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FEATURES AND PRINCIPLES OF THE INNOVATIVE ECONOMY FORMATION IN THE REGION IN THE CONTEXT OF ECONOMIC SANCTIONS

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Abstract. The next world economic crisis of 2014 burdened by the economic sanctions of the USA, EU countries, Australia, and Canada, etc. sharply reduced the rate of economic growth in all subjects of the Russian Federation. One of the priorities changing directions in this situation should be the qualitative development of education, science and innovative technologies. At the same time, it is especially necessary to emphasize not only the purely economic, but also the social significance of the processes concerning formation and development of the innovative economy in depressed regions, because this approach allows not only to steadily ensure professional employment of residents in these territories, and thereby to reduce social tension in the regional labor market, and also to assist the population in employment.

Keywords: economic sanctions, decline in production, national priorities, regional innovation economy, competitive advantages.

1 Introduction

The urgency of the strategic management problems in the creation and development of innovative regional economies in the context of the economic blockade by the group of the most economically developed countries has determined the increased interest in this problem by many Russian and foreign researchers. In recent years, there have been published many works on the basics of managing the development of innovation; on analysis of the main socio-ecological and economic problems of sustainable development of territories in the context of creating an innovative economy; development of science, education, and training of qualified personnel in the field of innovative development of the regional economy, etc (Alekseev S.G. 2009; Granberg A.G. 2012;Preobrazhensky B.G. 2013).

At the same time, analysis of special scientific literature argues that in the context of strategic management concerning the processes of building and developing an innovative economy of the territories, the tasks of analyzing and diagnosing the development degree for the scientific and educational potential of the region are still insufficiently studied. There are also no effective methods for integrated assessment of the effectiveness for the development of the regional innovative economy; it is necessary to significantly refine the methodology of a systematic analysis of the factors for development of the regional innovative economy for depressed territories, etc.

All of the above, of course, actualizes the need to develop conceptually advanced approaches and create modern guidelines for strategic management of the processes of innovative economy building and sustainable development.

This paper is structured in such a way that it allows the most justified and complete follow-up of the research logic; it also allows to feel the relevance of problems concerning strategic management by the processes of building and developing the innovative economy of depressed territories which are under economic sanctions, to reveal the features of the proposed theoretical and methodological provisions from the perspective of the economic development theory and the theory of regional economics.

2 Research Methodology

The theoretical and methodological foundations of the study were scientific papers, research results of Russian and foreign scientists and practitioners in the field of innovative economics, development and recommendations regarding the assessment and forecasting of regional trends in the development of innovative economies being under economic sanctions.

A set of fundamental methods of scientific knowledge was made as the methodological basis of this scientific work: system analysis and synthesis, dialectical unity of qualitative and quantitative assessment, subject-object approach, comparison and generalization.

In substantiating the theoretical principles, conclusions and practical recommendations, various methodological tools and methods were used, including economic and mathematical ones, system and structural analysis, and scenario forecasting.

3 Research Results

In the short term of the socio-economic development of the regions in the Russian Federation, the formation, reproduction and effective use of the resource potential of the regional economic system will mainly depend on the development level of the innovative economy of the territories. This actualizes the need for research from a scientific perspective of the socio-economic possibilities of this potential in the face of increasing competition with simultaneous economic blockade.

The 21st century was marked by the need for a total transition of economically developed countries to a new stage which consists in building an innovative society and shaping a knowledge economy. The vital need for the active use of breakthrough achievements in science and education, increasing competition in the field of innovation, etc. predetermined the significance of reducing the time period of the innovation cycle and thereby caused an increase in the rate of updating innovative products and technologies.

In Western countries, the development of innovation activity is accompanied by a significant increase in the economic impact on all aspects of society and causes serious targeted socio-economic and institutional changes. Under these conditions, innovative technologies and products of innovative activity created through the vigorous mobilization of modern scientific knowledge are the key factors of economic growth; they in fact act as the main sources for the formation of competitive advantages and sustainable development of regional economic systems,.

A feature of the last years of the economic life in Russia was that the regions began to be considered as an object of innovative development. The presence of an innovative economy in a region implies such a state of the regional economic system when a key factor in building up the territory's economy is the possibility of continuous updating and improvement of technological and other processes. In the course of sustainable construction of an innovative economy in the region, the highest efficiency of using the resources of the economy is ensured, the dependence of the regional economy on the economic situation is reduced, and, ultimately, the stability of the socio-ecological and economic development of the region is achieved (Astapenko E.O. 2017;

Repchenko N.A. 2014; Misakov V.S., Khamzatov V.A., Temrokova A.Kh., Misakov A.V., Dikareva I.A. 2018).

In the course of our study, we came to the conclusion that most of the provisions of the "Concept for the Long-Term Socio-Economic Development of the Russian Federation for the Period Until 2020" will remain unfulfilled. This, in particular, concerns the need to ensure the competitive capabilities of Russia; the formation of a competitive economy and innovative technologies; creating an innovative base for socio-economic development of the country; structural diversification of traditional sectors of the national economy; ensuring balanced spatial development of the constituent entities of the Russian Federation.

We must also admit that in today's realities it is impossible to talk about equalizing the level of innovative development of the regions, moreover, the solution of this problem in the depressed republics of the North Caucasus is in contradiction with the federal innovation policy, according to which the preference for financing is given to the developed (in innovative technological aspect) regions.

It is also not a secret that the economic crisis and the economic blockade froze the implementation of the strategic plan measures to mobilize private investment in innovative processes, collapsed the financial flow of the private sector of the Russian economy for the development of innovative technologies, and thereby exposed the structural gaps of the Russian innovation system. (Usacheva I.V. 2011; Dzobelova, V.B., Olisaeva, A.V. 2019; Sikimik U., Chisa V. 2016).

Experts note the unacceptably low level of investment in innovation as the main reason for the slowdown in innovation transformation in the Russian economy. This situation prevents the continuous updating of the technological base of production, cost reduction, etc.

Under the conditions of anti-Russian economic sanctions, our country should create a mobile export strategy aimed, among other things, at the diversification of national exports. Such an approach will allow not only changing the international specialization of foreign trade, but also neutralizing the sanctions impact, as well as reducing the risks associated with the increasing uncertainty of the market situation in the world economy.

Stability, sustainable social and economic development of the region is the foundation for ensuring the national security of the country.

In accordance with the National Security Strategy of the Russian Federation, the main strategic national priorities are increasing the competitiveness of the regional economy, ensuring sustainable economic growth, and improving the quality of life of the population. There is no doubt that the implementation of the provisions outlined in the National Security Strategy should take place in the regions through the formation of a regional investment system. This requires a departure from focusing on the raw export material model of development of the Russian economy (Kovalchuk Yu.A. 20113; Dzobelova, V.B. 2019; Ugurchiev O.B., Dovtaev S.A.Sh., Misakov V.S., Misakov A.V., Temmoeva Z.I., Gyatov A.V. 2018).

Another problem is the absence of any competition in the regions in the field of science and education, which also does not contribute to the formation and development of a regional innovation economy. The consequence of this situation is that, for example, in the North Caucasian regions there are practically no results in the development of breakthrough innovative technologies.

In the recreation-oriented republics of the North Caucasus, the problems of rational environmental management as a possible significant factor for ensuring economic growth remain particularly relevant. There are practically no ecologically effective modern technologies in the region, which does not help to reduce the negative impact of people on the environment and does not ensure the ecological safety of recreational areas.

To assess the existence of prerequisites and conditions for the formation of a regional innovation economy, it is necessary, first of all, to assess the state of the socio-economic situation in the region. To do this, there is a set of estimated indicators: unemployment rate, decile coefficients (income ratio of 10% of the most and 10% of the least well-off population), the level of provision of social infrastructure, etc.).

The geopolitical situation in a number of depressed republics of southern Russia clearly shows that the presence of regional imbalances in the standard of population living in individual regions can be a serious threat to national security. It is worth noting that the Russian National Security Strategy itself (paragraph 55) explicitly states that the uneven development of regions is the main strategic risk and threat to the country's national security in the socio-economic sphere for the long term. All this requires the immediate development and implementation of a constructive state regional socio-economic policy, with emphasis on the development of regional investment and other financial institutions, which should allow ending the regional imbalance in the level of development of the innovative economy in the constituent entities of the Russian Federation. (Melnik L.G. 2009;Misakov V.S., Tsurova L.A., Yandarbieva L.A., Thamadokova I.Kh., Goigova M.G. 2019;Ozerova M.G., Sharopatova A.V., Olentsova J.A. 2019).

It is noteworthy that, despite the rather high level of development of scientific and educational potential in the republics of the North Caucasus, nevertheless, there is the highest unemployment rate in the country, especially in the mountainous regions of the region.

Experts note that an excess of the decile coefficient over 10 indicates an extremely strong social stratification of society and, as a rule, this situation leads to social unrest (Sitnikova E.V. 2013;Dzobelova, V.B., Berkaeva, A.K., Olisaeva, A.V. 2018;Misakov V.S., Misakov A.V., Tsurova L.A., Adzhieva A.Yu., Eskiev M.A. 2017).

The effective use of the organizational and economic mechanism for managing the processes of building and developing a regional innovation economy requires the integrated implementation of such functions as the formation of an information base about management objects, planning, budget financing, monitoring and controlling the management objects.

Directly, the very potential of innovative development of the regional socio-economic system (in a generalized form) can be considered as a set of various organizations involved in innovative scientific and educational activities. In modern realities in the medium term, one can hardly even expect a relaxation of economic sanctions. This means that it is impossible to count on foreign investment from Western countries, the United States, Canada, etc. The solution is different: it is necessary to actively develop economic and scientific ties with the BRICS countries, the CIS, and East Asian communities. It seems to us that all this will help to reduce the stagflation period of the Russian economy.

Since 2015, over 20 comprehensive import substitution plans have been implemented in the regions of the Russian Federation, containing more than 2.5 thousand positions in various technological areas in such sectors as engineering, electrical equipment, biotechnology, pharmaceuticals, etc., which should ensure the replacement of a number of foreign analogues in the Russian market. The implementation of these state plans has already allowed the regions to increase their tax base up to 30 billion rubles. In particular, it should be noted that the modernization of the domestic economy regarding import substitution is considered as one of the subsystems for modernization of the Russian economy.

By engaging effective social and economic anti-crisis measures in the regions, the Government of the Russian Federation intends

to carry out structural economic reforms in order to diversify the Russian economy. It is planned that in the medium term it will be possible to create the necessary conditions for ensuring sustainable economic growth.

It seems to us that it is advisable to begin the national economy development in the Russian Federation with a rational distribution of the priority directions of the balanced economy development in the regions of the country. With the goal of highly efficient development of the constituent entities of the Russian Federation, it is necessary to determine the qualitative and quantitative parameters of the regional economy, breaking which limits can create a threat to the country's economic security. Among these parameters, one can note the dynamics and structure of the gross real product, labor productivity, unemployment, volumes and rates of industrial production, innovative activity, etc. Moreover, it is very important that these parameters should be set personally for each region taking into account its economic potential and other special components. Moreover, the priority areas for the development of a separate region should be such not only for the region in question, but also for the state. The direction priority should be justified by the competitive advantages of the region, namely, by the fact that it will enable to use as many enterprises of the territory as possible.

Another feature of depressed territories is the low involvement of innovative technologies that contain the results of intellectual property and are the basis for the modernization of the domestic economy. At best, imported innovative technologies, machinery and equipment should be introduced in the regions. But imported innovative technologies are not able to contribute to a significant increase in the level of competitiveness of products manufactured by the Russian industry due to the presence of a number of restrictions on their technological level, laid down directly by the exporter. This once again speaks of the relevance of building up the innovative activity of Russian developers of innovative technological equipment.

4 Conclusions and Proposals

- Ensuring the innovative development of the economy in the Russian Federation in accordance with the challenges of our time, which, in addition to the above, include globalization processes and long-term economic sanctions, as well as the need to confront all kinds of risks. This requires updating the material and technical base, introducing innovative technologies, developing infrastructure, balanced development of both individual regions and the national economy as a whole.
- This situation implies the use of a new paradigm strategically aimed at progressive changes that involve investment activity in a constructive connection and interdependence with investment activity. This, along with the growth of labor productivity, will also solve the problems of limited capital and labor amount in production, and thereby ensure sustainable development based on innovation.
- The analysis of the features and principles of the formation of the innovative economy in the regions in the conditions of the economic blockade made it possible to develop methodological recommendations for enhancing innovative and investment activities in depressed territories. These recommendations are distinguished by strategic management of innovative development in the conditions of creating innovative infrastructure, the establishment of technology transfer centers, which implies, first of all, the interaction between regions in the implementation of strategic tasks, taking into account the territorial characteristics of management.
- The approaches proposed by the authors to the formation of an innovative investment regional economy are distinguished by the innovative orientation of investment and economic mechanisms, a clear focus on the implementation of priority areas of territorial development.

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FEATURES OF THE USE OF MANAGEMENT ACCOUNTING BY SEGMENTS OF AGRICULTURAL ENTERPRISES

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Abstract. A distinctive feature of the modern organizational system for managing agricultural enterprises is itsmeaningful effectto the growth of agricultural production efficiency. External financial accounting and internal management accounting at agricultural enterprises require continuous improvement of various functions of accounting, audit, and analysis. This situation makes it possible to generate and use reliable and timely accounting and analytical information. All this requires a comprehensive study of the theoretical and methodological provisions development for the organization of management accounting and its adaptation to international agricultural management standards, which formed the basis of our study.

Key words: socio-economic development, agriculture, business entities, management accounting, financial accounting, information base, analysis and diagnostics.

1 Introduction

The development of agricultural production in the Russian Federation, the increasing of its effectiveness is associated with the creation of the necessary prerequisites for this, and also with the improvement of management accounting, since it is economic relations (through management accounting) that form the basis for the effective increase in agricultural production, while ensuring its safety, timely implementation and efficient use.

The formation of market relations has also necessitated fundamental changes in the system of accounting and agricultural production management. Undoubtedly, the success of agricultural development, the restructuring of the entire system of socio-economic life required a deep restructuring of the organization and methods of conducting financial and management accounting, and the improvement of the theory and methodology of management accounting based on the functional stages of the circulation of economic assets. At the same time, the dialectically interconnected construction of the components of the production and financial activities of agricultural enterprises should be the basis for improving the theory and methodology of management accounting organization (Neuman A. 2019; Petrakova N.I. 2008; Misakov V.S., Misakov A.V., Tsurova L.A., AdzhievaA.Yu., Eskiev M.A. 2017).

It should be noted that the orientation of management accounting to analysis of situations, making consumer decisions, using modern technologies, studying consumer demands, diagnosing deviations from cost standards, etc. allowed it to become an active and effective tool for optimizing the production process. Moreover, management accounting, unlike ordinary accounting, which was purely registration in nature, has turned into a mobile toolbox for optimizing production aimed at maximizing profit.

Effective organization of management accounting involves the use of scientifically grounded cost classification, which, in turn, serves as the basis for the proper organization of management accounting. Its use allows us to more deeply explore the composition and features of cost accounting, increase control in the production processes for their formation, and use a variety of different techniques and methods in management accounting and management decisions.

2 Research Methodology

The theoretical and methodological basis of the study was composed of the most important laws of dialectics, the main provisions and categories of economic science, the works of leading foreign and domestic scientists in the field of management accounting in the agricultural sector.

In the course of our study, general scientific methods and methods were used, such as abstract-logical, analytical, statistical, and also modeling, comparison, grouping, and generalization.

3 Research Results

In modern conditions, solving urgent problems of improving and development of the theory and methodology of management accounting requires the active use of computer technology, which operates with a large array of interrelated variables that characterize different aspects of the production process. The use of computer technology in the modeling of management accounting allows us to very quickly set quantitative and logical relationships and logical relationships of various elements of the production process for the strategic management system.

Management accounting through the use of computer technology receives a new dialectic form of its existence and development.

At the same time, many accounting models are practically incapable of reflecting the essence and specificity of production relations in which they are implemented. It seems to us that this necessitates the development of mathematical analogues for the entire system of categories and concepts of socio-economic phenomena (Vakhrusheva O. B. 2019; Anthony R., Rees J. 1996; Misakov V.S., Tsurova L.A., Yandarbieva L.A., ThamadokovaI.Kh., Goigova M.G. 2019).

Accounting information about production costs, as well as the presence of complex and numerous reporting and analytical indicatorsare always distinguished by their massiveness and great variety. All this can no longer be processed without computer technology, which has a special speed and high memory capacity, and, moreover, is capable of performing logical operations.

When using the model for constructing management accounting, modern computer technologies allow us to effectively systemize and organize arrays of accounting information, to increase significantly the level of their accuracy, completeness, reliability and timeliness; to improve operational processing of accounting data and reporting preparation, to mobilize the control and analytical functions of accounting information, etc. As can be seen from the foregoing, computer technologies in management accounting not only form new information productivity, but also change its content. And this is natural, because the modeling of accounting information about production costs a priori changes the idea of conducting analytical accounting, especially regarding accounts for management accounting.

In our opinion, the purpose of management accounting in these conditions is the timely satisfaction of requests from interested parties in order to fulfill their functional responsibilities regarding the development and adoption of effective management decisions.

When designing management accounting at an enterprise, it is necessary, first of all, to investigate the composition of information, the nature of information flows and relationships, their compliance with optimality criteria; the structure of the current and planned management accounting system and the prospects for its improvement in the production process (Blake D., Amat O. 2018; Shim Jay K., Siegel Joel G. 1996; MisakovV.S., Khamzatov V.A., Temrokova A.Kh., Misakov A.V., Dikareva I.A. 2018). As a rule, the used system of accounting information on production costs in today's realities is still distinguished by the redundancy of primary documents with a simultaneous lack of information necessary for production management; difficulties in the search and a small degree of application of the initial indicators can also be noted.

The priority area of management accounting is the segmentation of the activity of a business entity. Worldwide, segments are seen as critical business elements and ways to build a firm's competitive advantage.

An analysis of the specialized literature allows us to conclude that researchers are actively considering various aspects of the segment regarding the market and business, using the principles of geographical and industry orientation (Kotler F. 1993; Shim Jay K., Siegel Joel G. 1996; Ugurchiev O.B., Dovtaev S.A.Sh., Misakov V.S., Misakov A.V., Temmoeva Z.I., Gyatov A.V. 2018). But they all agree with the provision that business segments are the processes of accounting for the functions of all kinds of enterprise segments in the form of structural units, manufactured products, and sales territories.

It is appropriate to cite the statement of F.B. Ripol-Zaragozi "A company within the selected segment either tries to achieve advantages in reducing costs, or enhances product differentiation, trying to stand out among other companies operating in the industry.

In this way, it can achieve competitive advantages by focusing on individual market segments." (Ripol-Zaragozi F.V. 199).

We can cite more than a dozen statements by various authors, but all of them are united by the fact that they consider business segments in the form of enterprise units, manufactured products and retail outlets on the market.

Today, the cases are not uncommon when certain large banking structures seek to absorb profitable enterprises and control their activities. This situation requires careful consideration and the correct determination of business segments from production and commercial positions. Note that, in general, business segments act as centers of responsibility associated with the production of a particular product and its marketing. At the same time, they can be differentiated with respect to geographical location and sectoral nature.

In the first case, we are talking about areas of sales of industrial products, and in the second, we are talking about specific types of products.

The totality of all segments can be reduced to the following hierarchical system consisting of a logical chain: production - products - sale, since each segment is an integral part of a particular activity sphere of a company and its main link. At the same time, any segment can consist of either one or several parts of an enterprise.

Regarding the segmentation of agricultural enterprises, here, any segment is directly related to the production of agricultural products or servicing business entities. The need to reduce their scale is the level of purpose and completeness of the production and organizational processes of agricultural enterprises. (Volkova O.I. 2006;Sergeeva I.A. 2019; Misakov V.S., Tsurova L.A., Yandarbieva L.A., Thamadokova I.Kh., Goigova M.G. 2019).

The process of segmenting the activities of agricultural enterprises in production and marketing of products is divided into spheres in accordance with the phases of the circulation of economic assets and coordination of various aspects of activities and management. Such isolation of segments occurs due to their different economic content and importance in creating a product of new value, their belonging to various fields of activity of agricultural enterprises. It is at this phase that the processes of the formation of segmentation in management accounting take place, where the production unit in the form of a separate responsibility center acts as the main link in segmentation.

Note that in the USA, production infrastructure itself is equated with a responsibility center, because it already unites several cost centers (Chumachenko N.G. 1971). Indeed, it seems to us that any production unit should be considered as a separate center of responsibility of the appropriate level.

It is noteworthy that in Western countries the production unit very often is combined with a center of responsibility, taking into account their intended purpose.

In Russian practice, structural units of an enterprise are considered as production units. This is based on the principles of homogeneity and their comparability on specific grounds intended for solving a number of problems, including ensuring control over the performance of the separate divisions of an enterprise, to compare the final results for each of them; improving the accuracy and objectivity of detailing their costs, etc.

It is necessary to consider territorial isolation and production isolation, the possibility of determining personal responsibility for individual segments of activity, and the possibility of differentiating costs in the established manner as the main conditions for the formation of segments of activity in an agricultural enterprise in management accounting (Ivashkevich O.V.2017; Sergeeva I.A. 2019).

