, positive trends in the development of art are growing and by the second half of the XVII century, in the struggle of the two greatest schools, French art won, by the middle of the XVIII century, even more asserting its leadership.

In the representations of the Russian court nobility of that time, French art has an unconditional priority. Good taste and French taste are identical concepts. The Russian Academy of Arts, called the Northern Academy in Europe, was modeled after the French Academy with its lectures, contests, hierarchy of genres, and the possibility of postgraduate education. Founded under the Empress Elizaveta Petrovna, the Academy received a powerful impetus in the formation under Catherine II.

Empress Catherine II, like her predecessors on the Russian throne, is actively involved in the art process as a porphyry customer. Her ideas about beauty are formed primarily through books. The library of the empress, has become one of the most representative collections of her time. At first, the reading of Ekaterina Alekseevna, the Grand Duchess, consisted of publications ordered by her from the catalogs of the Academy of Sciences library. Then she gets acquainted with the works of Montesquieu, D'Alembert, Didro. The moment will come, and Catherine will become the owner of his library. In 1765, the library will be redeemed from its owner, who gave a lot of effort and money to publish the Encyclopedia and was very costly. The purchase was made thanks to Dmitry Alekseevich Golitsyn - a diplomat, scientist and writer. It is impossible to overestimate the importance of the efforts of the Russian envoy to establish cultural ties between Russia and France. Golitsyn is included in the whirlpool of the cultural life of the French capital. Its center was a salon - a special cultural phenomenon, named after the Grand Salon of the Louvre, where art exhibitions have been held since 1737. Later, Didro wrote a series of essays "Salons", which influenced the formation of the aesthetic concept of that time [6].

In Paris, there were several salons where a circle of intellectuals gathered. The most famous salon in Paris, whose fame boomed throughout Europe, was the Marie Theresa Joffren salon, which was also attended by representatives of Russian high society. Among them was Ivan Ivanovich Betskoy. Surely for Betsky, the future president of the Academy of Arts, it was a very valuable experience, he generously shared it with Ekaterina Alekseevna.

Another person close to Catherine had a serious impact on her ideas about the beautiful. We are talking about Stanislaw August Poniatowski, her favorite, a regular visitor to the salon, Madame Joffren.

Arriving in Russia in 1755 in the retinue of the English ambassador Williams, Ponyatovsky very quickly achieved the location of the Grand Duchess. Stanislaw Augustus spreads the spirit of Parisian salons, which Catherine absorbs especially after entering into correspondence with Madame Joffren [7].

Such a circle of correspondents represented by French enlighteners and representatives of the Russian high society has become a breeding ground for the spread of European, in particular, French art ideas in Russian art in general and in the Chinese Palace of Oranienbaum in particular.

These ideas were born first in the area of the contact of two styles - Classicism and Baroque, and then, at the beginning of the XVIII century, Rococo joined them.

Rococo style originated in France, in the mansions of Parisian nobility. The first signs of it appear in the newly remodeled interiors of Versailles, the Palais Royal, and in the interiors of the Bourbon Palace and Hotel Subiz, Rococo is already presented in its mature version. The Princess Salon of the Subiz Hotel (architect Germain Boffrand) is full of Rococo splendor: mirrors, openwork stucco decoration, gilding, a combination of the most delicate shades of white and blue [8].

Boffran's ideas found reflection in Germany. In particular, in the work of architect Francois Cuvillier Elder. Cuvillier, who studied in Paris, instilled the traditions of French Rococo in Germany. An example of German Rococo was the Amalienburg Pavilion in Nymphenburg Park, built by Cuvillier. Amalienburg Mirror Hall is very reminiscent of the Princess Salon at the Subiz Hotel in Paris. And the architectural solutions of the Amalienburg Pavilion in Nymphenburg and the Chinese Palace in Oranienbaum are also very close (Fig. 1).



Fig. 1. Chinese Palace in Oranienbaum

Thus, the ideas of French masters penetrated into Russia, sometimes through the mediation of third countries in this case, Germany.

Architect Antonio Rinaldi, traveling in Europe, visiting Germany, in particular, Bavarian Augsburg, could well have seen Amalienburg.



Fig. 2. Amalienburg Pavilion in Nymphenburg

Inspired by European buildings, Rinaldi reworked this experience, otherwise refracted on Russian soil. One of the differences is the fact that the French country palaces were created by order of the aristocracy. The Chinese palace was built by order of the autocrat of the Russia. If in France the Rococo style was created in contrast to the monarchical ambitions of Louis XIV, then in Russia this style quite naturally existed in the imperial parade and ceremonial palace.

The glass room cabinet is one of the most representative interiors of the Chinese Palace. Like the Chinese Palace as a whole, the Glass Cabinet offers Rinaldi's fantasies on European, including French, art.

In France, in the second half of the 17th century, an orientalizing trend was born in the bowels of the pretentious and pompous Baroque. But in order to realize the poetry and spirituality of the East, a new style had to appear. It is in the bowels of the rococo style - light, playful, designed to indulge the most daring fantasies, where chinoiserie blooms with all the colors of the

East. The glass room cabinet is one of the chinoiserie-style interiors.

Images on Buglar panels embroidered with fleecy silk (chenille) are elegant chinoiserie. They are enclosed in peculiar frames, which is typical for French ornamental engraving of the Rococo era, in particular, for the works of A. Watteau (Fig. 3).



**Fig. 3. The southwestern corner of the Glass Cabinet
(website www.otzyv.ru)**

In his works, Watteau first introduced the world to gallant scenes in their absolute, refined perfection. It was the refinement of this world, sometimes full of oriental exoticism, that was so close to the Parisian bohemia that it did not fail to make it its fetish, and A. Watto's work became one of the sources that nourish Rococo, the style of French salons. One of these salons - the royal office in the castle of La Muette for the Duchess of Berry designed Watteau. And, although this interior has not existed for a long time, it died already in the middle of the XVIII century, but the author's engravings have been preserved. Their decor perfectly combines Chinese and rocaille motifs. The artist was apparently inspired by Chinese art, but his eastern variations are full of French lightness [9].