Taking into account the peculiarities of agricultural production, its technological cycles, the initial, intermediate and final stages of segmenting the production, financial and marketing activities of agricultural enterprises are involved.

In accordance with the intended purpose, segments of the production sector of agricultural enterprises are grouped into main, auxiliary and related ones.

In the conditions of everyday realities, which are characterized by extreme complexity of the socio-economic situation in the rural territories, a drop in labor productivity, etc., the introduction of management accounting and segmentation of agricultural enterprises into production is very important; this will make it possible to organize proper control over the economic aspects of production, including calculation of the cost of agricultural products manufactured in divisions of an agricultural enterprise.

Differentiation of product segments is associated with the need to distribute their costs to compensate for the cost of fixed assets, depreciation of tangible assets, depreciation of the low-value and short-living items, reserve write-offs and accruals.

An exceptional feature of agricultural production (in contrast, for example, to industry) is that in a single production process, most types of crops and animals simultaneously create basic products with different composition and consumer value and other products for their intended purpose (the so-called by-products).

The availability of a wide variety of methods for forming segments of agricultural enterprises' activity necessitates their systematization and consistency with the functions of management accounting, taking into account the functional

belonging of costs to a particular stage of segmentation of the business entity. However, at the same time, we must remember that each of them has its own, separate object and its own conditions for the formation of costs. For example, in production units, the writing-off objects for the corresponding expenses are the number of seeds and planting materials, mineral fertilizers, plant and animal protection products, fuel and lubricants, low-value and short-living items, labor remuneration, work in progress, etc.

The effectiveness of using management accounting by responsibility centers as segments of accounting units depends on the strength of the impact of many multidirectional factors, including on the production structure of agricultural enterprises, the features of technological processes, the level of technical equipment and organization of labor. Under these conditions, the most preferable for engaging management accounting by segments are departments (agro-economic divisions), and then, in turn, agricultural enterprises consisting of several production units. At the same time, it is desirable to group them according to the homogeneity of the technological process (especially where manual labor prevails), and it is advisable to take into account costs when performing mechanized work (Ivashkevich O.V.2017; Vakhrusheva O. B. 2019; Sergeeva I.A. 2019).

There is no doubt that the level of use of management accounting for the segments of a unit for each agricultural enterprise is individual. But in any case, the main criteria for its isolation are the number of cost items or elements, the relevance and reliability of the information base. Due to the fact that the above parameters are present in different directions, the optimal solution can be made only after a thorough analysis of the current conditions and the needs of management accounting.

Regarding the determination of the cost composition by segments of the agricultural enterprise, the following options are possible:

1. The costs structure by the activity segments of the business unit of an agricultural enterprise should include the totality of direct and indirect costs associated with this unit, regardless of what products they relate to.
2. The costs structure by the activity segments of the business unit include only indirect costs, which cannot be attributed directly to specific types of agricultural products. (At the same time, direct costs are directly included in the cost of production, work and services).

Each of the above variants has its positive and negative sides, as a result of which they require preliminary methodological and organizational research, taking into account the peculiarities of management accounting in a particular unit of an agricultural enterprise. But in any case, it is advisable to attribute costs directly related to the end results of business units to the segmentsof the business unitactivity in these variants.

Management accounting in practice is not able to provide maximum coverage of all direct and indirect costs, because this involves the development of cost estimates, but is not directly related to determining the cost of production.

In foreign practice, analysis of the management accounting organization by segments of company activity suggests that they need to be carried out through clear budgeting. In this case, budgeting is expressed in a quantitative reflection of the plan, and it is an effective tool for coordination and controlling its implementation.

The master budget is compiled regarding production, sales, distribution and financing, future profits, cash flows and other business plans.

Undoubtedly, such budget programs are very useful in any organization of accounting by responsibility centers.

4 Conclusions And Proposals

- One of the priority areas for the development of management accounting is the segmentation of enterprise activity, which allows objectively detailing the production and organizational spheres of an economic entity, taking into account the functional belonging of costs to a particular stage of segmentation of an enterprise.
- The development of the activity segments of any enterprise is associated with many factors, including with its production structure, features of technological processes, the level of technical equipment and organization of labor, etc. The organization of management accounting requires taking into account not only existing systems; it also assumes on its basis to lay down the purpose of the activities of a particular unit.
- Such a methodology for organizing management accounting in divisions allows for greater uniformity of costs in terms of their types and content, best comparability with indicators of the involvement of agricultural machinery, the correct write-off of costs for relevant types of products, which, ultimately, creates the conditions for an objective calculation of the cost of production.

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SOME FEATURES OF THE FORMATION OF THE RUSSIAN INFORMATION SOCIETY AND THE SYSTEM-FORMING FACTORS OF ITS DEVELOPMENT

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Abstract: A feature of the on-going transition from industrial technological mode to the post-industrial one is the formation of attributive indicators of the new economy, which is defined as informational. The increase in the pace of informatization of the communication interactions between economic entities is accompanied by the formation of a global economic space; this also changes the configuration of the innovation cycle with regard to reducing implementation time and regional distribution of participants. Analysis and generalization of special literature on the issues under discussion suggests the need to take a fresh look and evaluate the problems of the formation of socio-economic and organizational-economic relations in the process of building and realizing consumer demand in the context of informatization of the domestic economic space.

Key words: globalization, economic crises, economic space, informatization, information and communication technologies, information society

1 Introduction

The activation of the use of automated systems in all spheres of society's life allows us to generate, store, process and quickly use knowledge, create conditions for ensuring equal access for business entities to global information resources. All this positively affects the growth of reputation and contributes to an increase in the share of added values, forms an information culture, and changes consumer behaviour.

Experts note that the formation of the information society and information culture significantly changes the object-subject composition of communication interactions in the information space, transforms the content of carriers of productive and personal demand, etc.

In the course of our study, we studied the scientific works by D. Bell, N. Wiener, M. Maklusin, which were pioneers in the formation of information technology as key factors in the progressive development of society; we also studied the works of K. Koyama, F. Macloon, T. Umyasao and others (they were researchers of the information society development laws), as well as the works by such Russian scientists as V.S. Avtonomov, V.I. Ilyina, G.A. Zhdanovskaya, V.V. Radaev and others on the problems of formation and implementation of consumer demand.

The use of traditional (neoclassical) approaches to researching the consumer choice factors does not allow carrying out comprehensive diagnostics and substantiation of reliable prediction of the nature of consumer behaviour in the context of the economy digitalization, etc.

All this suggests the need to identify and study the information society formation characteristics, to analyse the factors of its development and the mechanism of supply and demand law action, taking into account the modification of the composition of needs, and goods used, and the nature of industry markets, etc.

It should be specially noted that all this happens in the context of high uncertainty of the market environment, pronounced asymmetry of the information base used, the value of which grows as the volumes of the latter increase. This situation requires the prompt creation of tools for diagnosing the authenticity and reliability of the information base, the formation of special institutions with the participation of state and business structures, as well as economic agents.

All of the above prompted us to tackle the issue under consideration.

2 Research Methodology

The theoretical and methodological basis of our study was made up of certain provisions of the neoclassical and neo-Keynesian areas of economic theory, taking into account modern approaches to the interpretation of consumer demand factors.

To achieve this goal, we used the epistemological potential of general scientific and specific methods of cognition, deduction and induction, synthesis and analysis, typology, comparison, generalization.

3 Research Results

One of the essential features of the 21st century has become the transformation of information technology into a system-forming branch of post-industrial civilization, which has already led to global changes. Everywhere there is a rejection of the established laws and relations of industrial society; the institutional and material foundations of public life are changing; the most essential factors of social and economic development are being updated.

Experts note that in order for a society to become informational, it is necessary not only to form an innovative and competitive in the world market complex of relevant technologies (infrastructure, production and knowledge), but also to make the public system politically open. [Andreev N.S. 2006, Rostovtseva D.V. 2013, 13.Pak C.N. 2006]

Today, no state can sustainably develop if it is not integrated into the global information society. Undoubtedly, the process of forming the relationship characterized by digitalization, globalization and national identity is extremely complex and contradictory, because it is also accompanied with resolution of cultural identity and national values, which temporarily prevents the expansion of information exchange.

It is obvious that the emerging information age manifests itself in the form of a global, diverse and multicultural reality, a multitude of emerging national and sociocultural information space models. [Bauman, Z. 2004;World Cultural Report 2000]

In the course of our research, we studied the experience of advanced countries regarding the development of information relations, including Japan, Finland, USA, Singapore, etc. [Castels M., Himanen P. 2000, Mikhailov A.A. 1999, Fedotova T.S. 2002]

Among the most advanced models for the development of the information society there are:

- "Silicon Valley" model which exists in the form of an open welfare information society;
- Singapore model in the form of an authoritarian information society;

- Financial model in the form of an open welfare information society;
- Japanese model in the form of a closed self-regulatory system.

The experience of Japan and Finland is of particular interest: these countries began to dynamically develop their national economy after the Second World War. It is noteworthy that these extremely different states in terms of their national, economic and political structure, have their cornerstones in common: a reference to general prosperity, which allows for the highest level of well-being and special protection of their citizens while preserving the natural environment. [Castels M., Himanen P. 2000]

It is worth noting that, for example, extremely backward until recently Finland (by the way, like Singapore) is today one of the most significant world leaders in the technological sense. The Finnish economy is strictly focused on building up information technologies: every third person works in this sector, where more than 45% of the country's GDP is created or a third of the export volume. [Fedotova T.S. 2002] Moreover, this approach allows successfully combining the development of the information society with the formation of a social state where, for example, absolutely free education is provided for everyone in the country's universities.

It seems to us that it is necessary to use the Finnish experience in developing the state strategy for the formation of the information society, especially regarding its social orientation. It is necessary in the regions where socially-oriented clusters of information technologies should be implemented according to the conditions of Russian reality.

It must be admitted that the information technologies used in the Russian Federation have not become a system-forming factor in the development of society yet. The formation of the information society requires mandatory dynamic interaction between business structures and civil society with the direct participation of the state in the capacity of an intermediary.

It should be specially noted that the Finnish state is considered by the Finnish population as a fair social equalizer and the defender of their rights and this is true, because it allows preserving the social and ethnic homogeneity of Finnish society with a pronounced democratic character to this day. It is noteworthy that this situation also makes it possible for the Finnish government to painlessly use the high tax system, as it was able to correctly develop a strong opinion among the majority of Finnish citizens that this is precisely what makes it possible to ensure such a high standard of living in the country.

Foreign experience in creating a spatial configuration for national models in building information society suggests the formation of “points” with increased concentration of resources, the manifestation of a highly diversified society in spatial and cultural terms. [Bauman, Z. 2004;Guriev M.A. 2003;Mikhailov A.A. 1999]

It seems to us appropriate to take into account that the formation of the Russian information society in the regions will face new challenges.

First, there will be a mandatory demarcation of the old format and the new format of the national economy, and, first of all, in those areas where information technologies are more efficiently implemented (information and communication field, financial field, healthcare field, education field, etc.)

Secondly, we must anticipate the growth of certain contradictions between the emerging information society and the outdated social management structure. Apparently, it will be necessary to form a modern project culture, finance innovative projects, in particular, in the development of digital educational materials, in the construction of virtual universities, etc. to the detriment of subsidies for the social sphere.

Thirdly, in our opinion, we should expect the emergence of new types of social inequality, the growth of social instability regarding low-income sectors of society. And this is natural, because a spatial configuration of inequality is observed already for a long time in the constituent entities of the Russian Federation, especially in the depressed republics of the North Caucasus in the form of a lesser provision of modern technical means, the absence of regional centres for technological development, etc. This ultimately leads to curtailing the majority of social programs for the socio-economic development of territories. [Misakov V.S., Misakov A.V. 2014;Misakov V.S., Sabanchiev A.Kh., Misakov A.V., Dyshekov A.A. 2017;Arzamatseva N.V., Ugurchiev O.B., Khamzatov V.A., Misakov A.V., Misakov V.S. 2019]

Fourth, it must be admitted that in the conditions of depressed, agrarian-oriented and labour-surplus republics, the majority of the able-bodied population (especially young people) have practically no opportunity to become entrepreneurs in everyday business, not to mention the implementation of high-risk projects. This situation is especially aggravated by the presence of overproduction of young specialists with higher education in all specialties.

Fifth, it will be impossible to ignore the contradictions between the pronounced national identity inherent in the ethnically monolithic North Caucasian peoples and the increasing and inevitable integration into the world multicultural community [Gerasimov V.O., Sharafutdinov R.I., Kolmakov V.V., Erzinkyan E.A., Adamenko A.A., Vasileva A.G. 2018].

In this regard, it is appropriate to turn to the Japanese experience of such interaction, where the state retained several functions, including:

- Public administration of development and deregulation regarding liberalization, privatization, and innovation;
- Social security issues, including social partnership between labour and capital. [Guriev M.A. 2003, Rostovtseva D.V. 2013]

It should be noted that one of the most significant competitive advantages of the Japanese model on the development of the information society is the availability of opportunities to combine the centuries-old ethnic culture of the Japanese people with the modern high-tech world.

Experts explain the presence of wide sociocultural shifts in Japan as a direct result of internationalization processes and their convergence. [Stanley Jevonc W. 1957]

Properly conducted state policy allowed the Japanese government to convince citizens, and first of all, entrepreneurs, of the need for reasonable adaptation and integration to the emerging international order. Undoubtedly, Japan today is a universally recognized technical superpower.

In our opinion, Russia has positive system-forming factors that contribute to the formation of the information society. First of all, it should be noted the presence of a high educational level of the population, as well as the high quality of the workforce.

In the Russian Federation, the informatization of administrative procedures is actively on-going; an electronic management system is being created; bureaucratic barriers to management at all levels are being reduced; network structures of social organizations are being formed, etc. [Adamenko A., Petrov D., Temmoeva S., Eskiev M., Misakov V2020]

At the same time, it should also be pointed out that the current legislative and state administrative system in the Russian Federation is lagging behind and does not meet the requirements of the rapid growth of the IT industry.

It is necessary to immediately eliminate this situation, because the activation of the informatization processes in the economic space implies the possibility and mandatory implementation of

information and communication technologies in the system of public reproduction, and thereby qualitatively change the essence of factors and the final results of production, increase their level of information saturation, and ensure the progressive development of society.

4 Conclusions And Proposals

The more and more intensive introduction of breakthrough information and communication technologies in the system of social production led to the rapid development of informatization in the economic space. The main content of this situation is the replacement of the industrial society with the information society, during which the system-forming factors quality of economic and social development changes significantly. There is a total information saturation of the socio-economic space.

Increasing competition and the constant uncertainty of various processes in market economy forces businesses to monitor and analyse relevant information from the external environment on a daily basis.

The uncertainty of the institutional environment, coupled with the growing asymmetry of the information base, limits the capabilities of some of their consumers in the analysis and choice of alternative solutions.

The study allowed us to analyse the experience of forming the information society which is on-going in the most advanced countries in this area, taking into account the possibilities of its use in the conditions of Russian reality.

It has been established that it is advisable to use the provisions of the modern theory of network society in order to mitigate the complex and contradictory relationships between informatization and globalization processes and Russian multinational identity.

It seems to us that the government strategy for building the Russian information society should have a clearly defined social orientation and ensure dynamic interaction between business structures and society with the direct participation of government agencies.

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Primary Paper Section: A

Secondary Paper Section: AE, AH

DEVELOPMENT OF ANTI-INFLATIONARY MANAGEMENT METHODS TO OBTAIN FINANCIAL RESULTS IN AN INFLATIONARY ECONOMY

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Abstract: Inflationary economy problems have strong negative affect on the socio-economic situation of any state. Inflation problems have an extremely acute impact on the final financial results of economic entities in all sectors and especially in the agricultural sector. All this requires, undoubtedly, the immediate working out of a set of measures for the development of anti-inflationary management system by forming a relevant accounting and analytical information base. It seems that such an approach will make it possible to ensure the proper quality of the management function and to focus all the employees of business entities towards the improvement of their financial and economic situation. Experts recognize the absence of a proper accounting mechanism.

Keywords: economic crisis, economic sanctions, inflationary processes, enhancement of accounting and analytical reporting.

1 Introduction

One of the fundamental indicators of an agricultural enterprise activity in a market economy is its financial result achieved, which, in turn, reflects the quality of managing business processes in the economic entity.

Undoubtedly, an increase in profit is necessarily associated with the need to increase production efficiency and product quality, reduce product cost, increase in production, and improving the methods for utilizing labor, land, production and other resources. An analysis of the specialized literature shows that there are many different approaches to the definition of the concept “a financial result of an enterprise activity” and methods for its calculation.

So, a group of economists suggests considering an amount of profit (loss) received as the financial result. [Kovalev VV, Sokolov Ya.V. 1993]

Indeed, profit is the final financial result and, in general, it characterizes the result of the production and financial activities of an enterprise. In other words, the financial result is the basis of the economic development of an economic entity. [Financial accounting in agriculture. Ed. by Belov N.G. - 2010]

One of the most popular approaches for determining the financial result is the accounting approach for determining profit (loss) as the difference between the income and expenses of the enterprise.

So, in accordance with paragraph 2 of the Accounting Regulations PBU 9/99, the growth of economic benefits acts as the company's income as a result of the receipt of assets and extinguishment of debts and obligations, that led to the growth of capital achieved by the enterprise (with the exception of contributions from property owners). [Kimyaeva U.V. 2012]

In the current conditions, there has been some modification of the phenomenon under consideration. Now, in addition to the amount of net profit, the size of the financial result is also characterized by the amount of total income. Hence, it must be assumed that the strategic goal of the modern enterprise’s focus is to obtain a financial result that can satisfy both the interests of business owners and the interests of diversified groups of stakeholders reflecting their need for sustainable social development.

For sure, the final financial result defined as total income for a certain period of time, should be one of the strategic goals of the enterprise’s activity and development. It seems to us that this situation requires the prompt development of a set of effective measures to ensure a given final result.

Scientifically-based management of financial results requires analysis and involvement of many multidirectional factors. The work [Kovalev V.V. 2003] presents their combination of six groups of factors that directly affect and even form the parameters for the final financial results of the enterprise, these are economic, material, technical, social, organizational and managerial, economic and legal, as well as market factors.

Obviously, they are designed for industrial enterprises and therefore do not take into account the specific factors of economic entities in the agricultural sector.

It seems to us that this classification of factors affecting the final financial result of enterprises in relation to the agricultural sector should include another group of factors that take into account the potential of agricultural resources of agricultural enterprises (those are the use of land as the main means of production, biological assets, etc.)

The obligation to constantly take into account these agricultural factors in the development of the anti-inflation control system is due to the presence of distinctive features of agricultural production manifested in the special conditions of the production environment. It is also necessary to take into account factors of state agro-industrial policy regarding the regulation of procurement prices; state intervention policy, state support, and customs policy.

Soil fertility, climatic conditions of production, adaptive potential of biological objects, etc. can be noted among the factors involved in the use of agro-resource potential.

The possibilities of anti-inflationary management of financial results and the restrictions imposed on such management can be foreseen based on an analysis of the above factors that directly affect the amount of profit (loss). It should also be borne in mind that the impact of market environment and economic and legal conditions remain outside the field of activity of the agricultural enterprise management, because they appear as environmental impact.

2 Research Methodology

The works of foreign and Russian scientists, legislative acts, methodological provisions of modern management theory and methods for managing financial results, as well as regulatory legal acts regarding the regulation of financial accounting results and their reporting made the theoretical and methodological basis for studying the complex of problems inherent in anti-

inflationary management of the final financial results of agricultural enterprises in the conditions of an inflationary economy.

In the course of the study, general scientific research methods were used: analysis and synthesis, deduction and induction, comparison, balancing, groupings, and generalizations.

3 Research Results

Traditionally, management is considered in the form of a certain synthesis of science and art, because the subjectivity factor quite significantly affects the logic of the development and adoption of necessary management decisions, including decisions of the financial nature. This implies a practical orientation of management and acts as a kind of bridge between theoretical calculations regarding the capital market, systems, processes and general principles of management, and their practical implementation. [Kovalev V.V. 2003,. Misakov V.S., Misakov A.V., Tsurova L.A., Adzhieva A.Yu., Eskiev M.A. 2017]

This aspect of managerial activity is formed as a result of its close relationship with accounting as a provider of information resources for managers, and the simultaneous coincidence of an object of activity in these two areas, which in this case are the financial flows themselves and, on the other hand, operations with financial flows, through which the parameters of the assets and liabilities of the enterprise change. [Lukash E. 2005, Misakov V.S., Tsurova L.A., Yandarbieva L.A., Thamadokova I.Kh., Goigova M.G. 2019, Ugurchiev O.B., Dovtaev S.A.Sh., Misakov V.S., Misakov A.V., Temmoeva Z.I., Gyatov A.V. 2018]

Accounting is one of the necessary management system elements; moreover, as the business developed and became more complicated, it became obvious to everyone that without accounting, the business was not able to do anything. With the development of accounting, it gradually turned into a separate and independent general function of strategic management with certain unification. The chaotic homegrown accounting systems have turned into a rigidly structured formalized accounting system, which in practice has subsequently been supplemented by in-house unstructured operational accounting systems. [Kovalev VV, Sokolov Ya.V. 1993]

Experts note the proximity of the financial and accounting components. And this is understandable, because most of the much-needed business solutions appear in terms of financial concepts. At the same time, accounting at enterprises is also carried out in cost estimates, and the accounting and analytical information generated in the accounting system acts as an information basis for the development and adoption of most financial decisions.

We do not believe that accounting is intended solely for making managerial decisions of an operational nature. At the same time, we are sure about its significance in solving strategic and tactical tasks. The operational aspect acts as a routine daily production, financial and marketing activity for the implementation of the specified final financial results through the effective use of the resource potential of an enterprise.

The fundamental principle of accounting is the reflection of accounting objects at acquisition prices.

This is a classic principle and it refers to the conditions of stable prices. At the same time, during periods when significant inflation occurs, it becomes inappropriate to use this principle due to a distorted idea of the financial and economic situation, and the final results of a business entity. And this is obvious, because with inflation there is a decrease in the purchasing power of money. And since in our case the money meter is the basis of accounting, then its direct consequence is the loss of comparability of accounting data for different periods. [Andrianov V.V. 2006, Rozhkova O.V. 2001, Tskhoki O.E. 2008]

In other words, inflationary processes negatively affect the relevance and reliability of the studied reporting data. There is no doubt that inflation does not affect different types of assets in the same way. In particular, if an economic entity had free (unused) funds and payables during the inflation period, then the effect of the impact on these accounting objects is directly opposite.

Here, in the first case, due to the decrease in purchasing power, the company received indirect losses, and in the second case, on the contrary, the company had indirect income, since it would be cheaper to repay existing debts, although, in general, the amount of debt remains unchanged.

A feature of most effective indicators today is that they are not able to take into account the inflationary impact. Directly in accounting itself, information on inflationary distortions in the size of assets and liabilities is not provided, i.e. profit (loss) indicators based on such accounting estimates do not allow to detect the availability of inflationary influence, as well as indicators based on market estimates. [Aaker D. 2007, Needles B. 2004, Misakov V.S., Khamzatov V.A., Temrokova A.Kh., Misakov A.V., Dikareva I.A,2018]

It should be noted that, in general, a group of indicators of financial results based on cash flows allows us to "catch" to a certain extent the influence of inflationary processes. But because of the complexity of their calculation and the limitations of their use in comparison with the accounting approach, it does not allow them to be used to the extent necessary for the managerial needs of the enterprise.

Agro-industrial production is characterized by a rather low marketability of production and a rather significant value of stocks (in particular, feed, seeds, exchange funds, natural output of agricultural products, etc.).

Due to this situation, profit from sales in agricultural enterprises allows us to speak in fact not about the effectiveness of all production, but only about that part of it that has received value expression.

As can be seen from the above, when we assess the final financial result of agricultural production, it is impossible to us to proceed from only one balance sheet value of profit received, because this leads to an underestimation of the effect achieved by the enterprise.

All this once again emphasizes the importance of understanding the essence of the final financial result, knowing the goals and objectives of anti-inflationary management, and the skillful use of multidirectional factors in an inflationary economy. [Abel E., Bernanke B. 2010, Tarkhanov O. 2004]

We consider inflation as a complex multifactorial process of raising the general price level in the economy, which is accompanied by a reduction in the purchasing power of monetary assets. It is the result of a crisis situation in the economy when the course of the socio-economic life of the state, and the law of money circulation are violated...

Of course, not every price increase means inflation. So, the price increase in connection with the improvement of the quality of the products is not inflationary in nature, because it is caused by a focus to improving the quality of life.

In our study, we also omit the issues of agrarian agflation, because we are not talking about the imbalance of the food problem.

However, it seems important for us to understand the mechanism of inflationary effects to consider the approaches of various economic schools to this problem.

The Russian School of Economics in its studies focuses on supply inflation. [Abel E., Bernanke B. 2010]

The American Economic School pays more attention to the problems when the actual level of inflation depends on its expected level and the costs involved.

To analyze the impact of inflationary processes, there is a set of effective methods and factor models of DuPont firm, CVP-model (cost-volume-profit), etc.

A feature of inflationary processes in agricultural production is their disproportionate development of agricultural sectors. As a rule, this effect on the reproduction process is observed as an increase in the costs of its implementation.

In such cases, an increase in the cost of production and a decrease in the production of food products occur against the background of the following circumstances: shortage of goods, lack of competition, imperfection of the mechanism of state's and consumers' influence on production costs.

The ongoing gap between industry and agriculture destroys economic ties and, ultimately, leads to an overflow of monetary resources from the manufacturing sector to the sphere of circulation.

The various impacts of inflationary processes on anti-inflationary management methods discussed above uniquely complicate the activities of the enterprise's managerial staff. This concerns planning issues, searching for additional sources of financing, interest rates on new loans and borrowings, the need to diversify own investment portfolio, etc. [Tarkhanov O. 2004, Tskhoki O.E. 2008]

In these conditions, it is advisable to invest free money in cheaper real estate, increase the size of the obligations of the enterprise, etc., which will slightly reduce the inflationary impact on the financial results of a business entity.

In our opinion, it is also advisable to show the impact of inflationary processes directly in the Capital Flow Report in management reporting, because one of the most significant components of the total capital of an economic entity is profit changes precisely under the influence of this process. At the same time, the accounting record for account 85 "Profit (loss) caused by inflation" in financial accounting should be carried out unilaterally, i.e. book this information off the balance.

4 Conclusions And Proposals

1. Inflation, in addition to its negative impact on the reproduction process in the national economy, also acts as a destabilizing factor in the development of production and the stability of the financial and economic situation of enterprises through distortion of financial results.
2. We consider the anti-inflationary management of the final financial results in the form of a multi-stage process, at each stage of which the development and adoption of sound management decisions on all components (planning, formation, distribution and use of profit or covering the loss of an enterprise) is carried out.
3. It has been established that due to the lack of an accounting mechanism for reflecting inflationary impact, the resulting consequences are distorted, which, in turn, leads to the impossibility of organizing not only expanded, but even simple reproduction, which usually ends in bankruptcy of the enterprise.
4. It is substantiated that the accounting record for account 85 "Profit (loss) caused by inflation: in financial accounting is expedient to carry out unilaterally, that is, to book this information off the balance sheet. This approach will increase the reliability of the reporting information, which is the basis for the development and adoption of sound management decisions taking into account the interests of all participants.
5. It is proposed to use an integrated system consisting of private and general indicators to analyze the multidirectional groups of inflation factors.
6. Opposition to inflationary impact on the final financial results at the level of an economic entity belongs to the field of microeconomics and allows you to counteract not inflation as a whole (as an economic phenomenon), but to reduce its negative impact on a specific enterprise. We are aware that at this level it is impossible to completely neutralize the undesirable effects of inflation processes on a particular enterprise (as can be done at the state level), but only to some extent mitigate the negative effects.

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ENVIRONMENTAL PROTECTION AS THE MOST IMPORTANT INSTITUTION FOR ENSURING SUSTAINABLE SOCIO-ECOLOGICAL AND ECONOMIC DEVELOPMENT OF THE REGION

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Abstract. The actualization and significance of the environmental factor in the daily routine activities of society increases the need for research and development associated with the need for detailed identification of environmental aspects of production. The ability to manage the environment in economically developed and environmentally sustainable countries has long been a factor of competitive advantage for a civilized and socially-oriented business. Moreover, the analysis of special literature shows that debatable aspects related to environmental protection, the need to bring them into line with the principles of sustainable development, the use of new management concepts in this area, with the analysis of the environmental situation, and identifying opportunities to improve the effectiveness of environmental protection are preserved.

Keywords: economy of nature management, sustainable development, environmental protection, environmental protection, environmental responsibility, territory assets, assimilation potential of the region.

1 Introduction

Over the past half century, scientists from all countries have been especially active in growing environmental issues; a new independent area has emerged, namely the "ecological economy" which formulated a set of theoretical and methodological approaches and studies in the field of environmental management and regulation.

Time has shown that the development of an ecological economy is impossible without invoking the sustainable development principles and developing its indicators, and without assessing the effectiveness of environmental management, etc. It is appropriate to note the role and achievements of the Club of Rome which presented mathematical models concerning the dynamics of development and mutual existence of socio-economic, technical and environmental systems in the global world, forecasts of economic development and the environmental situation in the territorial aspect, the justification of the need to limit economic growth, and the like.

Scientific works by the Club of Rome resonated in the scientific and social environment, and for the first time caused a large-scale international concern about environmental condition and prospects of the development of mankind.

Since then in many countries, global studies of anthropogenic environmental impacts have been carried out; fundamental principles have been formulated, on the basis of which it becomes possible to implement the principle of environmental development in the context of global, regional and local levels. The control object was rotated: the economic system was replaced by a socio-ecological and economic system; and moreover, the latter serves as the main form of organization for the future development of mankind. The commensurability of the natural and production potentials in the socio-ecological and economic system allows us to move on to quantitative methods for measuring and comparing them, by means of which one can control the commensuration.... The idea of the concept under consideration is the need to ensure economic growth exclusively within the framework of a given environmental and economic balance. The point is that it is necessary to return to the limits of the ordinary ecological niche and advance within the framework of ecological capacity.

This approach allows us to create an organizational structure that can bear responsibility for the implementation of goals, to build a system of responsibility, and an information base, etc.

The limiting factor in modern realities is no longer production capital, but natural capital in accordance with the new concept.

2 Research Methodology

The theoretical and methodological basis of our study was made by scientific research and applied work of Russian and foreign scientists and practitioners in the field of environmental economics, environmental protection and sustainable development, materials from periodicals, and scientific and practical conferences.

In the course of the study, a complex of scientific methods was used, they were: abstract-logical and system analysis, functional-cost analysis, expert estimates, groupings, comparison, and generalization.

3 Research Results

In accordance with the chosen research topic, we have been able to clarify the concept of "environmental protection activity" by deeply studying its main interpretations and examining it in conjunction with the concept of "sustainable development".

Analysis and generalization of special literature on the issues under consideration allows us to talk about the presence of many interpretations concerning the essence of sustainable social development and the place of this concept in the modern economy of environmental management. [Azatov F. A. 2001;Akamova T. A. 2012;Misakov V.S., Baiduev I.Z., Gendugov S.Z. 2015] Economic, environmental and social processes in accordance with the theory of environmental development should be balanced, with emphasis on the need for rational nature management, unconditional reproduction of irreplaceable natural resources and living conditions in the interests of future generations.

It is noteworthy that the environmental doctrine of the Russian Federation and Russian legislation define sustainable development as the strategic goal of socio-ecological and economic development. Moreover, the concept under consideration has an integrated socio-ecological and economic significance.

Sustainable development is achieved by achieving harmonization and balance of its components (economic, social and environmental) social production.

At the present stage of formation of the economic stability theory, the following conceptual propositions are put forward:

1. The instability of the economic system leads to a violation of the state of its temporary and territorial structure, as a result of which minor changes in the environment are rapidly gaining strength and form a new state of the whole system.
2. The stability of the economic system is not absolute; in reality, the system is selectively stable with respect to specific types and conditions of external and internal disturbances.

3. During evolution, the economic system tends to complicate its structure, because in bifurcation selection, hierarchical states turn out to be more preferable from the point of view of the stability criterion, however, the more complex the system, the more threats are to its stability from the external environment.
4. There is a limit of complexity; when it has been reached, the economic system begins the reverse process, but at the same time its disintegration into simpler elements is accompanied by their difference from the initial state. [Porter M. E. 2012;Cherednichenko O. A. 2013]

Note that the main quality that the socio-economic system seeks to preserve is its development. Moreover, the concept of "development" in this context can be defined as a progressive movement towards certain goals expressed as an increase in positively directed indicators of the state of the system as a whole and a decrease in negatively directed indicators.

At the same time, all attention is focused on a set of key tools for balancing the main objectives of social, ecological and economic development, namely, environmental management based on the innovative modernization of production, maintaining anthropogenic loads within the parameters of the assimilative capacity of the region, the harmonization of social and economic relations, management capital taking into account the interests of all participants in market relations. [Misakov V. S. 2007;Cherednichenko O. A. 2013]

A feature of the organization of the economy intended for environmental management in developed countries at the beginning of the XXI century is the formation of a new methodology, according to which economics, society and ecology do not act as equivalent, but interconnected subsystems of a single whole which interacts and develops according to the principle of a natural hierarchy. [Krisanova O. P. 2008;Misakov V. S. 1985]

At the same time, researchers note that the priority is given to the reproduction of the natural conditions of life instead of the reproduction of economic potential. Moreover, the ecological environment becomes primary, because it ensures the existence and development of social and economic subsystems, which are now considered as secondary subsystems.

This situation allows us to consider the system of social and economic indicators as the main criteria for optimizing economic growth and social development.

The above approaches to determining the essence of the concept concerning "sustainable development" indicate the diversity and capacity of the studied category, as well as the need for further scientific development to provide a generally accepted methodological solution to the problem under study regarding different levels of management.

In our study, we want to consider in more detail a "production cell" being an economic entity which, in our opinion, will allow us to specify its role and significance in ensuring sustainable socio-ecological and economic development by specifying the concept of "environmental activity".

The importance of this type of activity should be noted, because it plays an exceptional role in optimizing the correspondence of the development of production and the state of the environment. It must be admitted that society does not have the ability to change the natural conditions of life, but it can engage the appropriate global environmental program through the organization of a technological breakthrough and the transition to an ecologised post-industrial technological mode of production. [Misakov V. S. 2007;Misakov V.S., Baiduev I.Z., Gendugov S.Z. 2015;Cherednichenko O. A. 2013]

We consider environmental activities in the form of a set of targeted measures that ensure the preservation, reproduction and improvement of the quality of the environment, carried out within the boundaries of the enterprises.

The main provisions of environmental activities are regulated by the Declaration of the United Nations "Agenda for XXI Century" (UNCED - 22), in a European qualifier CEPA 2000, in the federal law FZ-7 "On Environmental Protection", and in international quality standards of series ISO 14000. [Declaration of the UN "Agenda 21". 1992]

In general, it can be noted that all these documents contain a set of measures to prevent and eliminate the negative impacts of economic activity on the environment, on maintaining biodiversity, and on the need for environmental education, etc.

It must be admitted that due to the lack of breakthrough technologies, the lack of budgetary resources, due to various organizational difficulties, the lack of competence of managerial personnel, etc., the conditions and nature of domestic production do not allow us to realize most of the directions indicated in the above documents. Almost the vast majority of Russian enterprises do not have their own environmental monitoring and control systems due to financial problems.

For a systematic solution to the problems of environmental economics, a set of basic environmental technologies are needed to minimize or completely neutralize the negative technological impacts on the environment, among which are recycling technologies that enable the reuse of waste material and energy flows, and also waste components, etc. [Boboshko V. I. 2009;Danilov-Danilyan V. I. 2005;Musaev M.M., Musaev H.M., Misakov V.S. 2018]

It is also appropriate to note the "green economy" being one of the modern areas of environmental economics, aimed at internalizing the costs associated with the need to overcome degradation processes in the natural environment through the use of environmentally friendly and highly efficient technologies.

In practice in the conditions of Russian reality, the opportunities and the ability of an organization focused to the effective environmental management and protection of the environment (within the limits of its liability) are influenced by many countervailing factors. The contradictory nature of environmental conservation activities and the extremely important significance of the possible consequences of the refusal to effectively protect the environment for society and the economy determine and actualize the need to study their impact and identify the most significant of these sustainable development positions. The influence of each factor can be both stimulating (supporting) and destimulating (restraining). [Donichev O.A. 2013;Cherednichenko O. A. 2013]

Hence, it can be argued that the management structures of any business enterprise are fully responsible for the results of environmental activities through targeted impact on relevant factors. To do this, they need at least to establish hierarchy of factors and determine which of them have the highest effect on the process under study.

We are talking about the fact that knowledge of factors, their orientation and power of impact enable management to more fully and objectively identify environmental aspects of production, to quantify and economically substantiate effective measures in the field of environmental economics at the level of economic entities.

The practical implementation of the postulates of the sustainable development concept at the national and regional level or at the level of an economic entity is a starting point for the formation of a qualitatively different type of development. Moreover, despite the complex interconnections and interdependencies between the components of any socio-ecological-economic system, their sustainable development in the context of reducing the level of environmental load can be considered in terms of the following main aspects:

- biological - sustainability of ecosystems, which suggests their self-healing, biodiversity, high productivity, etc.;

- environmental protection - protection and restoration of biosphere elements, resource conservation;
- socio-environmental - satisfaction of the physiological needs of residents in clean air and water, in quality food, as well as in environmentally comfortable living conditions and in also psycho-emotional needs for communication with nature.

The totality of the above sustainable development goals determines the direction of the sustainable development strategy as a general direction of movement or the prospects for the future that are visible in time, which both government and the population adhere to, embodying in their intentions and specific actions.

An analysis of the specialized literature allows revealing the most important factors characterizing environmental management conditions, such as globalization, urbanization, and scientific and technological progress.

It seems to us more appropriate to concentrate attention in our study on a group of specific factors, in particular, on the market of resource-saving technologies, on the assimilation potential of the territory, on institutes and regulators, and global natural processes.

The use of resource-saving technologies is the basis of rational nature management, and it is impossible in modern conditions without them to satisfy the needs of society and improve the quality of life. Perhaps, in today's realities, updating funds in the economy of the Russian Federation is the most difficult problem, because more than 70% of industrial equipment has unacceptable wear and tear and obsolescence.

Speaking about the assimilation potential of the region, we proceed from the fact that in modern realities a territory must be considered through the prism of the economy which uses nature management and other sciences as a regional economic asset. It is about the whole area of the region: climatic conditions and natural resources, landscape, transport and engineering infrastructure, housing and production assets, population size and distribution; investment attractiveness of the territory, etc.

And this is natural, since all of them are associated with the most important aspect of life as environmental safety which has also dual nature: on the one hand, it is the primary need of man and society; on the other hand, it requires constant restriction of the dynamics of economic growth, based on the possibilities of recreation. [Danilov-Danilyan V. I. 2005;Declaration of the UN "Agenda 21". 1992]

These circumstances have led and to appear in the scientific circulation the concept of "assets of the territory", which proposed to understand the totality of the value of having a resource controlled territory, which can be involved in productive activities based on the principles of environmental economics.

However, it is true, and experts confirm this, that in actual practice it is still impossible to ensure economic growth while fully compensating for anthropogenic pollution of the environment. The realities are such that the measures taken to neutralize the impact definitely lead to a disproportionate increase in the cost of production, and, consequently, to a drop in competitiveness. [Krisanova O. P. 2008;Misakov V.S., Baiduev I.Z., Gendugov S.Z. 2015;Cherednichenko O. A. 2013]

Institutions and regulators in the form of state structures are designed to reduce uncertainty by establishing an effective system of interaction between people through laws, norms, customs, etc. This increases the importance of institutional factor as well, because it affects the institutional structure, information and communication technologies, investment climate, socio-economic and industrial policies.

The internal environment of any enterprise is created and regulated under the influence of the above factors and directly forms the opportunities and conditions for the organization of rational nature management. In the course of our study, we found an interesting fact: even successful and financially prosperous enterprises experience great doubts and uncertainty in the distribution of cash flows between operating and environmental cycles due to the unpredictability of the market environment and the inevitable increase in current costs. This was especially acute and evident in the current global economic and medical crisis that arose as a result of a coronavirus spread.

This confirms once again the need for a state program to create incentives to increase the interest of business entities of all forms of ownership in organizing sustainable socio-ecological and economic development. Moreover, this program should justify and reflect the loss of profit due to the introduction of expensive resource-saving technologies in comparison with the economic and social benefits that are possible in the long term, provided by sustainable industrial and economic activities. For this, it is necessary to abandon the declarative nature of the organizational and economic mechanism of rational nature management. Moreover, world practice confirms that financial losses in this process are inherent in the short-term nature, and effective environmental protection manifests itself, as a rule, in the form of an inevitable strategic competitive advantage, which ensures an increase in the market value of the assets of an economic entity.

A sustainable development is associated with the need to simultaneously address the diverse and very often contradictory problems of ensuring economic growth with the obligatory focus on specific social and economic results and supporting the natural qualities of the environment. Such position requires the inclusion in the list of studied problems of environmental economics in addition to the identification, evaluation and control of the environmental aspects of production and business activities, and also the task of stimulating the interest of economic entities in enhancing management efficiency in this field.

In accordance with the approach by M. Porter, any company is interested in choosing precisely those types of activities in which it will achieve excellence and create sustainable competitive advantages in the market. [Musaev M.M., Musaev H.M., Misakov V.S. 2018] Indeed, the interest of a company grows if its final results correspond to the motives for achieving and supporting such profit growth rates that will allow for an equivalent increase in the production, social and environmental potential of the enterprise, and increase the market value of assets.

In [Porter M. E. 2012], where the orientation of the reproduction process in the economy considered as part of the socio-economic transformation, is substantiated on the basis of a mathematical-statistical technique, it is proposed to use the level of resource-saving innovative production and the efficiency of spending funds on the development of breakthrough technologies as the main criteria for the stability and resistance of regions including also advanced environmental technologies.