In the composition of bugle - bead panels, you can also see a harmoni-

ous combination of ornamental frames and chinoiserie motifs.

Watteau uses a peculiar compositional technique in his ornamental works - characters from the comedy del arte, scenes in the Chinese spirit are located on a peculiar island hanging in space. The concept of the island is significant in the work of Watteau. His painting "Departure to the Island Kifera" reflected the departure of an imaginary Eden. Using the motive of the island, Watteau poetizes, spiritualizes ornamentation. Such a compositional technique is also present in the motifs of the panel. Here, the island is a stylized rocaille.

Here, the manner of another French ornamental artist Jean-Baptiste Pilman, can also be traced. He, probably, the only one of Watteau's followers, caught the subtle, spiritualized atmosphere of the eastern variations of his predecessor, and created his amazing world of chinoiserie. Pilman-style chinoiserie was decorated with toile de Jouy (canvas from Jouy), cotton fabrics with a printed pattern of lilac or red [10]. The fascination with oriental exoticism was brilliantly continued in the motives of Sevres porcelain. Iconography of chinoiserie here has developed thanks to all the same engravings by J.-B. Pilman.

Considering the works from the numerous collections of his engravings, one can notice the similarity of their drawing with the images on bugle - bead panels, which are characterized by a calm compositional structure, the poetics of the image. Despite the fact that the authors of the motifs decorating the panels are attributed to the Italian artist Serafino Barozzi, their iconography allows us to doubt it - it still guesses the French trace, reminiscences of the works of A. Watto and J.-B. Pilman. In favor of the authorship of Pilman can be attributed to the fact that he was the first artist of the king of Poland - Stanislav Poniatowski - favorite of Catherine II. Despite the fact that the question of authorship remains open and requires further research, nevertheless, based on iconography, it would be more correct to give preference to the French artist.

Thus, the architecture and interiors of the Chinese Palace, a unique monument of the Enlightenment, reflected artistic trends that, starting in the middle of the 17th century, France began to dictate. Gallomania in Russia, which began in previous reigns, is actively supported by Catherine II. Participating in the construction of the palace as a porphyry customer, she learned from the correspondence with French enlighteners, from the Parisian impressions of representatives of the Russian aristocracy about the latest trends in French art. This impulse was taken by the architect of the palace Antonio Rinaldi. The French spirit, nourishing the empress's ambitions and the architect's inspiration, was reflected in the well-organized space of the palace, its interiors, full of Rococo charm with variations on the theme of Chinese art, in particular chinoiserie decorating bugle - bead panels. Their authorship, apparently, also belongs to the French artist.

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STRUCTURAL ANALYSIS OF CRIMEAN TATAR FOLK INSTRUMENTAL MUSIC

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Abstract. The study of Crimean Tatar musical folklore is one of the urgent scientific tasks of modern musicology, since, despite some existing studies, the musical culture of the Crimean Tatars is still poorly understood.

The purpose of the article – is to identify the belonging of the analyzed work to the maqam genre. In the musical culture of the Crimean Tatars, a structural analysis of the Crimean Tatar folk instrumental music from the collection of F. Aliyev “Anthology of the Crimean folk music” has not yet been made, so the choice of topic is due to the need to fill in a significant gap. This study will provide an idea of the Crimean Tatar folk instrumental music.

Keywords: tact; sentence; fret; melodic line; option; maqam; maqam development principle; structural analysis.

Haytarma (kaytarmalar) is one of the genres of Crimean Tatar folk instrumental music. Among all Crimean Tatar dances, the most popular is the fast, temperamental Kaytarma, which has a size of 7/8 or 7/16. Melodies of the type “Kaitarma” are also found in some other peoples - the Bulgarians, Moldavians, Turks, Romanians, Greeks. However, the Crimean Tatar “Kaitarma” differs from them in a more developed form, a variety of rhythm, and intonational originality. The performance of the Kaitarma melody requires great virtuosity from the musicians and is often associated with almost insurmountable difficulties for musicians of other nationalities due to the specific features of the metro rhythm. Many “Kaytarma” have their own names: “Bagachasaray kaytarmasy” (Bakhchisaray Haytarma), “Eski Kayrym kaytarmasy” (Starokrymsky Haytarma), “Akamesjit kaytarmasy” (Simferopol Haytarma) and others, but some of them have no name.

“Kaitarma” is usually performed by the full ensemble, but occasionally individual instruments do solo [2, p.14].

As an example, consider “Kiev kaytarmasy” from the collection of F. Aliyev “Anthology of Crimean folk music” [2, p.537 - 538].

The image shows a musical score for a piece titled "Kiev kaytarmasy". The score is written in 7/8 time and is marked "Allegro". It consists of six staves of music. The first staff starts with a treble clef and a key signature of one flat (D minor). The music is composed of eighth and quarter notes, with various phrasing and dynamics. The staves are numbered 9, 18, 27, 36, and 43, indicating the start of new sections. The score ends with a double bar line.

“Kiev Kaitarmasy” has a size of 7/8, which is maintained throughout the entire work. This work is a three-part reprise form. Each period consists of two sentences, each of which ends with a duration of a quarter with a period. The work in question is written in the key of D minor (d moll), in the second period there is a deviation to the key in F major (F dur), and then, in the third period, it returns to its previous key.

The range of the melody is undecim: from the first octave to the F-sharp second.

This work is an example of the maqam development principle, in which each subsequent fragment follows from the previous one [3, p. 74].

As is known, the word maqam is of Arab origin, which means stop, position, place [1, p.6]. The main dramatic principle of maqam development is the principle of consistent dynamic ascent, “capture” of melodic peaks and registers. This is achieved by the appropriate organization of mode-intonation and motivational development at different register and dynamic levels. So, the melodic complex of each subsequent section is grouped around the main mode center; the foundations of the fret are sung, emphasized until they are functionally established. It is indicative that each sound zone, each subsequent mode center is located above the previous one. Here, sequential climbing, variant conducting of thematism at a new altitude level, its ornamental playing in a higher zone, register roll-call with the received dynamization of melodic links can be used [5, p. 61].

A special role for the entire maqam composition is played by the introduction. In it, as it were, the formation of the main maqam model takes place, the mode of support is “groped”. The main rhythmic and melodic structure, sprouting in the future, is approved [4, p.17].

Consider the structure of this work.

The first and second sentences can be divided into two phrases, each of which consists of 4 measures.

1 sentences



2 sentences



The biggest leap in the first period is the downward fifth. The first period sounds in the harmonic form of a minor. The re-structure period, however, the initial two-stroke exposition of the second phrases form minor changes. Despite the fact that the general outline of the movement remains the same, the altitude level of the second phrase of the second sentence begins a fifth higher. Both in rhythmic and in melodic terms, the melody is very simple. Durations such as eighths, quarters and quarters with a period are used here. There is absolutely no melismatics characteristic of Crimean Tatar folk music.

Consider the principle of maqam development in the first period.

In the first two measures of the first sentence, a quarte move is observed, which can often be found in Crimean Tatar folk music.

1, 2 такт:



The received downward movement with a fifth skeleton in the third measure varies in the fourth, where the same received move is stated in the upward direction.

3, 4 такты:



The fifth measure is a variant of the fourth, but if in the fourth measure the melody ended with a quarter duration with a point and a A sound, then in the fifth measure there are B and C-sharp.

4 ТАКТ:



5 ТАКТ:



The sixth measure is the culmination of the first sentence, where prima tune is sung by upward and downward introductory tones, and then, as if varying the previous intonation, the melody moves downward.

6 ТАКТ:



The seventh measure follows from the previous sixth measure, where the general outline of the first four sounds forms a kind of movement in circulation, and the next downward move is completely duplicated, but by a fifth below.

7 ТАКТ:



The eighth measure is a variant of the downward move from the previous measure.

8 ТАКТ:



As mentioned earlier, the period has a repetitive structure, therefore, we consider fragments that differ from the previous sentence.

So, for example, the thirteenth measure is a variant of the twelfth with a four-sound ascending move

12 ТАКТ:



13 такт:



And the fourteenth measure, slightly transforming, is identical to the thirteenth, but here the melody moves in a downward direction.

13 такт:



14 такт:



The climax in the second sentence sounds a second higher.

The second period sounds in F major, however, fragments of the mixolydian mode are periodically introduced. The period consists of two sentences, each of which is divided into phrases consisting of 4 measures. The period is also of a repetitive structure. Durations are used such as: a quarter with a dot, half and eighths. In the second sentence, the melody is decorated with a short bow. The biggest jump in the second period is the downward fifth.

1 предложение



2 предложение



The second period also begins with an upward quarter jump similar to the first measure of the first period

1 такт:



17-18 такты:



The next nineteenth measure is a variation of the sixth measure

6 ТАКТ:



19 ТАКТ:



The twentieth measure completely duplicates the eighth, but is recorded at a different altitude level - a quarter higher.

8 ТАКТ:



20 ТАКТ:



Twenty-first and twenty-second measures are variants of 17 and 18 measures.

17-18 ТАКТЫ:



21-22 ТАКТЫ:



Twenty-third and twenty-fourth measures are also variants of the nineteenth and twentieth measures with minor changes.

19-20 ТАКТЫ:



23-24 ТАКТЫ:



The twenty-seventh measure differs from the nineteenth only in the introduction of a short grace note.

19 ТАКТ:



27 ТАКТ:



Thirty second measure is a variant of twenty fourth measure

24 ТАКТ:



32 ТАКТ:



The third period is a reprise of the first period.



Thus, as a result of the structural-comparative analysis of the Crimean Tatar folk instrumental music “Kiev kaitarmasy”, it can be assumed that this work is a genre of “maqam”, as the work develops according to the maqam principle, where each subsequent presentation of the musical material follows from the previous one. As is known, maqams (“makyamlar”) is an old genre, the pearls of Crimean Tatar folk music, the performance of which is associated with great difficulties for many performers and requires great talent, skill and experience.

Crimean Tatar folk instrumental music is characterized by freedom and breadth of melodic deployment, the flexibility of rhythm and meter, mode wealth. Along with the natural major and minor in the Crimean Tatar folk instrumental music, there are modes with an increased second. Of the major modes, mixolidian is more often used. It should be noted that the richness of the mode system of Crimean Tatar folk instrumental music has been little studied to date. The metro-rhythmic side of the Crimean Tatar folk works and melodies is diverse and complex. It has such dimensions as: 2/4; 3/4; 5/4; 4/4; 3/2; 7/4; 3/8; 4/8; 5/8.

Often in Crimean Tatar folk instrumental music there are variable sizes. Also, a wide variety of durations, a wide variety of rates, from slow, moderate, to fast and perky, are characteristic.

The musical works of the Crimean Tatars are full of various decorations, short and long grace notes, trills, mordents, melisms, etc.

Crimean Tatar folk instrumental music is very colorful, virtuoso and improvisational. It is very complex, diverse in rhythmic terms, intonationally original. The performance of Crimean Tatar folk instrumental music requires great virtuosity from the musicians and is often associated with almost insurmountable difficulties due to the specific features of the metro rhythm.

As a result of the structural analysis of the Crimean Tatar folk instrumental work "Kiev Kaytarmasy", it turned out that in this work the principle of successive development of intonational-melodic material was maintained, where the mutual ratio of the components is logical meaningful and dramatic.

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**RESEARCH OF INFLUENCE OF TEMPERATURE AND PARTIAL
PRESSURE OF OXYGEN ON THE SOLUBILITY
OF COPPER AND LEAD IN SLAGS**

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Abstract. The article discusses the solubility of copper and lead in slag during mine blast smelting of intermediate products and recycled materials of lead production. The statement regarding the dependence of the solubility of copper and lead in slags from the composition of matte, slag, temperature and oxygen partial pressure is substantiated.