Indeed, the imperative of socio-ecology and economic balance of economic processes causes an entity to take investment projects in the environmental field as independent non-profit and socially relevant business processes. This situation requires the immediate development and increase of information and analytical tools for diagnosing causal relationships between costs and the end results of environmental activities.

It is obvious that the final results depend on the literacy of managers and analysts to predict the losses created by non-profit environmental assets and the validity of the developed preventive measures.

It is possible to implement through reasonable optimization of cash flows and financial liabilities the most attractive combinations of “environmental assets - operational assets”, characterized by a high level of balance of cash inflows and outflows.

The presence of a non-commercial nature and at the same time a high social demand for environmental protection forces enterprises to use the marginal income mechanism in combination with the principle of economic value added EVA (EconomicValueAdded) in environmental management. [Cherednichenko O. A.2013]

Using the economic value added concept opens up the possibility of simultaneously diagnosing the effectiveness of activities taking into account the interests of all participants in market relations and determining the value of assets taking into account the intangible component.

Directly, the formula for calculating the economic value added has the following form:

$$EVA = NP - (WACRCxI) \quad (1)$$

Where NP - net profit; I - invested capital; WACRC - weighted average cost of raising capital.

It should be noted that most of the current Russian accounting standards and the practice of preparing financial statements does not allow us for taking into account a number of existing assets directly involved in determining accounting profit, in particular with regard to intellectual investments, investments in R&D, organizational innovations, etc.

The advantage of using the procedure for assessing economic value added is that its use eliminates the above contradictions. Of course, balanced development requires the support of a certain compromise between economic efficiency, socio-economic performance and financial stability.

4 Conclusions and Proposals

- In the context of globalization and the constant increase in man-made impacts on the environment, society orients the development of social production within the basic social and environmental standards and the need to create environmental balancing.
- Analysis and generalization of methodological aspects in the organization of an economic entity activity allowed highlighting the competitive advantages of the management by procedures in nature protection activities that makes it possible to provide identification and detail environmental costs, and to organize targeted subsystem of environmental cost accounting.
- The unacceptably low share of investments in environmental protection in the country has been established (less than 1% of GDP); the ignoring by the majority of companies of investment in the environment protection (less than 8%) was noted.
- The necessity of the development of modern regional environmental policy and municipal programs in nature protection activities and environmental safety oriented to provide stable development in the sphere of natural resource use is substantiated.

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Primary Paper Section: A

Secondary Paper Section: AH, DN

SOME ASPECTS OF THE CREATION OF AN ENVIRONMENTAL AND ECONOMIC RISK MANAGEMENT SYSTEM IN THE CONTEXT OF THE ELABORATION OF REGIONAL SUSTAINABLE DEVELOPMENT INSTRUMENTS

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Abstract. A feature of recent decades is the increased interest in studying the problems of the generation and neutralization of environmental and economic risks, as well as their possible consequences in the daily activities of regional economic systems. Undoubtedly, the problems of achieving sustainable development of the territories are rather rigidly associated with the need to implement national programs to neutralize environmental and economic threats to public health and prevent possible economic damage to the environment. All this speaks of the relevance of improving the theoretical and methodological principles and empirical and factual methods of studying environmental and economic risks in the context of achieving sustainable development of the regional socio-ecological and economic system.

Key words: globalization, regional economic complex, nature management, triune spiral, environmental risks, management, socio-ecological-economic system, sustainable development.

1 Introduction

Any modern construction of the organizational and economic mechanism of effective environmental management at the regional level is fraught with the need to take into account possible environmental and economic development risks that arise in the daily production and economic activities of the regional economic system entities. In the context of today's realities, it is necessary for authorities and civil society to stimulate environmentally-friendly behaviour of all participants in the vital activity of territories and, first of all, of economic entities. And this is natural, because the concept of "environmental and economic risk" has long been no longer the prerogative of scientific research alone; it is already widely used in the everyday life of the population.

An analysis of the specialized literature on the issues under consideration allows us to note that there are many scientific publications that thoroughly consider various aspects of the conceptual provisions for the sustainability of regional development, and also for economic problems of environmental protection and nature management. The scientific substantiation of the socio-ecological-economic development concept for the Russian Federation and its subjects is given. [Akimova T.A. 2003, Gaponenko A.L. 1999, Misakov V.S. 2007, Musaev M.M., Musaeva H.M., Misakov V.S. 2018]

At the same time, a number of theoretical and methodological aspects of managing environmental and economic risks in the system of instruments for regional sustainable development are still in demand for their scientific consideration; they have scientific relevance, which led to the choice of the topic of our study.

2 Research Methodology

The theoretical and methodological basis of our study was the scientific works of foreign and domestic scientists in the field of management theory, regional economics, environmental economics, the theory of sustainable development of regions, and environmental and economic risk management.

The instrumental and methodological basis of this work was composed by the methods of a system-functional approach in developing a mechanism for reducing and neutralizing the environmental and economic risks of regional development.

The study involved methods of systemic, comparative, structural-functional, functional-cost, index analysis, grouping and generalization.

3 Research Results

The importance of regions as the main subjects of the national economy was especially clearly manifested in the context of globalization and increasing competition. Each region has a number of fundamental characteristics, such as integrity, comprehensiveness, manageability, specialization, etc.

In accordance with the current legislation of the Russian Federation, a region is part of the territory of the Russian Federation, which has common natural-climatic, socio-economic, national-cultural and other conditions. [The concept of sustainable development and risks for Russia 2012]

Any region, being a complex territorial entity, has “its own” special socio-ecological-economic relations. The continuous interaction between the regional economic system and the environment is accompanied by the constant presence of a risk factor. This requires the immediate development of methodological provisions for improving the strategic management system by optimizing the parameters of the phenomenon under consideration in order to ensure the sustainability of the development of the regional socio-ecological-economic system.

In the specialized literature, the main forms of regional stability of a territory are considered; signs of regional stability were identified, several dozen different mechanisms for the sustainable development of territories were proposed. [Bychkova E.A. 2005, Krasnova T.A. 2000]

For all these varieties of the mechanism under consideration, their focus on achieving balance in solving socio-ecological-economic problems, and improving the quality of life, and also conservation of natural resource potential are common. At the same time, sustainable development is understood to mean such development, which, despite certain environmental impacts, does not destroy the natural basis for the reproduction of human life. [The concept of sustainable development and risks for Russia 2012]

Sustainable development is an evolutionary type of development of civilization, suggesting the optimal management of the natural, social and cultural wealth of mankind. [Yakovleva I.Yu. 2012]

The dominance of the economic aspect of sustainable development in the XXI century means a move away from building up the use of the natural resource potential of the biosphere towards its rationalization.

The availability of a social aspect indicates the readiness of society to switch to democratic principles of governance, taking

into account the possibilities of combining the interests of a market economy and the need to implement the social functions of the state.

The environmental aspect indicates the priority of ensuring the conservation of the natural base.

An analysis of the specialized literature on the issues under consideration allowed us to generalize and single out the most popular interpretations to establish the essence of the sustainable development concept. In general, they substantiate, that:

- It is necessary to create a single and harmonious social, economic and environmental system in the interests of the entire community in order to ensure sustainable development,
- Economic growth and an increase in the quality of life of the population should correspond to the parameters of the economic capacity of the biosphere;
- Sustainable development is impossible without the restoration and preservation of natural ecosystems to a level that will allow the stability of the natural environment. [Abdulaev I.A. 2017, Velieva D.S. 2010, Rastvortseva S.N., Grineva N.A. 2010, Yashin E.A. 2009]

It can be noted that in any case, different authors regard sustainable development as the most important condition for ensuring regional environmental safety.

Speaking about the system of sustainable development, environmental safety, etc., they cannot be implemented without the concept of "environmental risk". This concept allows us to explore various forms of communication between negative environmental impacts and environmental objects, find out the potential danger of various activities, rank adverse environmental impacts, manage environmental risks, etc.

Hence, environmental risk can be considered in the form of an integrated assessment (quantitative measure) of possible environmental hazards. [Zakharova E.I., Bartashevich A.L. 2011;Misakov V.S., Baiduev I.Z., Gendugov S.Z. 2015;Yashin E.A. 2009]

The practice of recent decades shows that local events in the context of increasing globalization processes and the active development of ICT are increasingly leading to global risk communication. This indicates the formation of a new economy characterized by a transition from risk accumulation to risk multiplication.

The key goal of managing environmental and economic risks in the regional economic system is to ensure the maximum reduction of their level up to neutralization, taking into account environmental aspects of the development of territories. Proper risk management requires an appropriate system of regulatory, administrative and economic mechanisms aimed at neutralizing negative environmental impacts in the region, taking into account social and environmental factors.

In general, it is advisable to understand environmental and economic risk as a measure of the formation of undesirable environmental consequences when implementing some kind of investment project regarding natural ecosystems and public health. As can be seen from the foregoing, the calculation of risk is always conditional, since it is a question of the possibility of determining the probability of the occurrence of some undesirable event, of choosing an adequate model of damage formation and its price expression. It should also be noted that it is not only conditional, but also quite complicated and, in our opinion, not correct, because it is impossible to express directly in monetary terms, for example, human life or a unique landscape as an object of environmental damage.

There are many methodological approaches to environmental risk assessment in the specialized literature, in particular, the US Environmental Protection Agency (EPA), the UN Special Program, etc. As a rule, they are focused on considering the damage to human health from the adverse effects of a polluted environment...

Despite their relative simplicity, such approaches to diagnosing environmental pollution risk parameters are quite promising in predicting the negative consequences of this pollution, in developing priority areas for managing the state of the environment, etc.

Improving the methodological approaches to diagnosing environmental risk involves the development of effective tools for the objective substantiation of quantitative parameters concerning the probability of generating harmful consequences for the population due to environmental pollution. Hence, it can be argued that the methodological basis of risk assessment as a mechanism for environmental management should be based on two of its interrelated components:

1. Risk assessment system;
2. Risk management system.

Diagnosing environmental risk is the first step and basis of the environmental risk management mechanism. It is clear that its objectivity depends on many factors that form the technique for constructing initial indicators, on the specifics of the chosen method, on the reliability of the information received, etc. All this is extremely important, since it is precisely these provisions that determine the objectivity of risk assessment regarding public health and the environment, the accuracy of risk identification, the determination of risk characteristics, etc.

Experts note the extreme complexity of creating an information base for diagnosing an environmental base: a large number of specialists with different areas of expertise participate in this process, including, in addition to analysts in economics, also toxicologists, hygienists, and oncologists, etc., who, analysing physical and chemical properties of polluting harmful substances, determine the most appropriate data for the analysis of the risk associated with them. We are talking about the nature of the influence, the depth of metabolism, mutagenicity and carcinogenicity of the analysed factors and the formation of the necessary information base. This approach allows us to calculate the weighted exposure types of substances and compounds discharged by the source of pollution and thereby to establish the most significant sources of danger for diagnosing the risk of an economic entity. [Velieva D.S. 2010;Misakov V.S. 1985;Shmal A.G. 2004;Orhuls W. 1977]

It seems to us that, to a greater extent, the diagnosis of risk is a logical process involving an analytical and logical generalization of the information obtained on the basis of a detailed study concerning the complex of all kinds of assumptions and uncertainties that occurred in the risk assessment. It should be noted that just improving the methodology for diagnosing risk should be aimed, first of all, at developing clear principles and rules for resolving such uncertainties.

Analysts pass the results of diagnosis to colleagues who are involved in risk management.

At the same time, managers should emphasize the development of measures to prohibit and prevent the negative impacts of the studied factors on the natural environment.

When solving such problems, it is necessary to use a modern instrumental and methodological base, which can act as the basis for the development of a set of targeted measures to prevent the formation of risks.

When developing such events, regional authorities and administrations must accurately evaluate their capabilities, what are the resource requirements for the realisation implementation of the proposed measures, to justify the economic feasibility of these actions, etc. [Akimova T.A. 2003;Misakov V.S., Baiduev I.Z., Gendugov S.Z. 2015;Yakovleva I.Yu. 2012]

It should be noted that in the republics of the North Caucasus, institutional and instrumental and methodological support is actively being formed to support a set of targeted actions to reduce and neutralize environmental and economic risks, and what is very important, the rules of mandatory environmental-friendly behaviour of all legal entities and individuals is being consolidated at all levels of regional management upon approval and implementation of regulatory acts in the field of environmental protection.

Involvement of the modern environmental and economic mechanism for the sustainable development of the regional socio-ecological-economic system should reduce environmental and economic risks, prevent the scale of economic damage, and ensure environmental safety. Of course, this requires the formation of an ordered vector of environmentally priority areas of territorial development, taking into account the scale of possible environmental threats. The effective use of the ecological and economic mechanism in many respects depends on the "environmental initiatives" not only of the authorities, but also business entities and the civilian population of the territory.

There are many methods of economic analysis to assess the economic efficiency of environmental measures. Cost-effective analysis can be called among these methods; it is also called "cost-benefit analysis." [Optimization of radiation protection based on cost-benefit analysis: 1995] Its advantage is a clear focus on assessing socio-economic damage, which allows us to further optimize environmental safety and develop effective measures aimed at reducing health risks.

In accordance with this methodology, the event (production) being organized and associated with a risk to the health of citizens, can be considered justified if the resulting net economic effect $V > 0$:

$$V = Э – P – X – Y > 0 \quad (1)$$

Where Э is the full economic effect; P is reduced costs (without security costs); X - environmental costs; Y - residual economic damage from environmental impacts or public health. [Optimization of radiation protection based on cost-benefit analysis: 1995]

There are a number of other methodological approaches that show the possibility of a step-by-step multilevel risk study when considering socio-ecological and economic problems. [Rastvortseva S.N., Grineva N.A. 2010]

In general, the algorithm for monitoring environmental and economic risks in the system of instruments for regional sustainable development may consist of the following steps.

At the first stage, it is necessary to form threshold indicators for assessing stability.

At the second stage, it is necessary to carry out a classification of development and highlight weaknesses in the regional socio-ecological-economic system.

At the third stage, a factor analysis of the sustainability of regional development is carried out.

The fourth stage assesses the impact of risk and uncertainty.

At the final stage, the necessary recommendations are developed.

It seems to us that the proposed algorithm for monitoring the sustainability of territorial development allows us to actively use all the elements of economic research (observation, analysis, grouping, comparison, detailing, elimination, diagnosis and forecasting of the environmental and economic risk factor), which will allow regional managers to develop effective management decisions and recommendations aimed at improving the socio-ecological and economic situation in the region.

4 Conclusions and Proposals

1. A feature of the last years of regional development in Russia is the given orientation of the territories towards a balanced solution of the set socio-ecological and economic problems; to improve the quality of life of the population; to solve the problems of preserving the natural resource potential for next generations.
2. The environmental safety system is represented by three blocks at the level of the constituent entities of the Russian Federation:

- Comprehensive environmental assessment of the region;
- Environmental monitoring;
- Management decisions.

3. In the conditions of a chronic deficit of financial and material resources, the effectiveness of the regional socio-ecological-economic policy that is carried out now clearly depends on the given priorities for the distribution of these resources in the relevant areas. We are talking about the need for a reasonable combination of the interests of social and economic policy in order to ensure sustainable regional development.
4. The concept of "environmental risk" was introduced into scientific circulation to reflect the most significant relationships between negative environmental impacts and environmental objects. An algorithm is proposed for monitoring the sustainability of territorial development to search for ways to reduce and neutralize environmental and economic risks at the regional level; the algorithm contains a group of functional chains (measures) to reduce environmental and economic risks, to prevent economic damage, and to ensure environmental safety.

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Primary Paper Section: A

Secondary Paper Section: AH

FORMATION OF STRUCTURAL ELEMENTS FOR THE MECHANISM OF SUSTAINABLE ECONOMIC DEVELOPMENT OF REGIONAL INTERSECTORAL CLUSTERS IN THE AGRO INDUSTRIAL COMPLEX

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The study was carried out with the financial support of the Russian Federal Property Fund and the Krasnodar Territory as the part of the scientific project No. 19-410-230041.

Abstract: Globalization and increasing competition actualize the need to ensure the financial, economic and food independence of the Russian Federation while maintaining its active role in international cooperation. One of the key goals of any state is to ensure its long-term sustainable development. In our opinion, all this requires a radical adjustment of the state agricultural policy. We have seen that the presence of a large number of scientific research on the topics of formation and development of clusters does not absolve us from the need for a focused study of the processes of construction and implementation of the sustainable development model presenting high-performance clusters in agriculture, development of methodical bases for construction of an economic development model for the agricultural cluster, adapted to the Russian conditions.

Keywords: economic crisis, sanctions, agro-industrial complex, region, sustainable development, structural elements, organizational and economic mechanism, management.

1 Introduction

Modern conditions for the development of the world economy actualize the problems of ensuring growth and increasing the competitiveness of the agrarian industry being a part in the Russian national economy. The implementation of these tasks requires the implementation of an innovative development scenario, the active use of the scientific and technical potential of the most technologically advanced sectors in the agro-industrial complex. And this is indisputable, since only science-driven and high-tech industries are able to properly implement most of the innovative developments of breakthrough technologies, which allows for sustainable social and economic development.

In our work, we proceed from the fact that the solution to the problem of ensuring the stability of the regional agro-industrial complex should be interconnected with the solution of the problems on ensuring the country's food security, which implies the innovative development of a national production complex and increasing the competitiveness of diverse agro-industrial complex economic entities of the on world markets.

However, one cannot ignore that the Russian innovation system is characterized by low functioning efficiency, which is clearly manifested in the final results of innovation in the economy as a whole and, especially, in agriculture.

Several dozens of concepts for the innovative development of national production complexes are cited in the specialized literature, the sources of which were J. Schumpeter (the founder of the innovative development theory); ND Kondratiev (author of the "long waves" theory); G. Mensh (developer of S- models of investments), etc.

One can note N. G. Keshisheva, E. A. Lure, I. V. Milkina and others Among modern Russian researchers in the field of innovative development of territories. All of these authors are unanimous in the fact that the development of territories based on innovation is a complex and long-term process during which it is necessary to implement the state policy of federal and regional authorities and governing bodies, which determines the vector of development of high-tech sectors of the economy, a mechanism for stimulating the involvement of private capital in long-term region development, etc.

It is indisputable that the sustainable development of territories, and, in particular, territorial production complexes, is associated with the presence in the region of certain resources, and also scientific, technical, industrial and educational potential. Hence, it can be argued that the regional agro-industrial complex should have a combination of relevant production structures and research institutions, on the basis of which it can create the necessary innovative chain, the implementation of which will allow entering the markets with new competitive products.

It should also be noted the importance of the regional agro-industrial complex having such possible competitive advantages as modern production facilities, a certain research potential, an advantageous geographical location, favourable natural and climatic resources, a developed transport and communication network, etc.

All of the above suggests that the problems of choosing the most effective approaches to the development of high-tech sectors of the agricultural sector are one of the most relevant today, because the threats and risks for the development of Russian agriculture are not only real, but also increasing, which reduces the ability to ensure sustainable growth and accelerated import substitution.

2 Research methodology

The theoretical and methodological foundations of our study were the works of foreign and domestic researchers on the problems of the regional economic complex, and also agricultural business development; the formation of the organizational and economic mechanism for the implementation of sustainable economic development of territorial agro-industrial clusters.

They also studied the legislative and other regulatory acts underlying the formation of the agricultural sector and investment policy.

Depending on the tasks to be solved, we also used general scientific methods and methods of economic research cognition, such as abstract-logical ones, and also expert methods, analysis, and generalization.

3 Research results

When examining the problems of clustering, we were guided by the definition of the concept of a cluster given in the Concept of Long-Term Socio-Economic Development of the Russian Federation for the period of up to 2020. Based on this, we consider the cluster as “the union of economic entities, suppliers of equipment, production and services, research institutes and universities related by relations of territorial proximity and

functional dependence in the sphere of production and sale of goods and services" [Drozdova N. V. 2011].

Hence, we consider agro industrial clusters as inter-industry, which focus on cooperation and competition, both within a number of agribusiness sectors (for example, dairy farming), and between individual branches and sectors of the agro industrial complex. In turn, any inter-industry cluster consists of a group of participants, a particular set of volumes of resources involved, and various activities aimed, ultimately, at the production and sale of high-tech products (services) [Zaushitsyna L. L. 2015, Sidorov V. P. 2011]. From our point of view, the scientific basis of the agro-industrial cluster should be interdisciplinary knowledge about the production of the final product: high-quality food for the population and raw materials for industry. In addition, a distinctive feature of the agro-industrial cluster should be considered as the preservation of the agro-ecological situation and the development of the rural territory as a place of residence and place of production of final products.

There are other approaches to the classification of clusters in the specialized literature; for the most part, they are built according to the type of their origin. For example, in [Smorodinskaya N. V. 2015] the cluster is considered as a product of self-organization and integration of companies formed "from below", in [Kovaleva I. N. 2012] it was proposed to consider a cluster as a product that arose during targeted interactions between federal and regional authorities and governments, i.e, formed "from above."

Based on industry specifics, there are such types of clusters as discrete, process, innovative, agricultural, tourism, transport and logistics, etc.