Based on the mathematical processing of industrial and experimental data on the equilibrium of the copper-lead matte-slag-gas phase system, the dependences of the solubility of copper and lead from the composition of the slag, temperature, and P_{O_2} are established. It was found that increase in temperature increases the solubility of copper and lead in slag. The shift of the partial pressure of oxygen towards the reducing atmosphere increases the growth of dissolved losses of lead, and vice versa, reduces the dissolved losses of copper to slag.

Multiple correlation equations are generated that make it possible to predict the solubility of copper and lead in slags depending from the composition of the slag, temperature, and oxygen partial pressure. These equations can be used to control the process of mine contractile smelting of intermediate products and recycled materials of lead production.

Key words: copper, lead, solubility, slag, oxygen partial pressure, temperature, copper-lead matte, gas phase.

Introduction

The observed in practice tendency of the reduction of valuable metals recovery into the final products forced metallurgists to seriously revise approaches to the issue of slag depletion. The loss of metals in rich slags are becoming more noticeable for industrial production, and either sent to recirculation, or to be depleted in special electrically heated sedimentation tanks [1-4]. However, taken measures do not show a positive effect; as a result, the residual content of base metals in dump slag is still relatively high. The slag obtained in the process of current technologies is characterized by a high content of the base metal and contaminants. For example, dump slag from mine contractile smelting with matte product contains, % (wt.): copper – 0.38-0.6; lead – 0.58-1.4; arsenic – 0.12-0.2. Antimony content in the slag varies insignificantly around 0.12 ч 0.14% (wt.). For the industrial plant, from a technological point of view, the reduction of base metals in slags is a priority, while concentration of contaminant substances (Pb, As, Sb) in slags that affect the environment and human activity, is overlooked. The issues of establishing the thermodynamic solubility limit of copper and lead in slag of lead production have high practical importance. The lack of experimental data in the literature related to study of this issue make it more interesting.

The equilibrium of the copper matte - slag - gas phase system has been studied adequately, the dependences of copper in slag from various listed factors have been determined as well: temperature, oxidative potential of the gas phase (P_{O_2}), slag composition, copper activity. Nevertheless, despite the availability of extensive material, even for the solubility of copper in matte, the cause of the discrepancies between the experimental data of various authors remained unclear. Is it the difference in the conditions of the experiments or the errors of the applied methods and experiments?

The purpose of the work is to determine the effect of temperature and oxygen partial pressure on the solubility of copper and lead in slag, under the conditions of mine contractile smelting.

Research methods

The studies were based on processing the results of industrial smelting products - matte and slag compositions [5] and experimental data obtained in [6] under studying the thermodynamic equilibrium of the copper-lead matte – iron-silicate slag – gas phase system by using mathematical statistics methods.

In [6], during experimental studies, the partial pressure of oxygen and the composition of iron-silicate slag were fixed and almost similar to the industrial conditions. To assess the effect of the composition of the slag and the partial pressure of oxygen on the solubility of copper and lead in the slag, data from [2] was used, where the content of calcium oxide, temperature, and the value of the partial pressure of oxygen varied over a wide range.

When calculating the slag composition, in all cases, a system of components containing a non-polyvalent metal cation – SiO_2 , CaO , and FeO_x – was used. All the iron in the slag was converted to 1 mol of iron, which corresponded to the choice of the component in the form of FeO_x . This allowed to calculating the solubility of copper and lead in slag, regardless of the content of Fe^{2+} and Fe^{3+} in the slag. With this choice, the number of moles of the components does not depend on the oxidation state of the slag, since FeO and Fe_2O_3 make the same contribution. In this case, the slag oxidation state was taken into account by introducing P_{O_2} as a number of independent variables.

The evolutionary approximation procedure [7] was used to write the equation describing the dependence of the solubility of copper and lead from the composition of the slag and the value of P_{O_2} , which allows sequentially take into account the influence of various factors. The following parameters were chosen as independent variables: slag components – FeO , CaO , and SiO_2 , temperature – T K, and oxygen equilibrium pressure – $\log P_{\text{O}_2}$ (P_{O_2} , atm.).

The dependence of the solubility of non-ferrous metals from the listed parameters was sought in the form of a linear equation, which allowed to use the method of least squares in the calculations. The calculation by the formula $(\text{MeO}) = \sum a_i x_i$, where x_i - independent variables, gives a better approximation than the approximation of such quantities like $\ln(\text{MeO})$ or $RT \ln(\text{MeO})$ [7]. Mathematical processing of data was carried out according to the specially developed program “linear correlation”, which implements the procedure of stepwise regression analysis.

Results and discussion

In the previous work [8], based on the analysis of the compositions of industrial mattes and slags, the influence of slag components on the solubility of copper and lead in them was analyzed. The obtained results allowed us to establish only partial relations between the content of copper and lead in slag from each individual slag component. However, as it is known, during the mine contractile smelting of intermediate products and recycled materials of lead production, the temperature and the partial pressure of oxygen have a major influence on the distribution of copper and lead between matte and slag. Our accumulated material on the study of the thermodynamics of equilibrium of the copper-lead matte – slag – gas phase system allows conducting comprehensive analysis to study the solubility of copper and lead in slags depending on various parameters: slag composition, temperature, and oxygen partial pressure.

An array of industrial and experimental results, including 55 observations, was subjected to mathematical processing. One of the selected results of the study of the equilibrium of the copper-lead matte - iron-silicate slag - gas phase system is shown in Table 1.

Table 1 – Conditions and results of the study of the equilibrium of the copper-lead matte - iron-silicate slag - gas phase system

#	Chemical composition of slag, wt. %								
	Cu	Pb	ZnO	FeO	SiO ₂	CaO	Al ₂ O ₃	lgP _{O₂}	T
1	0,23	0,33	18	23,2	26,4	19,2	11,2	-11,76	1473
2	0,35	0,41	15	28,2	26,4	14,2	11,2	-11,76	1523
3	0,41	0,59	13	33,2	26,4	9,2	11,2	-11,76	1573
4	0,16	0,12		59,23	27,84			-9,56	1523
5	0,28	0,56		60,73	29,54			-9,56	1523
6	0,32	0,52		65,73	27,13			-9,56	1523
7	0,45	0,84		34,89	26,74	19,92		-7,12	1523
8	0,35	1,3		34,44	26,19	19,17		-7,11	1563
9	0,52	1,67		36,98	25,6	16,61		-7,01	1593

At the first stage, the influence of the partial pressure of oxygen P_{O₂} on the solubility of copper and lead in the slag was determined. The values of the partial pressure of oxygen were calculated according to the data of [6], based on the ratio of CO₂-CO in the gas mixture:

$$\lg P_{O_2} = \lg K + 2 \lg (P_{CO_2}/P_{CO}), \quad (1)$$

where: $\lg K = -29366 T + 8,961$.

For writing the equation of pair correlation of the copper content in the slag from the partial oxygen pressure, the influence of the values of log P_{O₂} and (log P_{O₂})¹ was taken into account. Calculations showed a weak effect of (log P_{O₂})¹ on the solubility of copper in slag. The equation describing the dependence of the solubility of copper from the value of the partial pressure of oxygen has the form:

$$(Cu) = 0,323 + 8,96 \cdot 10^{-3} \lg P_{O_2}, \quad r = 0,652; w = 10 \% , \quad (2)$$

where r – correlation coefficient;

w – variation coefficient;

P_{O₂} – partial pressure of oxygen, atm.

The effect of the content of FeO and SiO₂ in the slag on the solubility of copper in it was sought in the form of the dependence of the value of [(Cu) - lg P_{O₂}] from the ratio FeO/SiO₂. The desired dependence was small (r = 0.18) and discarded by the F-criterion. The effect of the content of zinc oxide in the slag was also statistically insignificant.

The effect of CaO content on the solubility of copper in the slag is taken into consideration by the equation:

$$(Cu) = -1,169 + 0,017 (FeO) + 0,013 (SiO_2) + 0,01 (CaO), \quad (3)$$

$$r = 0,63.$$

The final multiple correlation equation, which determines the copper content in the slag depending on the considered independent parameters, has the form:

$$(Cu) = -1,289 + 0,016 (FeO) + 0,013 (SiO_2) +$$

$$+ 0,01 (CaO) - 7,0 \cdot 10^{-3} \lg P_{O_2} + 4,52 \cdot 10^{-3} (T/100), \quad (4)$$

$$r = 0,634.$$

Similar calculations were carried out to determine the solubility of lead in slag. The effect of P_{O₂} on the lead content in the slag is described by the equation:

$$(Pb) = 1,18 + 0,043 \lg P_{O_2}, \quad r = 0,61, \quad (5)$$

where P_{O₂} – partial pressure of oxygen, atm.

The values of the FeO/SiO₂ ratio and the ZnO content in the slag showed a weak relation (r = 0.22) with the solubility of lead in the slag and as in the case of copper solubility, were discarded according to the F-criterion. The established position is also supported by conclusions of [9]: the content of zinc oxide in slags has minor effect on the oxide solubility of lead, and is subordinate in comparison to other modifying cations (Ca⁺ and others).

The effect of the CaO content in the slag on the solubility of lead in it is described by the dependence:

$$(Pb) = 1,907 - 0,011 (FeO) - 0,016 (SiO_2) - 0,015 (CaO), r = 0,653. \quad (6)$$

The final equation describing the dependence of the solubility of lead in slag from the studied independent parameters is:

$$(Pb) = -0,59 - 0,014 (FeO) - 0,016 (SiO_2) - 0,025 (CaO) -$$

$$- 0,016 \lg P_{O_2} + 0,164 (T/100), \quad (7)$$

$$r = 0,66.$$

The effect of various parameters on the solubility of copper and lead in slag is shown on Figs. 1, 2, and 3.

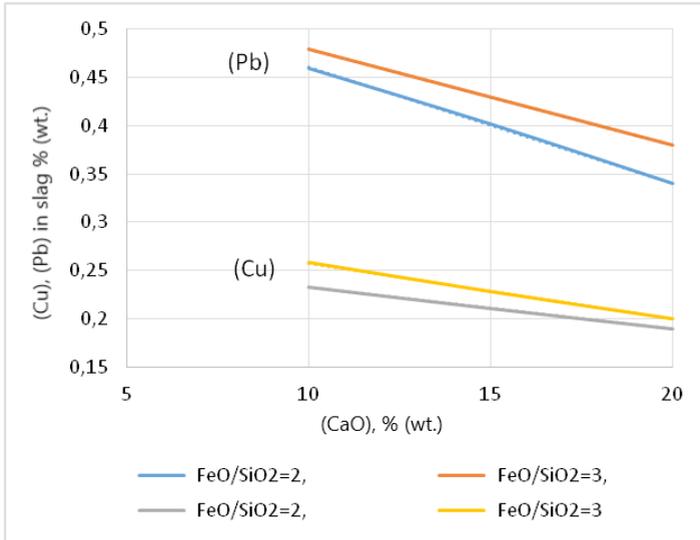


Fig.1. Effect of CaO content on the solubility of lead and copper in slag: $T = 1523 \text{ K}$, $P_{O_2} = 10^{-4} \text{ atm}$