In the course of the study, we identified many works where the authors quite freely interpret the concepts of "agro-industrial cluster" and "integrated agro-industrial formation", believing that this, in principle, is one and the same. Here we fully share the position of A. I. Altukhov, who a posteriori proved the existence of fundamental differences between the clusters created in the agro-industrial sector, and the agro-industrial associations, including by their legal form, principles of creation, production structure, scale of production, organization status, the presence or absence of competition, a form of management, etc.

An agro-industrial cluster is a complex open network system consisting of subjects of industries and sectors of agro-industrial production (including agriculture, processing industry, food industry); service industries, such as market and innovation infrastructure; educational and financial area; authorities; consumers of agricultural products; located on a specific (separate) territory and having a financial, economic, technical and technological relationship [Aksenova T. N. 2012; Zaushitsyna L. L. 2015; Misakov V. S. 2007].

Directly, the mechanism of sustainable high-performance cluster development in the agro-industrial complex involves legal, administrative, economic, organizational and information levers, the proper use of which allows us to purposefully influence the processes of formation and development of sustainable long-term and mutually beneficial ties between geographically concentrated production business entities and serving structures of the agro-industrial complex, market infrastructure, research and educational institutions, financial institutions, government and management bodies, consumers of agricultural products, etc., which together provide the stability of their effective functioning and development.

All organizations participating in the cluster act as an elementary particle of the cluster - that is, as a cluster unit.

The selection of an economic entity as a separate cluster unit as part of a cluster formation allows a detailed analysis and diagnosis of its activity, to determine the effectiveness of the use of cluster resources by this unit, to identify the level of involvement of cluster units in the design activities of the considered institutional economic and social unit of the cluster [Bobylev S. N. 2001;Misakov V. S. 1985;Cherkasova O. V. 2011].

Moreover, the cluster unit considered as the primary structural unit of the regional agro-industrial cluster can be unambiguously established, namely: what function it implements: it can be innovative, industrial, technological, etc.

Here we should once again turn to the essence of sustainable development. In the specialized literature, the sustainable development descriptor system, in general, is represented by three blocks:

- Economic block: investment in new products and processes; operating margin; return on invested capital, economic value added;
- Environmental block: a system of strategic environmental management; greenhouse gas emissions issues; energy intensity;
- Social block: training and retraining of workers, labour protection, improvement of the quality of life [Erokhin M. A. 2011; Misakov V.S., Baiduev I.Z., Gendugov S.Z. 2015;Duranton G. California Dreamin:].

In the course of the study, we identified an important regularity, in our opinion: the systems of valuation descriptors needed to reflect the approaches of valuation of both sustainable and innovative development allow us to objectively consider the possibility of their joint use by involving such a universal indicator as the newly created value (it can be expressed in GDP, GRP, and funds based on the considered level of the economy).

Based on the fact that the key goal of sustainable economic development of the agro-industrial complex in Russia is to ensure the balance of economic efficiency, social justice and environmental safety, it is necessary to develop a modern organizational and economic mechanism consisting of a set of principles, methods, techniques and factors aimed at developing the agro-industrial complex on the basis of the formation and development of regional high-performance clusters in the agricultural sector. The structure of such a mechanism may consist of:

- Theoretical block, which clarifies the terminological base of the subject area of research on the problems of sustainable economic development of high-tech clusters in the agricultural sector, development of a system of modern requirements and factors for the sustainable development of the agricultural sector based on regional agro-industrial clusters;
- Methodological base regarding the principles of sustainable development of the agro-industrial complex based on high-performance clusters, the use of multi-level approaches to build cluster policies and options for organizing regional clusters in the agro-industrial complex;
- Methodological tools, in particular, regarding the integrated system of indicators for sustainable economic development of a regional cluster in the agro-industrial complex;
- Methods for diagnosing the socio-ecological and economic system using the "value added" indicator;
- Analysis techniques concerning management of resources at their recycling.

When forming the structural elements of the developed mechanism for the sustainable economic development of high-tech clusters in the agricultural sector, it is advisable to use some of the components of the so-called "circular" economy program provided by the European Commission on 12/02/2015. It is aimed at creating a recycling economy in the EU countries that opens up fundamentally new opportunities for small business.

When constructing the mechanism of sustainable economic development, it is also very important to consider a set of issues of institutionalizing the sustainable development of the agro-industrial complex regarding the establishment and improvement of partnerships between the state and business structures, the implementation of cluster corporate policies and scenarios for

organizing a regional agro-industrial cluster based on a multi-level approach. Elements of the institutional environment in the process of building sustainable economic development of high-tech clusters in the agricultural sector with their combined and targeted impact cover all areas of activity and ensure the effective implementation of the set policy for the formation and development of clusters in the agricultural sector. All this suggests that a number of methodological guidances and tools for sustainable economic development of the agro-industrial complex of the country based on regional high-performance clusters should be organically interconnected with elements of the institutional system in the form of targeted interaction between certain institutional structures of the society that directly affect the functioning of agro-industrial clusters. The set of elements of the institutional environment (politics, society, economics, ecology, etc.) is fundamental, providing the movement and vector of sustainable development of the agro-industrial complex based on agricultural clusters. [Zaushitsyna L. L. 2015;Musaev M.M., Musaev H.M., Misakov V.S. 2018;Andersen C. 2010]

The mechanism of state cluster policy includes a number of measures to build the institutional environment that form the basis of the cluster approach, create programs and investment projects for the development of regional clusters in the agricultural sector, etc.

In a market economy, clusters should be "self-adjusting"; they also should ensure the competitiveness of all its participants and comply with the provisions of the state cluster policy.

In the depressed republics of the North Caucasus, the contours of future cluster formations are only being formed so far. This situation requires the creation of a typical cluster structure in the form of an interregional (North Caucasian) powerful corporation capable of accumulating regional technological business entities. In our opinion in these conditions, the state should not replace, but help and create conditions for the development of the cluster initiative, which is coming from "below." However, we are far from the fact that the cluster approach is self-sufficient and can do without government support.

When forming and implementing cluster policies in the republics of southern Russia, a number of obvious risks are observed, including regarding the disproportion of regulatory measures to identified problems; conflict of cluster tools with ongoing cluster policy activities; the dominance of costs for improving the structure of regional distribution of agricultural production over the benefits received. To overcome such risks, it is necessary to strictly observe the fundamental principles of cluster policy.

4 Conclusions and proposals

1.A feature of recent years is the formation in the republics of the North Caucasus of a flexible structure of the cluster environment, which allows the creation of appropriate facilities for the territorial and intracluster level;

2.Analysis and generalization of the most popular methodological approaches made it possible to propose the structure of the main elements for the organizational and economic mechanism concerning sustainable economic development of regional high-performance clusters in the agricultural sector;

3.In the course of the study of the structure-forming elements from the cluster environment of regional high-performance clusters in the agro-industrial complex, it was possible to single out the internal and external environment of the agro-industrial cluster and its constituent elements and substantiate the feasibility of using a multi-level approach in the implementation of cluster policy;

4.Conceptual recommendations are disclosed that reveal the features of sustainable economic development of agricultural production based on the formation of high-performance clusters in the agricultural sector.

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CORPORATE SOCIAL RESPONSIBILITY OF COMPANIES AS A FACTOR IN SUSTAINABLE DEVELOPMENT OF REGIONS

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Abstract: Globalization and increasing competition have greatly aggravated and actualized the need to study the problems of managing sustainable development of regions. The modern realities of the Russian economy development are characterized by a weak stability of regional socio-ecological and economic systems due to a significant imbalance in reproduction processes. A feature of the modern development of the world economy is that globalization has intensified the processes of regionalization and thereby led to the transformation of mesoscale systems into fundamental self-sufficient economic structures acting as subjects of competition. This situation forces national and regional authorities to actively seek new methods of state regulation of territories in order to increase the effectiveness of management systems.

Keywords: globalization, economic crises, pandemic, competition, regionalization, depressed republics, corporate social responsibility, sustainable development, strategic management.

1 Introduction

In recent years, corporate social responsibility of business has become an integral part in the strategic goal-setting of companies and regions. Successful regions of the Russian Federation annually strengthen the level of integration into global socio-economic processes, which mobilizes them in promoting their corporate transparency, increasing social responsibility and the effectiveness of the final results. For regional companies, corporate social responsibility is a constructive means of social positioning; it allows them to widely express themselves in society, develop and promote their own values, acting as a progressive enterprise, a reliable employer, etc.

Under the current geopolitical situation in the spring of 2020, the quantitative growth of the Russian national economy is almost at its final stage: there are a collapse in energy prices, economic sanctions, high volatility and devaluation of the national currency, pronounced limited resources in fundamental development of the real economy due to underdeveloped financial markets and others. All this makes it impossible to further use the previous economic course and established tools; a different, qualitatively new level of development of enterprises, regions and the country as a whole is necessary.

Mutually beneficial cooperation between regional business, government agencies and society should act as a starting point for growth in the current realities; in our opinion, this will be allowed due to creation of higher social capital. The need for successful solution of macroeconomic problems at the state level, regional optimization of social and business processes, increasing demand for Russian products and services by society appear as the cornerstones of a new vector of sustainability for the development of the Russian national economy. [Zakharova EN, 2014]

The basic interests of business structures and authorities are largely similar in their content in principle, because both parties have an interest in ensuring socio-economic and environmental stability, because this is the basis of their successful and long-term functioning. In our opinion, it is precisely this commonality of interests of the parties in question that acts as an objective prerequisite for their effective mutual cooperation in this field. Given the fact that civil society institutions in the Russian Federation are still rather poorly developed, the authorities and business structures themselves determine the vector and tools for sustainable regional development at the present stage (Misakov et al., 2017; Zakharova, 2015)
Experts note that a number of North Caucasian regions are unsuccessfully trying to use the concept of corporate social responsibility. However, the transformation of the external and the internal business environments that is being carried out for this, as a rule, does not have a conceptual systemic character and is poorly linked to the main provisions of the territorial socio-ecological and economic development strategy (Gerter & Misakov, 2012; Misakov et al., 2017, Misakov et al., 2018).

It should also be recognized that today there are many developments to ensure sustainability at the mega- and macrolevels; nevertheless, taking into account the peculiarities of Russian realities, there are no clear ideas about the methods and ways of strategic management of the sustainable development of regional socio-ecological and economic systems. This suggests that there is an objective need to develop regional sustainable development concepts that take into account the corporate social responsibility factor, which prompted us to tackle this research topic.

2 Research Methodology

The theoretical and methodological basis of our study was the scientific works of foreign and domestic researchers on the issues under consideration. The scientific analysis was based on the theory of management of socio-ecological and economic systems, the regional economy, the theory of sustainable development, contracts, interest groups, human capital, corporatism, social partnership, and state regulation.

In the course of the implementation of the assigned tasks, we used general scientific research methods, including synthesis and analysis methods, systems approach, modelling, system-situational method, empirical generalization, etc.

The information base of the study was the legislative and regulatory acts of the Russian Federation and its regions, state statistics data of the Russian Federation and its regional divisions, information from the global Internet, etc.

3 Research Results

An analysis of the special literature on the study of corporate social responsibility allowed us to identify a certain terminological inconsistency, mainly due to the fact that researchers belong to different scientific schools with their own specific vocabulary and a wide variety of methodological approaches to this phenomenon (Dembitsky, 2004; Kostin, 2005).

In our opinion, one of the most popular mistakes is the confusion of the concepts “social responsibility of business” and “corporate social responsibility”. Indeed, they are identical at first glance,

because in both cases there is a phrase “social responsibility”. However, if in the first case we are talking about business as a whole or as a set of entrepreneurial structures, then in the other only about corporations, which are just a certain form of business. In our opinion, it is logical to consider the social responsibility of business based on this provision as a concept of interaction between government agencies, business structures and civil society; corporate social responsibility is only an operational component of this aggregate mutual cooperation regarding corporations, i.e. individual units of business structures.

We consider it appropriate to give an interpretation of corporate social responsibility adopted by the United State Business Corporation for Social Responsibility: “Corporate social responsibility involves a business organization that meets and even exceeds ethical and legislative norms and social expectations." (Ivchenko, 2013).

Approximately this approach is taken by the European Commission and the World Council on Sustainable Development. When interpreting this concept, various researchers point to the need to include social and environmental issues in it. It always refers to the obligations undertaken by a company for solving socially significant problems not only within the business group itself, but also outside it: in a municipality, region, and country, and even at the global level (Kostin, 2005; Strizhov, 2007).

Special literature contains many characteristic features of corporate social responsibility, which, in general, can be reduced to its three main components:

- Voluntary solution of socially significant problems;
- Social significance and support for socio-ecological and economic stability in the region;
- Sustainable development of the business itself.

The possibility of combining social responsibility and the need for further formation of the competitive advantages of a corporation using the principles of corporate social responsibility is of great scientific interest now. Undoubtedly, finance, marketing, employee management, risk management, etc. remain the main tools for gaining profit with this form of business organization (Lapina, 2006; Malashenko, 2009).

The benefits of companies in terms of compliance with the principles of corporate social responsibility are that they have the opportunity to create a stable business environment, reduce operational risks, build trust relationships with their partners, and consumers, to form a new image of the company, to increase the efficiency of marketing activities, increase labour productivity and hence sales, to increase capitalization, etc (Abramov, 2005; Kozitsyn, 2015; Simachev, 2016).

It is noteworthy that although the corporate social responsibility policy is not directly focused on ensuring profit, nevertheless, it causes an increase in additional competitive advantages, as a rule. Social, charitable and other similar programs implemented in the regions by the company contribute to a more pronounced recognition of its brand, increase interest in its products, etc. Already there are many studies confirming the willingness of buyers to purchase primarily the products of those companies that send part of the proceeds from their sale to charity.

The companies which use the concept of corporate social responsibility manage themselves to strengthen team cohesion, develop transparency and be more investment attractive, etc.

It is clear that the implementation of corporate social responsibility in the constituent entities of the Russian Federation is affected by many multidirectional factors, including the presence of a high level socio-economic differentiation of regions. So, for example, depressed North Caucasian republics and industrialized regions differ by 40-45 times in terms of their GRP, by 10 or more times regarding the ratio of per capita cash incomes to the cost of living, by 3-4 times regarding unemployment, etc (Gerter & Misakov, 2012; Zakharova, 2015; Misakov et al., 2018).

The derivative of such economic inequality of the regions is social inequality in all spheres of their life, which is clearly manifested in the level of income of the population, in the duration and quality of life, the general state of healthcare, education, and social infrastructure.

Chronic economic inequality of the regions is accompanied by a significant increase in per capita expenditures of only a small group of regions, on the one hand, and the impoverishment of every second subject of the Russian Federation, including all North Caucasian republics. It is clear that it is not easy for the ideas of social responsibility to find their adherents in corporations and to apply them everywhere in their activities in these conditions.

All the reasons (both objective and subjective) that impede the development and implementation of the concept concerning business structures’ social responsibility have their federal or regional expression (Lapina, 2006; Territory development: the role and responsibility of business. Materials of an expert survey // Business and Society, 2008).

Among the factors of federal severity, we can note the chronic unpreparedness of society to consider corporate social responsibility as an important component of social development; there is the lack of focus of tax and civil legislation on ensuring favourable conditions for the involvement of the concept under consideration; there are also ambiguity of the economic situation in the country and opacity of corporate business in it, etc.

To analyse these and other factors, a large-scale study “Corporate Social Responsibility: Public Expectations” was conducted. Typically, every second respondent expressed their doubts about the ability of domestic companies to be actually socially responsible; 85% expressed no confidence in such assurances of business representatives, etc (Corporate social responsibility: public expectations, 2003).

Approximately the same results were obtained in studies conducted by the Public Forum of Strategic Planning Leaders (Malashenko, 2009).

In our opinion, such an undeserved attitude to the importance of implementing the corporate social responsibility concept can be explained by the low "corporate" literacy of the respondents. So, during our research in the republics of the North Caucasus, practically none of the respondents was familiar with the UN Global Compact principles, with the content of such international standards in the field of sustainable development and reporting as GRL and AA 1000s, etc.

The existing preferences of the current Tax Code of the Russian Federation are not systemic in their nature, but only affect some aspects regarding the employment of persons with disabilities... Undoubtedly, it is necessary to promptly adjust tax and civil laws regarding the social activities of non-profit organizations.
In the course of the study, we analysed the results of the VCIOM (All-Russian Public Opinion Research Centre) survey “Corporate Charity in Russia: Assessing the Performance of the Existing Institutional Environment” (Depository of social programs, 2017). The authors concluded that the ambiguous socio-economic situation in the country is among the factors hindering the implementation of the concept of socially responsible business behaviour. It should also be noted the preservation of the raw material orientation of the Russian economy, which does not allow to develop the production of final consumer goods.

It is clear that this situation hinders the growth of long-term investments in industry, not to mention the factors associated with the social sphere. This is accompanied by a natural population decline, inflation, a fall in real incomes, etc.

It should also be noted that most Russian companies are non-transparent and even closed to society; this does not affect their image in the best way. This also contributes to the formation of various risks, including the risk of conflict with the population, for example, due to information about the salary and social programs of corporations devoted exclusively for their employees; risk of conflict with tax authorities about the nature of social investments, etc.

In the course of the study, we were convinced that local authorities and administrations do not have a clear understanding of the essence of social responsibility of companies in all the North Caucasian republics. There are many among them who consider this activity of companies only as a desire to mislead interested parties in order to extract additional profit...

On the other hand, the lack of strategic thinking, a certain disunity and civic immaturity are very often manifested in the companies of the region themselves.
The peculiarity of the formed market relations in the depressed agrarian-oriented republics of the North Caucasus is that most enterprises do not have sufficient financial stability even with favourable financial reporting indicators. This is compounded by increasing competition in the regional market from large companies with a developed federal sales network.

If regional authorities do not take strategically justified measures promptly, there is every reason to talk about the reality of the final exclusion of small and medium-sized businesses out from industries with a high level of profitability (Kostin, 2005, Ugurchiev et al., 2018).

It is necessary to point out among the other characteristic features of the position of the regional business, that there is a lack of trust in the authorities and self-government due to their chronic corruption and indifference to the problems of business structures, the lack of methodological, organizational and informational support at the regional level regarding the implementation of a model of socially responsible behaviour.
In the course of the study, we examined various characteristics of the combinations of interaction between companies and regional authorities in the North Caucasus republics (Table 1).

Table 1. Description of options for interaction between companies and regional authorities

№	Variants for interacting with the authorities	Number of companies	Share of total number%
1	Support was not provided and was not received	12	10,9
2	Support was provided but was not received	42	38,2
3	Support was provided and was received	37	33,6
4	Support was not provided, but was received	19	17,3
	Total	110	100

The results obtained eloquently indicate the existence of a large number of companies that systematically provide support to local authorities and management and in return receive almost no support from them ...

In our opinion, this is the essence of the on-going regional policy regarding the support of business structures.

Analysis of the current situation in the North Caucasus republics regarding the implementation of the corporate social responsibility concept allowed us to develop a number of main directions for its implementation:

1. Regional authorities and administrations should:
- Actively stimulate the development of civil society institutions;
- Form a favourable public opinion regarding socially responsible companies, taking into account their constructive contribution to the socio-economic development of the territory;
- Form and structure relationships with companies and public organizations in the field of sustainable development and joint liability by concluding social partnership agreements involving the refusal to use coercive measures against companies in fulfilling additional social obligations;
- Develop and implement special targeted programs and social investments in the socio-environmental and economic spheres in cooperation with interested organizations.

2. Corporations and their associations should:
- Establish partnerships within the local business community, as well as with governing bodies of public organizations and the media, in order to jointly develop a consolidated approach to the implementation of corporate social responsibility in the region;
- Actively participate in the planning and implementation of regional and municipal social programs.

3. Public organizations and non-profit organizations must:
- Actively develop and implement grant programs for socially responsible companies;
- Provide legislative and informational support to social initiatives of government and business.

It is clear that such partnership acting as the basis for mutually beneficial cooperation in the context under consideration will effectively serve the interests of all aspects of social development, neutralize possible conflicts, and ensure a balance of interests of all participants.

4 Conclusions and Proposals

One of the factors of sustainable regional development is the proper implementation of corporate social responsibility. We justified that it is advisable to consider corporate social responsibility as an effective mechanism for the development of a company, which serves as an effective tool for building sustainability and competitive advantages both for the company itself and for the entire regional socio-ecological and economic system.

In the course of the study, we found that the practice of organizing corporate social responsibility that has developed in the depressed republics of the North Caucasus has a number of characteristic and distinctive features such as unevenness and size differentiation in industrial development; a specific range of stakeholders and driving forces with a predominance of the clan component; dominance of state structures; the presence of their own trends in on-going social programs, etc.

In the course of our study, methodological approaches were developed by us to build a strategy for the sustainable development of the regional socio-economic system, taking into account the influence of the business structures' social responsibility factor; priority directions for increasing the socio-economic efficiency of measures to create a corporate social responsibility system in depressed labour-intensive republics of the North Caucasus and recommendations on its targeted use for sustainable development of the region are suggested.

An algorithm is proposed for the interaction between regional authorities and government, corporations and civil society with the allocation of the functional responsibilities of each side based

on compliance with new principles of mutually beneficial cooperation. In our opinion, it can be considered as one of the effective options for the interaction between socially responsible companies and regional authorities and the community in the field of management of sustainable territorial development. Using this algorithm will increase the effectiveness of managerial actions aimed at ensuring the growth of well-being of residents in the region, improving the environmental situation and enhancing the competitiveness of the region.

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METHODS AND APPROACHES IN INTERACTIVE LEARNING

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Abstract: The transformations taking place at the global level bring changes to all spheres of human activity, including the educational system. The article emphasises the relevance of the use of interactive forms of education, analysing the concept of interactive learning. This article also presents the list of the main forms and technologies of interactive learning, with offering the order of the interactive classes. Among the types of work in interactive learning are following: brainstorming, interactive lesson using audio and video materials, ICT tools, round table (discussion, debate), project method, presentation, case study, business simulation games, role-playing games, such as aquarium.

Keywords: interactive learning, brainstorming, ICT, round table, simulation games, role-playing games, project method, active learning, case study, problem lecture, didactic games, educational process.

1 Introduction

Socio-economic transformations and information development of the whole world community necessitates the revision of the established traditional educational system. This trend reveals itself in the form of contradictions between the need for human's mastering of new areas of knowledge and the difficulties of their mastering in its entirety. In this regard, of current importance are the questions of development of educational system of the Republic of Kazakhstan in the context of integration into the world educational space, development of creative thinking, introduction of scientific achievements in compliance with their necessity, creating an opportunity for transforming a student into a subject of own activity. Only a specialist who obtained high-quality education is able to become an active participant in economic, social and cultural development of society.

The up-to-date issues of the educational policy of the Republic of Kazakhstan include improvement of the professional training of specialists, total updating of the scientific and methodological system of education, elaboration of forms and methods of education, narrowing the gap between the real level of specialists' training and demands from employers, ensuring the continuity of education, analysis of the foreign experience in education (Mukhametzhanova et al., 2016).

Therefore, a complex and important task of higher education consists in the optimization of the future specialists training process, development of professional skills, formation of a new system of professional orientation, preparation of competent specialists. Training such personnel necessitates activation of the educational process and development of new training forms and methods.

At present, economic theory has begun to pay more and more attention to the importance of the accumulation of human capital as one of the factors that constitute the productive forces of new methods of production in a changing socio-economic formation. Currently, dramatic and promising changes are taking place in the education system of the Republic of Kazakhstan. The transformation of socio-economic relations is taking place gradually and the development of information technologies mainly influences this process (Abykanova et al., 2020a).

As was noted by Yakovleva and colleagues (2014), there are required significant changes in the pedagogical support of the university curriculum, adding to it teaching methods which could provide the training of future specialists with the required comprehensive result. Although the traditional methods of the university educational process (lecture, etc.) are certainly important for professional development, their limitations are increasingly felt nowadays when a complex phenomenon such as competence is formed. The authors highlighted that modern education should focus on the student's independent activity, the organization of self-learning environments and experimental and practical training, where students have a choice of actions and can use initiative.

The task of a fundamentally new design of the content and organization of educational material, the pedagogical activity of the teacher and the educational work of the student in the computer environment comes to the fore in the educational system (Abykanova et al., 2020b).

As noted Pradono and colleagues (2013), comparing with the previous generations of students, the digitally-native students tend to be more active experimental learners, more proficient in multitasking and strongly dependent on communication technologies for accessing information and for interacting with others. Thus, the interactive learning methods seem to be more relevant today than ever before.

Dynamically developing market conditions necessitates rethinking of theoretical approaches related to the professional training of the youth, increasing its creative potential and competitiveness in the labour market. The solution to this global problem is determined by the implementation of a wide range of measures to improve the educational system. Interactive pedagogy has become deeply connected with such principles and trends as the technologization of the educational process, informatization, humanization, globalization of education, individualization of learning, improvement of forms of independent work, pedagogy of cooperation, the collective way of learning, etc. Obviously, the interactive form becomes a key element of the didactic structure of the lesson, which allows to organically combine seemingly irreconcilable opposites (Shumskis, 2017).

New education paradigm predetermines a change of priorities – from the traditional assimilation of ready-made knowledge during lecture and seminar classes to the independent active

cognitive activity of each student. Moreover, the student's involvement in the active cognitive process should be accompanied by the assimilation of knowledge and a clear understanding of it, where, how, and for what purposes this knowledge can be applied in future professional activities (Tulenova, 2020).

In order to update the education system and switch it to a competence-based basis, it is necessary to revise the training model itself. Three major models are identified:

- passive model: student is an object of influence, s/he listens and looks;
- active: student is a subject of learning, s/he works and gets knowledge independently and creatively;
- interactive: learning is understood as an interaction between a teacher and a student.

Undoubtedly, the transition from passive to active models is necessary, and this transition is almost completed, but the most productive is an interactive model of learning, since students, thanks to the use of this model, learn not just to apply the knowledge obtained, but also to constantly look for new, upgrade the already accumulated profession-related knowledge (Krylova, 2016).

With passive (traditional) model of training, the educational situation is often realized in the following way: "teachers expend a lot of energy preparing lectures, they must read various texts and synthesize the information, pick out the most important points and organize them in a cohesive manner, write lecture notes, and then deliver the information to students who sit passively often thinking of everything but what the teacher is saying" (Hurst et al., 2013).

This article analyses the methods of interactive learning, which shifts the focus on each student's potential and development of the cognitive skills of the future specialists.

2 Materials and Methods

With the introduction of a competent approach to training, the urgent task of higher education is to develop students' applied skills. The question of activating students' independence and proactiveness is one of the most important problems of modern methodology of teaching special disciplines, pedagogy and psychology. Productive work of students in the higher educational institution should form not only solid knowledge, but also the ability to use them in various situations, independently acquire knowledge, shape experience in solving problem situations. The development of independence and proactive attitude does not happen by itself, it is the result of purposeful interaction and organization of the pedagogical environment, i.e. the use of pedagogical technology. The key ones are related to the use of active or interactive learning methods.

The aim of this article is to study the learning methods that turn the classes in the higher educational institutions into more effective and productive for students. The methodological framework includes the following methods: theoretical, analysis of pedagogical and psychological literature on the studied problem; analysis, synthesis, generalization, classification of information; empirical methods.

3 Results and Discussion

The activation of the educational process is interpreted as the construction of such learning process, which involves the organization of the educational process on a scientific basis, creating conditions for creative thinking, research work of students, generates students' interest in their future specialty, etc.

In this regard, among the requirements for university teachers are the ability to work under new conditions, effectively use interactive methods, the ability to correctly convey their thoughts, prove their point of view and capacity for dialectic argumentation.

The success of the educational process for students is ensured by the implementation of:

- interactive methods;
- relationships between teachers and students based on partnership and cooperation.

Given these features, an important issue today is the training of future teachers in accordance with the requirements of modernity. The paradigm of education at the world level requires the focus of education on the result, on the student's personality, the construction of learning methods based on interpersonal relationships.

The fact that Kazakhstan has chosen a democratic path of development increases the role of society in decision-making. In this area, methods that increase student activity are called interactive. These methods, which seem simple at first glance, have their own peculiarities and difficulties.

The term "interactive" means to actively interact or be in a dialogue mode with something (for example, a computer) or someone (a person) (Mierin et al., 2015).

Interactive learning is the key to active interaction between the student and student group with the teacher in the dialogue mode. This contributes to the situation when all students are involved in the cognitive process, having the opportunity to evaluate their knowledge and express their attitude to the studied objects. As emphasised Krusche with co-authors (2017): "interactive learning tightens the relationship between content delivery and problem solving in class by integrating multiple, small units of content delivery and content deepening through exercises."

In other words, the word "interactive" implies joint activities, establishing a dialogue. And "interactive learning" refers to learning based on joint communication, learning through dialogue, the relationship "teacher-student", "student-student", "self-trained" in the following formats: conversation, dialogue, discussion, joint actions (A. Subocheva, & O. Subocheva, 2014).

In the course of dialogue-based training, students learn to think critically, solve complex problems based on the analysis of circumstances and relevant information, weigh alternative opinions, make thoughtful decisions, participate in discussions, and communicate with other people. To do this, the classes are organized in pairs and groups, research projects, role-playing games are used, documents and various sources of information are processed, and creative works are used. The student becomes a full participant in the educational process, student's experience serves as the main source of educational knowledge (Kaspina, & Plotnikova, 2016).

Rüütmann and Kipper (2011) emphasized that real-world activities often involve analysis, synthesis and decision-making behaviours in the cognitive domain, organization and characterization behaviours in the affective domain, and articulation and naturalization behaviours in the psychomotor domain. These behaviours are not learned by memorizing and rapidly and automatically reassembling them into a whole. Instead they must be constructed by learner's own attempts to use personal experiences and past learning to bring meaning to and make sense out of the content provided.

According to Gleason and colleagues (2011), it is important for teachers to make a transition of their concept of learning from simple knowledge acquisition, with learners memorizing by rote, toward more consequential knowledge construction with application of skills. Extending learning to include knowledge and skill applications can require a substantial change in how teachers both understand and approach the teaching-learning process. This transition moves from an instructor-centred and often lecture-based teaching format toward a learner-centred

teaching format that may include discussion and case-based applications.

The functions of a teacher in higher education are not limited to the mere transfer of scientific knowledge (using passive teaching methods), they also include the choice of an optimal teaching strategy, the use of modern educational technologies aimed at creating a creative atmosphere of the educational process (Pafifova, 2015).

Interactive learning process often involves the use of educational information technology (EIT) tools to facilitate the students' engagement and upgrade the overall process. EIT should be understood as an application of information technology to create new opportunities for transferring knowledge (teacher's activity), perceiving knowledge (student activities), assessing the quality of education and, of course, the comprehensive development of student personality during the educational process. Moreover, the main goal of educational informatisation is to train students for full and effective participation in the everyday social and professional fields of life in the information society (Abykanova et al., 2020c).

Teachers who use various IT tools are convinced that they implement an interactive approach to learning. To define a lesson with the use of interactive learning tools as interactive, that is, built on the practice of active, subjective interaction of subjects of the educational process, is just as wrong as to call a lecture, that touched upon a question of a problematic nature, a problem-lecture, as rightly noticed Korotayeva in her work (2013). Unfortunately, despite the popularity of the concept of "interactive learning", few people understand the essential characteristics of the educational process, built on interpersonal interaction, on a real, rather than virtual dialogue.

It makes sense to differentiate these phenomena in educational practice and identify four main approaches to the organization of educational activities.

1. First of all, there is still an approach that does not include either actual interactive learning or interactive learning tools. Here a student is assigned the role of a passive receiver of knowledge. Fortunately, this approach has recently been increasingly replaced by modern attitudes focused on subject-subject interaction in the educational process.
2. The second approach is based on the interactivity of the educational process, but without the use of multimedia tools: discussions, educational and cognitive dialogues, debates, communication trainings, etc. This direction is defined in didactics as an "active form of learning".
3. More often there are classes that involve the use of interactive learning tools, but without interactive learning as such, i.e. without dialogic interaction. Teacher here uses the possibilities of information and communication technologies as visual material and / or offers students to express themselves in the preparation of independent educational projects based on multimedia presentations, etc.
4. Interactive learning using interactive learning tools. This is the least studied area in modern didactics, but it should be the most popular area in terms of the theory and practice of the educational process (Korotayeva, 2013).

Interactive learning technologies imply such an organization of the learning process in which it is impossible for a student not to participate in a collective, complementary process of learning based on the interaction of all its participants. Students use personal and social capability to work collaboratively with others in learning activities, to appreciate their own strengths and abilities and those of their peers and develop a range of interpersonal skills such as communication, negotiation, team work, leadership and an appreciation of diverse perspectives (Sentham, 2018).

David and Roger Johnson (1989) distinguish five major components of the successful collaboration in the training process: positive interdependence, individual and group responsibility, motivation to cooperate, training in interpersonal and group communication skills, and group processing of learning results. Readiness for pedagogical cooperation and the formation of motives for cooperation, as well as the ability to think and carry out their activities in a team are the main indicators of comfortable learning activities of students.

The main requirements for successful learning with interactive technology are as follows (Kupriyan, 2015):

- Positive interdependence: group members should understand that shared learning activities benefit everyone;
- Direct interaction: group members should be in close contact with each other.
- Individual responsibility: each student must master the proposed material, and each is responsible for helping others. More capable students should not do other people's work.
- Developing teamwork skills: students must master the interpersonal skills necessary for successful work, such as interviewing, assigning, and scheduling tasks.
- Performance evaluation: during group meetings, it is necessary to allocate special time so that the group can evaluate how well it is working.
- Among the advantages of interactive forms of learning based on the goals of developing learning process are the following:

1. Formation of the ability to understand the essence of the subject being studied, the laws of its basic concepts, cause-and-effect relationships, etc.
2. Formation of evaluating activities: self-evaluation of their activities, discussion of proposals from other students, etc.
3. Development of cognitive abilities, i.e. all elements of students' cognitive activity: thinking, perception, memory, attention, imagination.

The difference between interactive learning methods and traditional learning methods is the use of life experience, the disclosure of personal and professional abilities through the analysis and systematization of information (Dvulichanskaya, 2011).

In the traditional system, instruction was teacher-centred and the students' needs and interests were not considered. This is when students' instruction must change into a method in which their needs are considered and as a result of the mentioned method active behaviour change occurs in them (Bidabadi et al., 2016).

Modern higher education training involves not only students' acquisition of knowledge and the formation of professional skills, but also the development of creative and communicative abilities of the individual in the process of active cognitive activity. The practical application of problem-based and developmental learning has led to the emergence of so-called active methods that combine means and forms of learning that stimulate cognitive activity and create conditions for creativity and collaboration between teachers and students.

If the classical teaching method allows evaluating theoretical knowledge more accurately, the interactive one requires evaluating the correct construction of the speech, reasoning, possession of the categorical apparatus, the desire to identify the content of concepts, the ability of students to think logically, make decisions, and offer alternatives that were previously ignored. An important factor is taking an active part in the discussion and preparing the final report on the issue under discussion (Gagach, 2012).

Through interactive methods, students master the following knowledge, qualifications, skills and abilities:

- development of critical thinking and reflective reasoning abilities;
- analysis and evaluation of own ideas and actions;

- independent understanding, comprehensive analysis and ability to select/filter information;
- independent formation of new knowledge;
- participation in discussions, defending own opinion;
- making decisions and solving complex issues.

Therefore, in the process of interactive learning, students should be prepared for the following actions:

- collaboration;
- activity in terms of perception, communication and sociality.

In the process of interactive learning, students learn to formulate their opinions, correctly convey their thoughts, justify their opinions, conduct a discussion, listen to others, respect and consider other opinions and points of view (Dvulichanskaya, 2011).

Interactive training includes the following types of work:

1. Brainstorming: a flow of questions and answers, or suggestions and ideas on a given topic, in which the analysis of the correctness is made after the activity.
2. Interactive lesson with the use of audio and video materials, ICT. For example, online tests, working with electronic textbooks, training software, and training websites.
3. Round table (discussion, debate): a group type of activity that involves a collective discussion of problems, suggestions, ideas, opinions by students and a joint search for solutions.
4. Business games (including role-playing, simulation games, etc.) are a widespread method that can be used even in elementary school. Business role-playing game is a specific type of human interaction that is aimed at simulation of a set reality providing its participants with the necessary freedom of actions within this reality. During the game, students play the role of participants in a particular situation, trying on different professions.
5. Aquarium is one of the types of business game that resembles a reality show. In this case, the given situation is played by 2-3 participants. Other students stay watching and analyse not only the actions of the participants, but also the options and ideas proposed by them.
6. Project method implies the independent development of a project by students on the topic and its subsequent defence.
7. Presentations are the easiest and most accessible method to use in the classroom. The method implies a demonstration of slides prepared by the students on a particular topic.
8. Case study have been used as learning method since the last century. It is based on the analysis of simulated or real situations and the search for a solution. There are two approaches to creating cases: American school offers a search for a single correct solution to the problem; European school, on the contrary, welcomes the diversity of solutions and their justification.
9. Problem lecture, in contrast to the traditional one, implies knowledge transfer that takes place in an active form. That is, the teacher does not present previously prepared statements, but only puts questions and indicates a problem. The rules are drawn by the students themselves. This method is quite complex and requires students to have a certain experience of logical reasoning.
10. Didactic games, unlike business games, are strictly regulated and do not involve the development of a logical reasoning to solve the problem. Game methods can also be referred to as interactive learning methods. It depends on the choice of game. Thus, popular games-adventures, performances, quizzes, humour games are techniques from the array of interactive methods, as they involve interaction of students with each other. The didactic games integrated into the lessons bring variety, joy, prevent monotony and boredom, the integration of the game as an active-participative method in the teaching-learning-evaluation process determines a greater efficiency of the lessons, reflected in the results of the students. to the development of the inventive and creative spirit, of the thought and imagination, of the interest for lessons (Nae, 2019).
11. The basket method is based on simulating the situation. For example, a student should act as a guide and conduct a tour of a historical museum. At the same time, student's task is to collect and convey information about each exhibit.

Conducting an interactive lesson requires following a particular algorithm:

- Preliminary methodological preparation. The teacher selects a topic, situation, identifies concepts, terms, documents to be learned, and selects the appropriate form of conducting an interactive lesson that is most effective for certain group on a given problem.
- Conducting a lesson. Such a lesson includes an introduction, the main part and summing up. The teacher informs the topic and purpose of the lesson, students get acquainted with the problem situation, the goal of which is to achieve its solution, under the conditions and rules of working in groups. Since conducting such an activity should take place after the basic concepts and definitions of a given topic were learnt, based on the knowledge base available to students, the teacher should seek to the assimilation of the conceptual framework, establish the connection between the new material and that was previously learned. The lesson should be lively and interesting, but at a high methodological level. Dialogue and cooperation are the main key concepts at this stage. The lesson is conducted according to a pre-developed scenario. The specific content of an interactive lesson is determined by its type and form.
- Summing up the lesson. This stage begins with self-evaluation of students' activities, reviewing the responses of other students, and emotional evaluation of the lesson. Then the evaluation part is carried out (the attitude of participants to the content aspect of the methods used, the relevance of the chosen topic, etc.). This reflection ends with general conclusions made by the teacher.

Thus, interactive learning methods based on interpersonal relationships meet the paradigm of modern education aimed at "personal development". At the same time, interactive methods not only form the activity of perception and personal significance in learning, but also develop them.

As stressed Atanasescu and Dumitru in their work (2013), the implementation of certain modern teaching tools involves a set of skills and availability from the teacher: receptivity to novelty, teaching style adaptation, mobilisation, desire for self-improvement, reflective and modern thinking, creativity, intelligence to accept novelty and flexibility in the way of thinking.

In modern didactics, the main differences between the forms and methods of active learning from traditional ones are considered to be the following:

- compulsory activation of students' cognitive activity;
- involvement of students in intensive activities for sufficiently long period;
- independent (individual or group) search for a solution to the problem at an increased level of efforts spent;
- creating an emotional and volitional background (tension) for intensive activity;
- continuous direct and feedback links between the training system and students;
- changing the role of a teacher to the role of a manager, organizer of the educational process, consultant;
- subject-subject relations between teacher and student both directly and indirectly through the study group, study text, computer, and so forth (Kupriyan, 2015).

The principle of activity in the learning process is one of the main ones in didactics. It provides for a quality of educational activity that is characterized by a high level of motivation, a conscious need to learn knowledge and skills, active learning and

performance. Initiating and maintaining such activity is the basis for purposeful organization of the pedagogical environment, development and application of pedagogical technologies (Kruglikov, 2012).

The full list of psychological and pedagogical principles of active learning usually includes (Verbitskiy, 1991):

- the principle of simulation of specific conditions and dynamics of production in all the variety of work, social and personal relationships is the basis of active learning methods;
- the principle of game simulation of the content and forms of professional activity as a necessary condition for an educational game that performs training functions;
- the principle of joint activity as the basis of all gaming activities, implemented by involving several participants in the cognitive activity, selecting and defining the characteristics of roles, interests and means of activity, identifying and simulating the most characteristic types of professional interaction of "co-workers" in the game;
- the principle of dialogical communication. This principle is a necessary condition for the achievement of the educational goals. According to psychology, the dialogue generates a process of thinking, because in the conditions of conflicting positions and viewpoints of participants, it is necessary to find an alternative that works for everybody. Only a dialogue, discussion with the maximum participation of all the players can generate a truly creative work. Only with a comprehensive collective discussion of educational material by students can they achieve a comprehensive representation of professionally significant processes and activities;
- the principle of duplicity, which reflects the process of developing real personal characteristics of a specialist in "imaginary" gaming conditions. The developer sets two kinds of goals for the learner, reflecting the real and game contexts in the learning activity. The implementation of this principle is directly related to the motivation of the game participants. Here various types of motivation are intertwined in a complex way: collective and individual, social and professional, productive and cognitive, achievement motivation and procedural.

Hence, it is indisputable that interactive learning forms are the necessary element of today's educational process and many education professionals and students have already assessed their advantages over using only traditional (passive) forms of teaching. Development of students' independence, responsibility for the decisions taken and creative thinking necessary for solving non-standard problems is a priority for the present-day educational organisations.