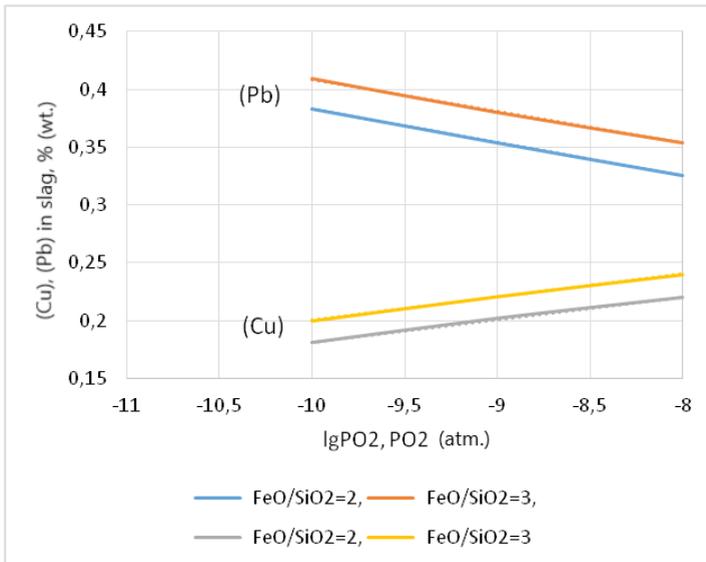


Fig.2. Effect of P_{O_2} on the solubility of lead and copper in slag: $T = 1523 \text{ K}$, $\text{CaO} = 20\% \text{ (wt.)}$

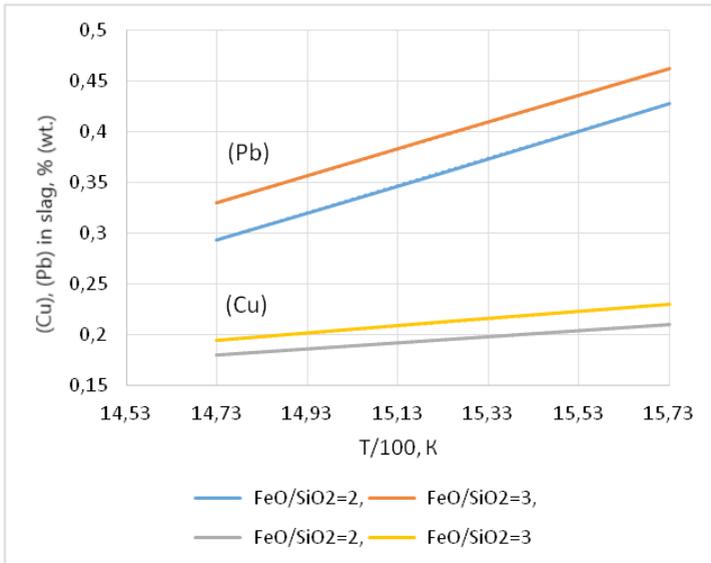


Fig.3. Effect of temperature on the solubility of lead and copper in slag: $P_{O_2} = 10^{-4}$ атм., CaO = 20% (wt.)

Fig.3 is noteworthy, where the dependence of the influence of temperature on the oxide solubility of metals is shown: weak for copper and strong for lead. The established fact for copper does not confirm the position of a significant increase of oxide solubility of copper with temperature increase [6]. It can be assumed that in the case under consideration, the oxide solubility of copper in slags is not effected by temperature, but by the value of the partial pressure of oxygen (P_{O_2}) and insignificant part of the copper intermetallic compounds present in the slag.

For a given content of CO and CO_2 in the gas phase, the partial pressure of oxygen can be determined by the equilibrium of reaction: $2CO_2 = 2CO + O_2$, where the equilibrium constant is: $K = P_{O_2} * (P_{CO} / P_{CO_2})^2$. Then, the partial pressure of oxygen can be represented as:

$$P_{O_2} = K (P_{CO_2} / P_{CO})^2.$$

The equilibrium constant of this reaction can be determined based on equation [10]: $\lg K = -29668/T + 9.062$.

In our case, when $\text{CO}_2/\text{CO} = \text{const}$, the equilibrium constant of the reaction changes with temperature increase, while the oxygen content in the gas phase increases. This leads to an increase in the solubility of copper in the slag. Taking into account the presence of dissolved copper compounds with arsenic and antimony in liquid slags [5], it can be argued that the transition of these compounds from matte to slag will increase with elevation in temperature. This leads to an increase in the total content of oxide solubility of copper in slags; therefore, the data on dissolved copper losses to real slags are somewhat overestimated in comparison with the results of experimental studies.

Decrease in the dissolved losses of copper and lead with an increase in the CaO content in the melt is apparently associated with a restructuring of the structure of silicon-oxygen complexes [11]. When the Ca^{2+} modifier cation is introduced into the melt, "forced" polymerization of silicon-oxygen anions occurs due to the large ionic radius of the Ca^{+} cation, which leads to a decrease in the content of copper and lead in the slag.

Dependencies (2) - (7) make it possible to predict the dissolved losses of copper and lead to real slags depending from the composition of the slag, temperature, and oxygen pressure. The equations adequately describe the oxide losses of copper and lead in complex multicomponent slags, and can be used to generate a general thermodynamic model of the solubility of copper and lead in slags under conditions of mine contractile smelting. As known that the general thermodynamic model for copper, which predict solubility of copper in slags at the equilibrium of the copper matte – slag – gas phase system, has been already applied to various processes [12].

The generating of a similar model that predicts the total solubility of lead in slags under equilibrium conditions of the copper-lead matte-slag-gas phase system is not yet possible, due to the limited data for conducting calculation of complex multicomponent systems. For example, for smelting of copper concentrates to matte, the minimum number of components considered is five (Cu, Fe, S, O, SiO_2), with disregarding such components of the slag as CaO, Al_2O_3 , and by considering the behavior of related elements (Pb, Zn, As, Sb, etc.), the number of components increases to seven or even ten. Nevertheless, regardless of the choice of the model used to calculate the solubility of copper in slag, the condition for maintaining the traditional dependence $(\text{Cu}) = f[\text{Cu}]$ should be satisfied in any type of model when the remaining independent variables are constant. This position is fully confirmed by the results of this study: the indicated dependence is maintained for copper-lead matte [1]. In this regards, the solubility values of copper from copper-lead matte to slag are in good agreement with the data obtained for pure copper matte according to the model [12].