4 Conclusions

Nowadays, higher education training should provide not only for students' passive acquisition of knowledge and the formation of professional skills, but also for the development of creative and communicative abilities of the individual in the process of active cognitive activity. The practical application of interactive learning involves active methods that combine means and forms of learning that stimulate cognitive activity and create conditions for creativity and collaboration between teachers and students. The conducted analysis showed that interactive learning methods greatly contribute to the development of student's independent thinking activity and lay the ground for the student-teacher or student-student collaboration, and thus bringing educational process closer to the every-day communicative reality of the future specialists when they will be required to seek solutions through teamwork. During such interactive classes, students share their knowledge and opinion, jointly developing the right solutions. The interactive learning forms increase students' motivation and thus enhances the productivity of the educational process. Therefore, successfully combining the traditional and interactive learning methods increases the involvement of students into the learning process and contributes to the development of students' independence.

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IS THERE A ROLE OF HUMAN CAPITAL IN MONETARY AGGREGATES - EVIDENCE FROM SOUTH ASIAN COUNTRIES

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Abstract: The paper addresses the money demand function for three South Asian countries India, Pakistan and Sri Lanka. The theoretical underpinnings are derived from portfolio demand for money. This explains the role of human wealth as a determinant of demand for money in addition to the traditional scope and scale variables. The johansen cointegration test confirms the existence of long run relationship between real demand for both narrow (M1) and broad money (M2) and human capital index along with other determinants. The long run and short run elasticities reinforce the significant relationship between money demand, income, interest rate, inflation rate and human capital in a dynamic framework. The cusum and cusumsq confirms the stability of the money demand function even after the introduction of structural breaks.

Keywords: Demand for Money, Human Capital, Johansen Cointegration.

1 Introduction

In the restatement of Quantity theory of Money (QTM) in 1956, Milton Friedman emphasized that the theory is not a theory of output, money income or price level, it is the theory of money demand. The real cash balances demanded by the wealth holders are a commodity because they provide services to the wealth holders. Hence money was regarded as asset and capital good, thereby making the demand for money a part of capital or wealth theory. The wealth thus was regarded as an important determinant of demand for money amongst other determinants. Friedman further reinstated that numerous demand studies for money have shown that some concept of permanent real income or wealth is more closely connected with the real quantity of money demanded than is current income. The wealth was further bifurcated into human and non human component of wealth. Money, physical assets and nominal-value assets fell into non human wealth. While human wealth referred to the productive capacities of the human beings (Peng et al, 2017).

Historically, most of the research on the demand for money up until 1980s was carried out by the so-called partial adjustment models in which demand for real money is formulated as a function of a scale variable and a vector of opportunity cost variables. The demand for money models built under this framework for the United States and industrial countries using post World War II data indicated that the demand for money was unstable in the 1970s, which is commonly referred to as the "missing money episode". The "missing money episode" was due to the assumption of a stable velocity and misspecification of the model. On the policy front, it made most of the industrial countries to abandon the monetary aggregate targeting policy framework in favour of inflation targeting. However, in the recent past, this view has changed, consequently, considerable effort has been made in the empirical literature to determine the relation between the long-run demand for money and the key economic factors and the stability of the relationship between these factors and various monetary aggregates. These include among others, (Carlson et al, 2000) for the US, (Hendry & Ericsson, 1991) for the UK and (Hoffman et al, 1995) for the US, Japan, Canada, the UK, and Germany.

There is no dearth of literature on the determinants of demand for money which addresses the specification of the model and discusses the magnitude of the coefficients and their stability. The debate remains inconclusive, as the technological innovation in the monetary sector turns notes and coins and semiliquid money like cheques into card money. A glimpse of the literature pertaining to three countries is as follows.

The responsiveness of demand for money for scale and opportunity cost variables has yielded varied results in different studies conducted for Pakistan. For M2, (Cornelisse & Mertens, 1989) found that the real demand for money is sensitive to call money rate, monthly GNP and expected price increase. Mall, 2013: Fry, 1973: Akhtar, 1974: Khan & Raza, 1989) found the real income to be the significant determinant of demand for money. (Mall, 2013: Hassan et al, 2016) found foreign exchange rate to be another determinant of demand for money both in the long and the short run. Akhtar, 1974: Khan, 1982: Khan & Raza , 1989) found that demand for money is also influenced by interest rate. Fry found expected rate of inflation to be an important determinant while (Khan, 1982: Burney & Akmal, 1990) found that the variability of the expected rate of inflation does not affect the demand for money. (Khan et al, 2000) in a disaggregated analysis found that the narrow demand for money is sensitive to income only while the interest rate significantly affects the demand for broad money while vice versa was observed by (Sarwar et al, 2013, Hassan et al, 2016) rural and urban population shares significantly increase money demand in Pakistan. (Sarwar et al, 2013) found the financial development as an important indicator of demand for money. (Shafiq & Malik, 2018) found that asset price is an important variable that explains demand for money in Pakistan. In case of India, (Arrau et al, 1995) found that the role of financial innovation whether stemming from the introduction of new liquidity services, from a secular process of dollarization, or from regulatory changes is quantitatively important in determining demand for money. (Kulkarni & Yuan, 2006) concludes that the demand for money in India is not effected by the openness policy. (Bharadwaj & Pandit, 2010) concludes that an increase in the real exchange rate stimulates demand for domestic money stock in contrast to the situation that prevailed in early 60s and 70s. (Sahadudheen, 2012) found little evidence for the basic contention that exchange rates have a significant influence on real money demand. In case of Sri Lanka, Iftikar et al (2017) analysis of the determinants of demand for money for Sri Lanka revealed that in the long run per capita GDP, budget deficit, interest rate and exchange rate effect the M2 demand for money. In the short run, the per capita GDP and fiscal deficit remained significant determinants in case of Sri Lanka. reported that highly significant negative coefficient for real effective exchange rate shows that depreciation of the domestic currency increases the value of foreign assets owned by domestic residents, hence, increases the demand for domestic currency (Carr & Darby, 1980: Meltzer, 1963)

The analysis of the sensitivity of the income and interest rate elasticities and their magnitude to different specifications has yielded multiple results for the three countries. The interest elasticity was insignificant by (Hasan, 1987: Khan, 1980) in case of nominal M1 and M2 and significant in case of (Khan, 1980), The magnitude was smaller in short run and higher in long run Mall, 2013: Akhtar, 1974) found that the interest elasticity was

high but not substantially different for two definitions of money M1 and M2. The evidence on the substitution hypothesis revealed that the income elasticity was high and differs substantially for both M1 and M2 (Mall, 2013). revealed that for real demand function, both for M1 and M2, the measured and permanent income elasticities were higher than the ones obtained through the nominal demand function. In another study (Khan, 1980) observed that the results for M1 and M2 were the same. In (Khan, 1982) the long run income elasticity for M2 is greater than the M1. (Khan et al, 2000) found the unit income elasticity for the broad money. In case of India, (Gujarati, 1968) found the income elasiticity was greater than unity in the long run, but the magnitude was smaller in the short run. The interest elasticity was insignificant in both cases (Gupta, 1970) found results contrary to (Gujratai, 1968). The authors found that the demand for M1 in India is interest elastic (Sharma, 1978) revealed that the income elasticity of M1 was about 1.5 and the interest elasticity was between 0.61 and 0.69. (Rao & Shalabh, 1995) and Kulkarni and found similar results. (Bhattacharya, 1974) concluded that for M2, the income elasticities at sample mean levels are 0.47 and 0.52, respectively and considerably lower than unity. In case or Sri Lanka, (Valadkhani & Alauddin, 2003) found that the long-run income elasticity for M2 are greater than unity for Sri Lanka and is less than unity.

Regarding the stability of demand for money the empirical investigations remains inconclusive. (Qayyum, 2005: Mall, 2013: Hassan et al 2016: Tariq & Matthews, 1997: Shafiq & Malik, 2018) using CUSUMSQ and CUSUM statistics showed that the demand function was stable for the period of analysis. Whereas (Ahmad & Khan,1990) found that the money demand function was unstable for both M1 and M2 for the period 1959-60 to 1986-87. Further investigation by adding one fiscal year each time after 1968-69 to 1986-87 revealed that money demand corresponding to M1 is unstable after 1970-71 and money demand corresponding to M2 remained stable till 1979-80 and then became unstable. Sarwar et al (2013) found unstable M1 and a stable demand for M0 and M2. In case of India, (Padhan, 2011) found the demand to be slightly unstable between 2005 and 2006. In (Bharadwaj & Pandit, 2010) the demand for broad money was found to be more stable than narrow demand for money. In (Pradhan & Subramanian, 2002), possibility of regime shifts suggests lack of stability in the demand for M1 (Rao & Shalabh, 1995) showed that the money demand function was stable during the period. In (iftikar et al, 2017), the CUSUM and CUSUMSQ tests revealed that the demand function for M2 was stable over the period under analysis. In (Alessi, 1966) the authors concluded that the demand for M2 was not stable.

The brief overview of the literature accentuates why despite the widespread view that the quantity of money is unimportant to central bankers, research on the demand for money has continued [Duca and Vanhoose (2004)]. The contribution of this study to this ongoing debate is a question that posits is there a role of human capital in demand for monetary aggregates. Friedman gave more importance to wealth in determining the demand for money. He divided wealth in to two components, the human and non human wealth. According to this approach wealth can be held in five different forms: money, bonds, equities, physical goods, and human capital. Each form of wealth has a unique characteristic of its own and a different yield. To date, the human capital component of wealth and its effect on demand for money remained entirely unexplored because of difficulties in quantifying the human wealth (Gerdesmeier, 1996). As pointed out by Knell and Stix (2006), despite the existence of a number of theoretical approaches that suggest the inclusion of (financial or human capital) wealth as an additional explanatory variable for money demand, only a minority of studies follow this suggestion. This study is based on a theoretical model [Anwar et al (forthcoming)] and the Friedman discussion on human capital as follows (Friedman, 1956)

2 Model Specification

According to Friedman, wealth can be kept in five different forms i.e. money, bonds equities, physical non human goods and human capital. Consider now the yield on each.

i) The yield of money is the ease and liquidity etc. The magnitude of this return in real terms per nominal unit of money is directly proportional to the volume of goods that unit corresponds to, or on the general price level, which is given as P.

ii) The nominal income stream purchased for $ 1 worth of a bond at time zero is given as

$$r_b - \frac{1}{r_b}\frac{dr_b}{dt} \tag{2.1}$$

v) Similarly the nominal income stream of $ 1 worth of an equity at time zero is given as

$$r_e + \frac{1}{P}\frac{dP}{dt} - \frac{1}{r_e}\frac{dr_e}{dt} \tag{2.2}$$

iv) The physical goods are similar to equities so their yield is the same as equities except that the yield is in terms of satisfaction rather than money. The nominal value of the yield, at time zero is given as

$$\frac{1}{P}\frac{dP}{dT} \tag{2.3}$$

i) The yield on human capital is defined as w. Since this form of wealth of an individual could not be expressed in terms of market price or rate of return so it could not receive a lot of attention. Still, he included human wealth in his portfolio of assets. Hence w was defined as the ratio of non human to human wealth, or of income from non human wealth to income from human wealth.

Combining these yields gives us the following demand function.

$$M = f\left(P, r_b - \frac{1}{r_b}\frac{dr_b}{dt}, r_e + \frac{1}{P}\frac{dP}{dt} - \frac{1}{r_e}\frac{dr_e}{dt}, \frac{1}{P}\frac{dP}{dT}, w, \frac{Y}{r}, \mu\right) \tag{2.4}$$

Whereas per Friedman, Y refers to the return to all forms of wealth other than money held by the individuals and so $\frac{Y}{r}$ is the total remaining wealth. A number of observations about this demand function are explained by Friedman are as follows.

i)"The general interest rate, r is interpreted as weighted average of the r_b and $r_e$the rates applicable to the human wealth and to physical goods. Since the latter two cannot be observed directly thus the general rate is dropped, assuming that that its impact is taken into account by r_b and r_e.

ii) Assuming that there were no differences of opinion about price movements and interest rate movements and the bonds and equities are considered equivalent except that the former is expressed in nominal units, arbitrage would make

$$r_b - \frac{1}{r_b}\frac{dr_b}{dt} = r_e + \frac{1}{P}\frac{dP}{dt} - \frac{1}{r_e}\frac{dr_e}{dt} \tag{2.5}$$

as the rates of interest are either stable or changing at the same percentage rate, the interest rate on money is given as the sum of real rate and the percentage change of prices.

$$r_b = r_e + \frac{1}{P}\frac{dP}{dt} \quad (2.6)$$

iii) The M is homogeneous of degree one in prices and income.

The equation (2.4) can thus be written as

$$f(\lambda P, r_b, r_e, \frac{1}{P}\frac{dP}{dt}, w, \lambda Y, \mu) = \lambda f(P, r_b, r_e, \frac{1}{P}\frac{dP}{dt}, w, Y, \mu) \quad (2.7)$$

Alternatively,

$$\frac{M}{Y} = f(r_b, r_e, \frac{1}{P}\frac{dP}{dt}, w, \frac{P}{Y}, \mu)$$

$$= \frac{1}{\nu(r_b, r_e, \frac{1}{P}\frac{dP}{dt}, w, \frac{Y}{P}, \mu)}$$

or

$$Y = \nu(r_b, r_e, \frac{1}{P}\frac{dP}{dt}, w, \frac{Y}{P}, \mu) \cdot M'' \quad (2.8)$$

The equation (2.8) is the usual quantity theory of money where *v* is the income velocity. With the theoretical framework of Quantity Theory of Money, the money demand functions to be estimated are specified as follows. This study takes *w* as the productive capacity of the human being as defined by Friedman.

1.Demand for M1

$$M_{it}/P_{it} = f(Y_{it}/P_{it}, R_{it}, INF_{it}, HK_{it}, \mu_{it}) \quad (2.9)$$

2.Demand for M2

$$M_{it}/P_{it} = f(Y_{it}/P_{it}, R_{it}, INF_{it}, HK_{it}, \mu_{it}) \quad (2.10)$$

3 Estimation Technique

According to Granger Representation Theorem (Engle and Granger, 1987), if in the long run stable relationship exists among the non-stationary variables then the dynamic model can be described by Error Correction Model (ECM). The estimation strategy to obtain money demand function consists of three steps. The first step addresses the stationarity and non-stationarity of individual series by applying Augmented Dickey Fuller (ADF) unit root test. Having established the stationarity of the variables, the long run money demand function is estimated by applying the maximum likelihood method. Lastly, a dynamic short money demand function is obtained through the error correction mechanism using ordinary least square (OLS). Further Chow's (1960) analysis of variance test is used, along with Brown, et al. (1975) CUSUM and CUSUMSQ) tests, to test the stability of the estimated model (Basutkar, 2016).

3.1 Johansen Juselius Cointegration

"The concept of cointegration is a powerful one because it allows us to describe the existence of an equilibrium, or stationary, relationship among two or more time series, each of which is individually non stationary. [Banerjee et al. (1993)]". Granger (1981) introduced the theory of cointegration. It was further elaborated by two step procedure in Engle and Granger (1987). The procedure mainly dealt with one cointegrating relationship between two variables. It could not be applied in case of multiple contegrating realtionships between more than two variables. Later, Johansen (1988) and Johansen and Juselius (1990) proposed a residual based test for cointegration which could address more than one cointegrating relationships in multivariate macroeconomic models. Since there are more than two variables, the long run relationship between demand for money and its determinants is analyzed by applying Johansen Maximum Likelihood method. The Johansen procedure starts for vector autoregressive model of the form

$$X_t = \sum_{i=1}^{k} \Pi_i X_{t-1} + \mu + \varphi D_t + \varepsilon_t \; t = 1,2 \ldots . T \quad (3.1)$$

Where X_t is vector of variables included in the model. The error term ε is iid (0, A) disturbance term. μ is a vector of constant terms and D consists of dummies. From this general model, the dynamic error correction model can be deduced using lag operator,

$$\Delta X_t = \sum_{i=1}^{l-1} \Gamma_i \Delta X_{t-i} + \Pi X_{t-1} + \mu + \varphi D_t + \varepsilon_t \quad (3.2)$$

Where $i = 1,2, \ldots l-1$ is the lag length, $\Gamma_i = -(I - A_1 - \cdots - A_i)$ is the short run dynamic coefficient, $\Pi = I - (A_1 - \cdots - A_L)$ is a $(k * k)$ matrix containing long run information. The number of cointegrating vectors $((r)$ is determined by the rank of Π matrix. If matrix has full rank p then X_t is a stationary process, if it is zero then there is no long run information in the data and if the rank $(\Pi) = r$, where $0 < r < p$, there exits r cointegrating relationships between the variables. In this case, the Π matrix is further decomposed into two matrices as $\Pi = \alpha \beta'$. The error correction or adjustment coefficients are reported in α which is a $(k * r)$ matrix, while the long run cointegrating vectors are reported by β' which is a $(r * k)$ matrix. Similarly, the μ vector is further decomposed into $\mu = \mu_1 + \delta_1 t + \mu_2 + \delta_2 t$. The μ_1 and $\delta_1 t$ are the vectors of constant and trend coefficients in the long run cointegrating equation. The μ_2 and $\delta_2 t$ are the vectors of drifts and trend coefficients in the short run vector auto regressive (VAR) model. Incorporating this information in equation 4.3 gives us

$$\Delta X_t = \sum_{i=1}^{l-1} \Gamma_i \Delta X_{t-i} + \alpha \begin{bmatrix} \beta \\ \mu_1 \\ \delta_1 \end{bmatrix} X_{t-1} + \mu_2 + \delta_2 t + \varphi D_t + \varepsilon_t \quad (3.3)$$

The literature discusses five models for appropriate treatment of deterministic components. These include (Johansen & Juseliu, 1990: Johansen, 1991: Hendry, 1995: Enders, 2004) amongst others. The study uses the (Pantula, 1989) principle to determine the trend specification for the cointegration equation. The Pantula Principle compares the most restrictive model with the least restrictive one. The trace statistics are compared with the critical values at each stage.

The existence of the number of cointegrating vectors can be determined using trace test or maximum eign value test. The null of trace test is given as $H_0: rank\ (\Pi) \leq r$, where $0 \leq r \leq \rho$ and ρ is the full rank. It is tested against the alternative hypothesis of $H_A: rank\ (\Pi) > r$. The trace statistics is given as

$$\lambda_{trace\,(r)} = -T \sum_{i=r+1}^{k} \ln(1 - \lambda_i) \quad (3.4)$$

Where λ_i is the eigenvalues of Π matrix.

In case of maximum eignvalue test, the null hypothesis of $H_0: rank\ (\Pi) = r$ is tested against the alternative hypothesis of $H_A: rank\ (\Pi) = r + 1$. The likelihood ratio test statistic for the hypothesis that there are at the most r cointegrating vectors is given as

$$\lambda_{max\,(r,r+1)} = \lambda_{trace\,(r)} - \lambda_{trace\,(r+1)} = -T \ln(1 - \lambda_{r+1}) \quad (3.5)$$

The critical values for both the tests are provided by (Johansen & Juselius, 1990).

In addition to learning about the long run relationship between the variables, the cointegration enriches the analysis by providing a particular kind of dynamic short run model based on long run coefficients. The residuals of the long run model are an important component of error correction model. These residuals are known as error correction terms. The short run equation uses the first lag of these residuals. They measure the divergence form the equilibrium and also provide the speed of adjustment. The existence of $\in_{t-1}$ in the short run indicates that the adjustment to long run variables is not instantaneous. The adjustments are made in the short run to overcome long run disequilibrium. Theoretically, the error correction terms should be negative and significant to validate the long run relationship.

Using Hendry's general to specific approach (1992), the short run coefficients are obtained. In this approach we first construct a general model. The general model contains all the lags of the dependent and independent variables in differnces, dummies and the lag of error term. The specific model is derived by eliminating the most insignificant regressors form the general model. The specific model should satisfy diagnostics tests like Langrange Multiplier Test of Bruesh (Godfrey, 1978). This test is used to check the existence of serial correlation in the residual of error correction term. The specific model should also satisfy the Engle's ARCH LM test to ensure that there is no autocorrelation conditional heteroscedasticity in the residuals of the error correction term. The stability of the specific model can be tested through Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Square of Residuals test (CUSUMSQ) introduced by Brown, Durbin and Evan (1975). The CUSUM test statistic is given as

$$CUSUM_t = \sum_{j=k+1}^{t} \frac{\hat{w}_j}{\hat{\sigma}_j} \tag{3.6}$$

$$\hat{\sigma}_w^2 = \frac{1}{n-k}\sum_{t=1}^{n}(w_t - \bar{w})^2$$

The CUSUMSQ test statistic is given as

$$CUSUMSQ_t = \frac{\sum_{j=k+1}^{t} \hat{w}_j{}^2}{\sum_{j=k+1}^{n} \hat{w}_j{}^2} \tag{3.7}$$

If β changes, the w_t will tend to diverge from zero mean value line. The significance of divergence is analysed by the 5 % significance lines. Any movement of w_t outside critical lines suggests that the parameters are unstable. The difference between CUSUM and CUSUMSQ test is that the former tracks the regular changes in the parameters, while the latter elucidates sudden withdrawal from normalcy.