The scientific approaches used in the work to determine the solubility of copper and lead in slag depending on various parameters have exceptional importance from ecological point of view for the technological process. The obtained models can be used not only to optimize the technological parameters of the process, but also for the eco-monitoring of the process. This will allow influencing on the improvement of the quality of the produced slag by creating conditions for minimizing contaminant substances in it. In addition, predicting the solubility of copper and such contaminant and toxic substances as lead in slags will allow more accurately determine the hazard class of the obtained slag and, in the future, provide appropriate environmental safety measures for it.

Conclusions

1. As a result of the study of the equilibrium of the copper-lead matte-slag-gas phase system, a number of missing data in the technical literature on the solubility of copper and lead in complex multicomponent slags of mine contractile smelting were obtained.

2. Quantitative dependences have been generated which allow to determine the oxide solubility of non-ferrous metals in slags depending from the composition of the slag, temperature, and oxygen partial pressure. The obtained equations (2) - (7) adequately describe the industrial experiment and can be used to predict the loss of copper and lead to slags in the conditions of mine contractile smelting.

3. The experimental material and the new obtained data will be used to build a general mathematical model of the solubility of copper and lead in slag depending from the composition of the slag, temperature and oxygen partial pressure.

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RESEARCH OF ECOLOGICAL SITUATION ON WATER OBJECTS OF THE VOLOGDA OBLAST

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Abstract. The influence of anthropogenic factors on water bodies of Vologda Oblast was studied. Indices are calculated and the causes of water pollution are established. The connection of the hydrological regime of rivers with anomalies of weather conditions was investigated, in particular, an unusual natural phenomenon (the river flow back) was confirmed - a short-term reverse flow of the Sukhona River.

Keywords: water pollution index, hydrological regime, water levels, water quality

Studies of the level of surface water pollution in the territory of Vologda Oblast in the basins of the Northern Dvina, Sukhona and Volga rivers were carried out on 25 rivers, Sheksninsky and Rybinsk reservoirs, Kubensky and White Lakes (table 1).

Table 1 - Surface water quality in 2019 by water pollution index

Water body	Site	WPI	Category
1	2	3	4
Kubenskoe lake	Korobovo Village	0,6003	Clean
Sukhona river	Sokol, 1 km above the city	4,6200	Dirty
Sukhona river	Sokol, 2 km below the city of Sokol, within the boundaries of Rabanga village	3,9196	Polluted
Vologda river	Vologda, 1 km above the city	5,4731	Dirty
Vologda river	Vologda, 2 km below the city	6,0785	Very dirty
Lezha river	Zimnyak village	0,5996	Clean
Pelshma river	Sokol city	4,9300	Dirty

Assessment of surface water quality according to the integrated indicator “Water Pollution Index” (hereinafter referred to as the WPI) showed that in the 4th quarter of 2019, the Sukhona River in the city of Sokol is “polluted”. Also, the Sukhona River upstream 1 kilometer of the city of Sokol and the Pelshma River are classified as dirty. Compared with the same period of 2018, the number of water bodies classified as “clean” and “polluted” decreased while they moved to the category of “moderately polluted”.

The cleanest water bodies in Vologda Oblast are the rivers Lezha, Kema, Dvinitsa, Kubenskoye lake.

The Severnaya Dvina River, 2.5 km below the town of Krasavino and the Yagorbu River in the Cherepovets District, should be recognized as moderately polluted. “Severstal” and “Fosagro” enterprises discharge their effluents into the Costa River.

The water bodies experiencing the greatest anthropogenic pressure are the Pelshma River (Sokol), Vologda below Vologda, Koshta (Cherepovets), which is associated with significant volumes of wastewater entering the rivers when compared with their natural flow, as well as insufficient wastewater treatment.

In a sample of water taken in the Pelshma River 7 km east of Sokol in the area of the road bridge, high pollution of lignosulfonates was found, exceeding the maximum permissible concentration of 9.9 mg/dm³. In a sample of water taken in the range 2 kilometers below the city of Vologda, high manganese pollution was found.

An analysis of the dynamics of the number of cases of high (HP) and extremely high pollution (EHP) of water bodies in 2017 showed that their total number decreased by 2.1 times to the level of 2018 and amounted to 27, including HP - 22, EHP - 5 (in 2017, a total of 57 cases were recorded, including HP - 37, EHP - 20).

The reasons for extremely high and high levels of pollution at water bodies are the failure to comply with the standards for permissible discharges of pollutants into water bodies due to the insufficient efficiency of the treatment facilities, the subscribers' non-compliance with the concentrations of pollutants allowed to be discharged into the centralized public sewage system. The pollution in the Krasavino area is explained by the cleaning of the bottom of the Northern Dvina. From Veliky Ustyug to the border with Arkhangelsk Oblast it is necessary to remove 12 alluvial rifts that inhibit the movement of ice. There are no other factors that seriously affect the ecological state of the Northern Dvina in Veliky Ustyug and Krasavino.

The hydrological regime of water bodies on the territory of Vologda Oblast is associated with significant weather anomalies. In the spring of 2019, snowmelt began in the early stages, but in connection with the cold snap, it extended for a long period. In March, the development of spring processes was observed on the rivers in the southwestern regions of the Oblast - a rapid increase in water levels, an increase in gaps, rims caused by warm weather and active snowmelt. In the eastern regions, spring processes on the rivers developed more slowly.

In January - February 2019, a smooth decrease in water level was observed on the Sukhon River. In February, the period of the winter low-water remained, water levels were below the mean annual values.

The maximum levels of the spring flood of 2019 on the Sukhon River did not exceed long-term average values (see Table 2).

Table 2 - Maximum water levels of the Sukhona River and the timing of their onset in the spring of 2019.

Site	The maximum level of spring flood of 2019, mm	Maximum pass date 2019	The maximum level of spring flood of 2018, mm	Long-term characteristics of levels, mm		
				Highest	Average	Lowest
Rabanga	487	10.05	336	804	566	353
Totma	556	04.05	476	812	564	361
Great Ustyug	575	05.05	531	99	625	358

In the upper reaches of the Sukhon River from 04.08.19 to 04.17.19 an unusual natural phenomenon - the reverse flow of the river was observed. In the middle and lower Sukhon and its tributaries, due to the warm rainy weather, an ice drift was observed with congestion stops and at the same time small rivers began to open.

In the second half of May, a steady decline in water levels was observed below the mean annual value.

As of May 26, 2019, there was a steady decline in water levels on the Oblast rivers, and against the background of precipitation, only small fluctuations in water levels were observed.

Summer was characterized by a lower temperature regime in the first half and an increased regime with a precipitation deficit in August - early September. In addition, the summer was unusually rainy.

June in Vologda Oblast was characterized by an abundance of rainfall. Increased water content was observed on the Oblast rivers, water levels were higher than mean annual values. Rainfall in early June led to

a rise in the level of the Sukhona River. The total increase in water levels during the period of rain flood was: on the Sukhon River - 0.35-0.70 m, on the Vologda River - 0.90-2.55 m. On small rivers in the western and central regions, the intensity of the increase in water levels was $-0, 10 - 0.60$ m. Water levels on Lake Kubenskoye were higher than mean annual values.

Rainfall observed on the territory of Vologda Oblast in late June and in the first half of July led to rain floods on the rivers Mologa, Kuben, Malaya Severnaya Dvina, Yug, Sukhona, Vologda and small rivers in the western and central regions of Oblast. In general, in July, water levels on the Oblast rivers exceeded long-term average values.

In October, increased water content remained on the rivers. Water levels were higher than long-term average values on the Vologda, Upper and Middle Sukhon, Mologa, Kuben rivers - 100-160 cm, on the rivers South, Northern Dvina and Lower Sukhona - 50-120 cm.

After October 20, an ice formation process took place on all Oblast rivers, incomplete ice formation with polynyas, and channel blockage were observed in separate sections of rivers in the areas of waterfalls. On the Kubenskoye lake, the process of formation of freeze-up was taking place, the water level was higher than long-term average values.

In early December, on the Sukhona River, below the village of Kalikino, a blockage of ice formed, and an increase in water level began. The total increase in water level amounted to 381 cm. As of December 12, ice block was condensed due to accumulation of sludge, snow, accumulated and intra-water ice from the upper sections of Sukhona. As of December 2019, increased water content remains on the rivers of the Oblast. Water levels were noted above the long-term average values on the rivers Vologda, Sukhon, Mologa, Kuben, where ice formation of various intensities continued. The accumulation of sludge under ice always leads to the formation of ice gaps, above which there is an increase in water levels.

As part of this work, studies were also carried out on Lake Kubenskoye, where during January-March 2019, a winter regime was observed. Water levels were below the annual average values for the corresponding period.

The increase in water levels in the lake began in mid-March. By the end of mid-April, the intensity of the rise in water levels reached 22 cm per day. The maximum water level was observed on May 15 and amounted to 111.45 m BS (Baltic system), which is 19 cm lower than the average over a long-term observation period and 10 cm lower than last year. Since mid-May, the water level in the lake began to decline.

In June, as a result of rainy weather with an abundance of precipitation, the water level on the lake was 0.7-2.0 m higher than the mean annual values; the maximum water level in the summer-autumn period was observed on July 15 and amounted to 111.91 m BS. Since mid-July, there has been a decrease in water levels.

In November, the process of ice formation began on the lake, water levels were above the long-term average values, a slow decline in the level was observed. In December - on the ice-freezing lake, in the middle of the lake there are ravines.

Assessment of water quality in the Vologda Oblast rivers was carried out according to the results of hydrochemical monitoring on the rivers and Lake Kubensky in accordance with RD 52.24.643-2002 "Methodological instructions. Method for a comprehensive assessment of the degree of pollution of surface waters by hydrochemical indicators, using the software package of the specific combinatorial index of water pollution."

Based on the analysis of samples taken in 2019, it can be concluded that the Vologda Oblast surface waters are mainly classified as class 4 (category "dirty") - 57%, class 3 (category "polluted", "very polluted") - 41% of observation points, by grade 5 (category "extremely dirty") - 2% of points. The water quality in Vologda Oblast water bodies is largely due to the natural origin and background nature of the increased content of iron, copper and zinc in surface waters, as well as the COC indicator - chemical oxygen consumption.

Compared to 2018, there was an increase in the number of water bodies classified as quality class 3 ("polluted", "very polluted" categories) with a simultaneous decrease in the number of objects classified in class 4 ("dirty" category).

Improvement of water quality mainly affected rivers, the anthropogenic impact on which is insignificant or absent.

Analysis of hydrochemical data showed that the characteristic pollutants for Vologda Oblast water bodies are easily oxidized and hardly oxidizable organic substances according to BOC - biochemical oxygen consumption, and COC, compounds of iron, copper, zinc, oil products, which was the result of the climatic features of the year: rainy summer of 2019 led to rising water levels due to rain floods. As a result, the contaminants were washed away from the adjacent territories. According to research data, the most polluted Vologda Oblast rivers were identified: Pelshma river of the Sokol city (category 5 "extremely dirty"), Yagorba river (Cherepovets), Vologda river below the second cargo port.

Process Management and Scientific Developments

The main polluting ingredients of the Pelshma River are lignosulfonates (8.6 MPC), BOC (6.8 MPC), COC (5.0 MPC), ammonium nitrogen (1.8 MPC), nitrite nitrogen (1.5 MPC), iron (14.0 MPC), petroleum products (2.6 MPC), sulfates (1.8 MPC). It was found that above the mouth of the Pelshma River, the water quality in the Sukhona River improved with the transition from category 3B “very polluted” (WPI = 3.42) to category 3A “polluted” (WPI = 2.65). Below the mouth of the Pelshma River, the water quality in the Sukhona River also improved with the transition from category 4A “dirty” (WPI = 4.04) to category 3B “very polluted” (WPI = 2.87).

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