4 Data and Construction of Variables

The period under analysis ranges from 1960 to 2018. The annual series of narrow money M1, broad money M2, the yield on government bonds and rate of interest on bank deposits is taken from International Financial Statistics (various issue). The annual series of gross domestic product (GDP) and consumer price inflation (CPI) is taken from the World Development Indicators (WDI). The annual series of human capital index draws from the Penn World Table (PWT). According to the literature, the PWT series of human capital index is based on the average years of schooling from (Barro & Lee, 2013) and an assumed rate of return to education, based on Mincer equation estimates around the world (Psacharopoulos, 1994). This is challenging as data required to construct index is very inconsistent. In order to obtain information on the average years of schooling, the data is extracted from population census and combined with school enrollment data. The PWT 9.0 combines both (Barro & Lee, 2013) and the (Cohen & Leker, 2014) alternative dataset for average years of schooling. The human capital index is computed as follows

$$\phi(s) = \begin{cases} 0.134\,.\,s & \text{if s} \le 4 \\ 0.134.4 + 0.101\ \text{(s-4)} & \text{if } 4 < s \le 8 \\ 0.134 \cdot 4 + 0.101 \cdot 4 + 0.068(\text{s} - 8) & \text{if s} > 8 \end{cases}$$

where s is the average years of schooling from either dataset.

The narrow money (M1), broad money (M2), real gross domestic product and human capital index have been transformed into natural log. One of the objectives of taking natural log is to smooth out the time series and reduce the impact of outliers [Madalla (1992)]. The interest rate, inflation rate and the long term government bond yield are taken as such.

5 Results

Following the estimation technique outlined in 2.2, the results of the Augmented Dicky Fuller Test are reported in table 1. Thus all the series are therefore integrated of order 1. The trace test and the maximum eign value tests are used to determine the number of cointegrating vectors. The results are conflicting for narrow money of India and Sri Lanka, and for broad money of Pakistan and Sri Lanka. However, this contradiction generally appears and has been observed in many cases. In case of such situation, the trace test is preferred following (Johansen & Juselius, 1997: Enders, 2014). The trace test is believed to hold more power as compared to maximum eigenvalue test (Kasa, 1992). The existence of cointegrating vector indicates the existence of a long run relationship between the determinants of real narrow and broad money. In other words, the stochastic trend in the real money balances is related to the stochastic trends in the real income, deposit rate, inflation rate and human capital index. The long run coefficients are obtained by using the appropriate lag structure identified in the earlier section. The results of the long run cointegrating vector for narrow and broad money is presented in table 1 and 2 respectively.

Table 1: Long Run Coefficients of Narrow Money

Variables	Pakistan	India	Sri Lanka
lrgdp	1.573222	0.377652	0.699602
lhc	1.033506	2.855596	1.118659
depo	-0.018081	-0.12	-0.031911
inf	-0.010137	-0.0101978	-0.012581

The signs of the coefficients are as per the theoretical expectations. The demand for real money balances are more income elastic in Pakistan as compared to India and Sri Lanka. The high consumption per gross domestic product has been the highest in case of Pakistan during the observed time period. The high propensity to consume leads to high sensitivity of the real money holdings with respect to income. The low responsiveness of money demand with increase in income has been observed in India and Sri Lanka. Both these countries have lower consumption per gross domestic product than Pakistan. In case of India, during the period of analysis, there is continuous declining trend in household consumption per gross domestic

product. As human capital increases by one percent the demand for real narrow money increases unvaryingly. The elasticity of money demand with respect to human capital is highest in case of Sri Lanka as compared to India and Pakistan. Thus as this form of wealth increases the representative agent may desire to increase his holding of broad money by an equal amount. This has been discussed by Friedman, (Cagan, 1956). As the theoretical model [Anwar et al (forthcoming)] points out, income is a function of human capital. Since with more human capital, the individual can earn more income. Thus as real income increases, the individual can afford to hold more of liquid money. We can also say that as the rate of return to education increases, the individual is inclined to invest more in human capital as compared to other assets. This leads to an increase in the demand for real money balances. Interestingly, the literacy rate is the highest in Sri Lanka during the period of analysis which explains the high elasticity. The deposit rate and the inflation rate negatively affect the demand for real narrow money. The increase in the deposit rate inclines the individuals to substitute the real narrow money for bank deposits that have a higher rate of return as compared to the liquid money. Thus the desired real cash balances decreases. However, the magnitude is small as compared to income elasticity. Similar observations were made by (Ahmed & Rafiq, 1987), Goldfeld et al, 1973: Hasan, 1987: Akhtar, 1974: Khan, 1980). The nonexistence of financial markets outside commercial banks leads to little or no substitutability between money and other assets. The low level of financial literacy also leads to low interest elasticity of money balances. The increase in general price level leads to a decrease in value of real money balances. Thus higher inflation instigates the individuals to bring about a portfolio change. The individuals then substitute real assets for narrow money and financial assets. Thus the individual prefers to hold less of liquid money. The dummy variables enter as exogenous variables in the cointegration equation. Similar is observed in the case of broad money as shown in table 2.

Table 2: Long Run Coefficients of Broad Money

Variables	Pakistan	India	Sri Lanka
lrgdp	1.432987	0.367054	1.351252
lhc	1.08079	0.947651	1.41756
depo	0.04426	0.147381	0.020411
inf	-0.02205	-0.054581	-0.040744

The signs of the coefficients are as per the theoretical expectations. Still, two results are worth noting. The demand for real broad money balances are more income elastic in Pakistan and Sri Lanka as compared to India. There is unit elasticity of real broad money with respect to human capital in case of Pakistan and India. The elasticity is highest in case of Sri Lanka. The continuous decline in the level of employment in Sri Lanka during the period under observation explains the high elasticity. The individuals are inclined to invest in human capital as compared to physical assets with long term yields. The deposit rate positively effects the demand for broad money. The increase in the deposit rate provides an inclination to the individual to increase the demand for broad money which includes saving deposits. Secondly, the broad money thus yields a greater return to the individual. Thus the desired level of broad money increases. The positive correlation between short term interest rate and broad money was also observed by Knell and Stix (2006). The positive relationship was also reported by Khan et al (2000) for quasi money and by Khan and Hye (2013). The magnitude is smaller than real income. Thus the demand for real money balances is less interest elastic.

The short run dynamic error correction model (ECM) of the demand for real narrow and broad money. The residuals of the long run cointegrating function, known as error correction terms (ECM) are an important determinant of the short run equation. These measure the divergence between two periods and also give the speed of adjustment towards equilibrium path. The ECM is estimated by Ordinary Least Square (OLS) following Hendry's "general to specific "strategy (1992). The general model is presented in the first difference of all the variables. These are obtained by analyzing the residuals of the general model. The general model also contains the lag of error correction term, the lags of real money balances, the real income, human capital index, deposit rate and inflation rate. The specific model is obtained by dropping the insignificant variables. The resultant model is given as follows.

Table 3: Short Run Coefficients of Narrow Money

Variables	Pakistan	India	Sri Lanka
ecm(-1)	-0.094792* (0.0490)	-0.01246* (0.0678)	-0.108170* (0.0634)
Δlrm1(-1)	0.125070* (0.0280)		0.460553* (0.0021)
Δlrm1(-2)			-0.258653* (0.0131)
Δinf	-0.003300 (0.0119)*	-0.001470* (0.0102)	-0.003376* (0.0095)
Δinf(-1)		-0.004297* (0.0000)	
d81	-0.068903* (0.0209)		
d82	0.057178* (0.0728)		
d97	0.084393* (0.0046)		
c	0.003050 (08808)	0.042524* (0.0000)	0.067913 (0.1728)

**indicates significance at 5 percent level*

The ECM is negative and significant in all the cases, thus indicating dynamic adjustment of all variables towards equilibrium. The coefficient indicates a very slow adjustment to the equilibrium. In case of narrow money, the lags of real narrow

money balances are significantly effecting the demand for current narrow money in case of Sri Lanka and Pakistan. In case of India, the one period and two period lags of inflation significantly effect the demand for narrow money. The short run coefficients of broad money are reported in table 3.

Table 4: Short Run Coefficients of Broad Money

Variables	Pakistan	India	Sri Lanka
ecm(-1)	-0.065324* (0.0269)	-0.072483* (0.0024)	-0.084636* (0.0066)
Δlrm2(-1)			0.355429* (0.0089)
Δlrm2(-2)	-0.306464* (0.0007)		0.343150* (0.0189)
Δlrgdp(-2)			0.162701* (0.0946)
Δlhc	0.864501* (0.0062)		
Δdepo(-1)		0.015641* (0.0381)	
Δinf	-0.002469* (0.0138)	-0.004667* (0.0015)	-0.003204* (0.0103)
d72	0.245580* (0.0000)		
d81			0.069003* (0.0184)
d06		0.4364* (0.0471)	
c	0.050425* (0.0000)	0.088868* (0.0000)	-0.055701* (0.0681)

**indicates significance at 5 percent level*

The ECM is negative and significant in all the cases, thus indicating dynamic adjustment of all variables towards equilibrium. The coefficient indicates a very slow adjustment to the equilibrium. In case of broad money, the lags of real broad money balances are significantly effecting the demand for current broad money in case of Sri Lanka and Pakistan. The human capital index and lag of real income also contribute in achieving long run equilibrium in case of Pakistan and Sri Lanka respectively. In case of India, the one period lags of deposit significantly effect the demand for broad money. The inflation brings about significant adjustment in all three countries in the short run. The residuals of the short run equation are tested through the standard diagnostics tests.

The stability of the parameters can be seen from the CUSUM and CUSUMSQ graphs as shown below. The parameters are stable. Similar results were obtained by (Qayyum, 2001, 2005).

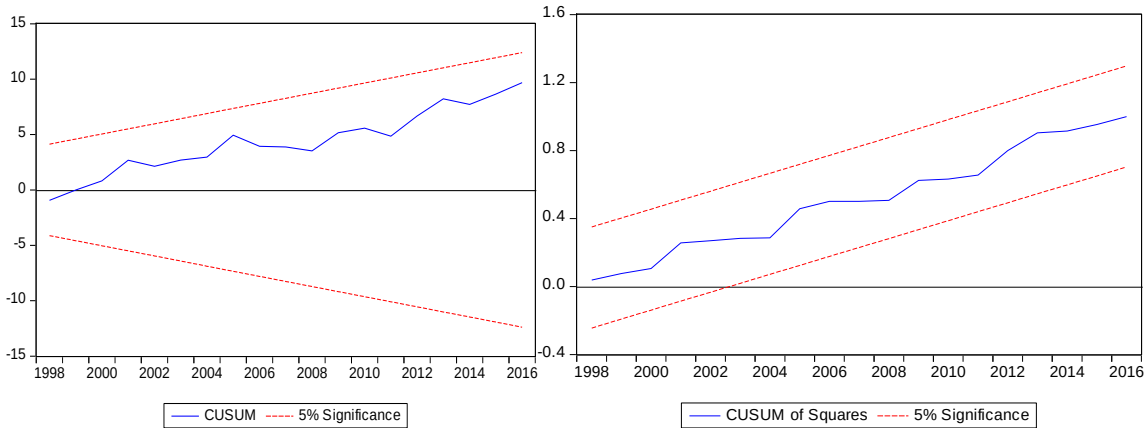

Fig 1: CUSUM and CUSUMSQ of LRM1 for Pakistan.

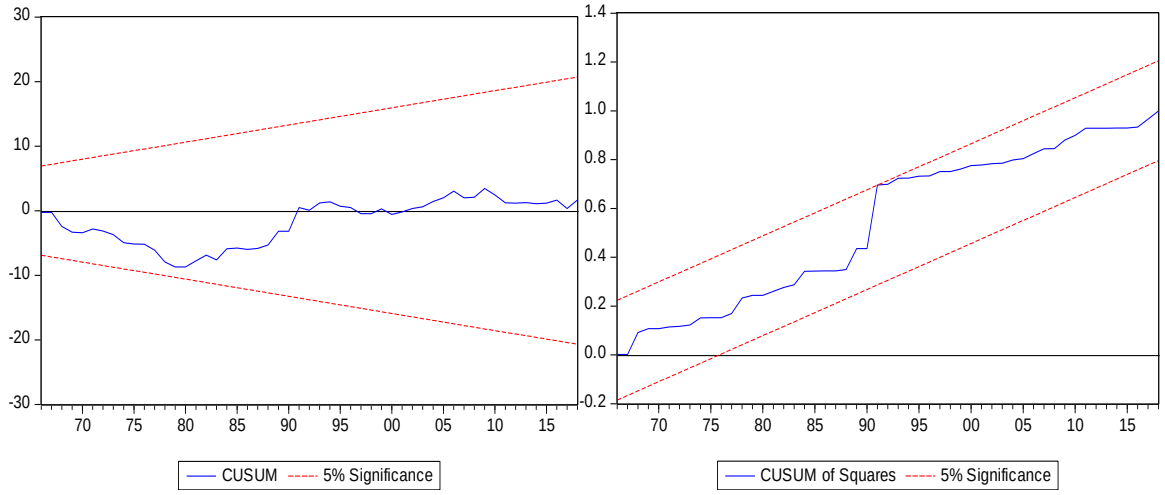

Fig 2: CUSUM and CUSUMSQ of LRM1 for India

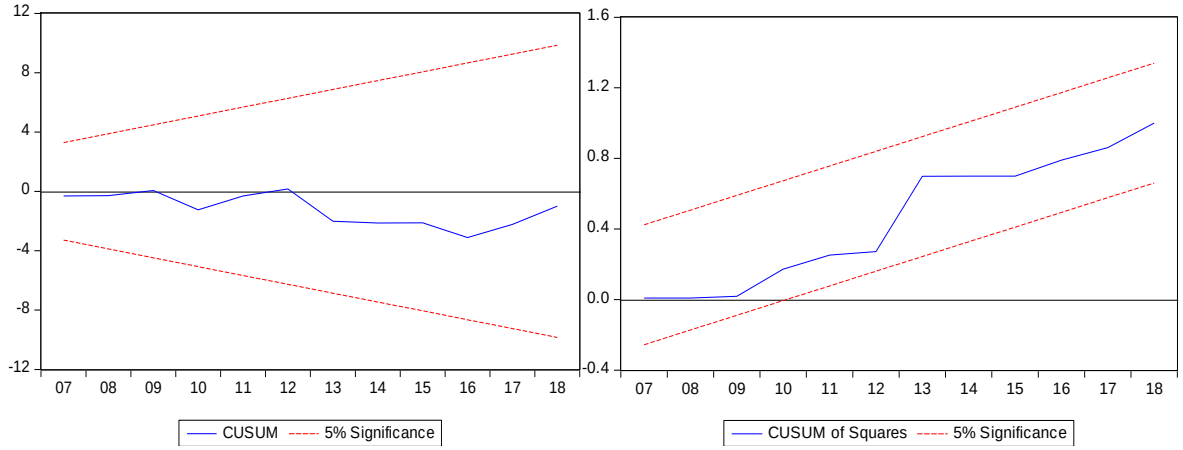

Fig 3: CUSUM and CUSUMSQ of LRM1 for Sri Lanka

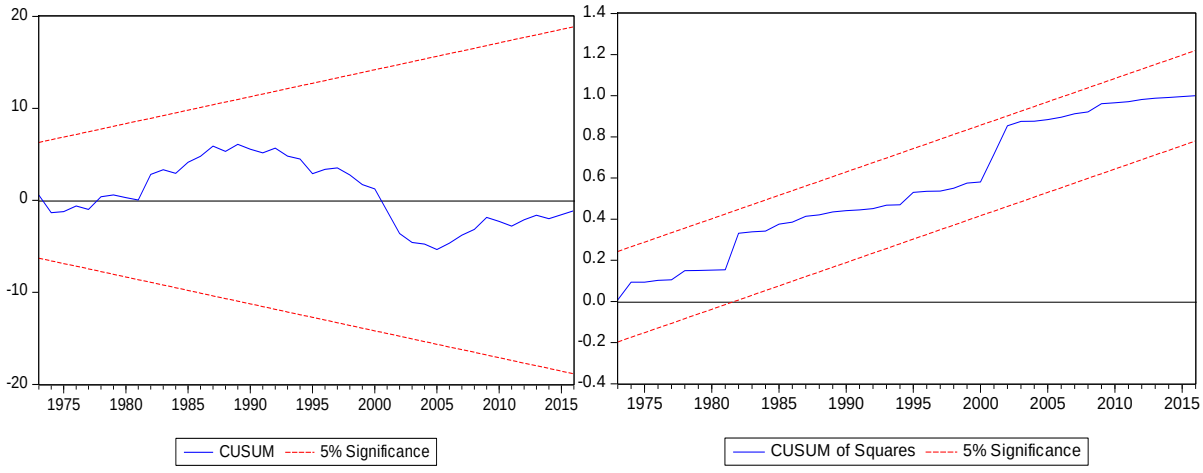

Fig 4: CUSUM and CUSUMSQ of LRM2 for Pakistan

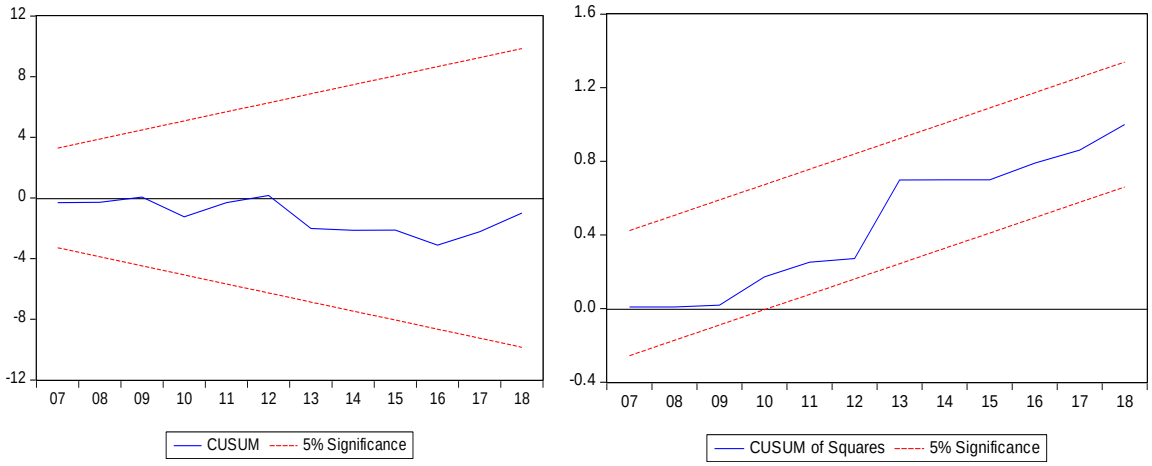

Fig 5: CUSUM and CUSUMSQ of LRM2 for India.

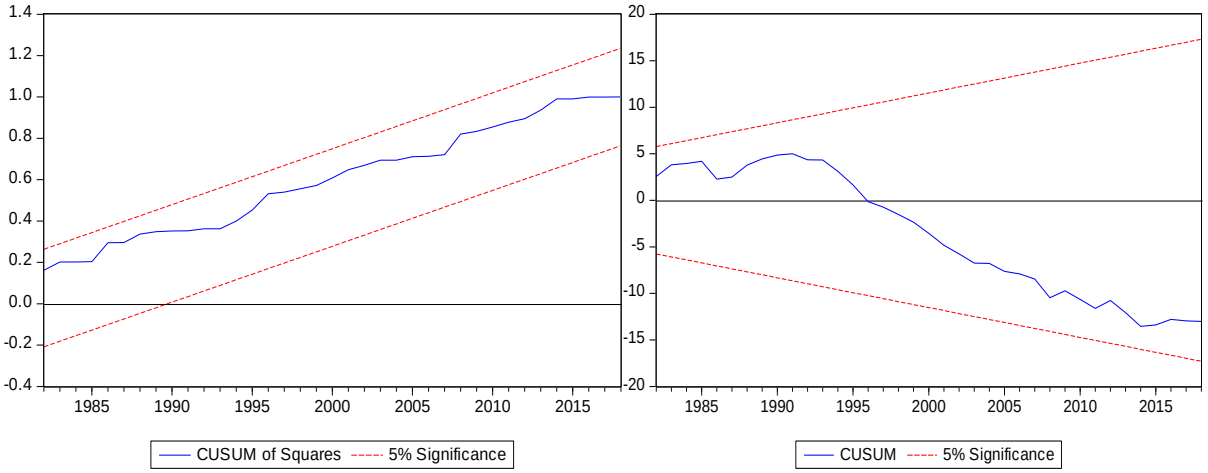

Fig 6: CUSUM and CUSUMSQ of LRM2 for Sri Lanka

"While many East Asian countries have liberalized their financial markets from the early 1980s, the South Asian countries were late starters and delayed reforms until the early 1990s. However, it is difficult to select a date for the structural break because financial reforms were not introduced by all the Asian countries at the same time and with the same intensity. Therefore, a single break date might be somewhat restrictive. (Rao & Kumar (2009). Following this, our study introduced multiple breaks for the analysis. The notable feature of the stability results is that in case of real narrow money balances, the coefficients are stable in case of India and Sri Lanka without any structural break as seen in the fig (1-6). In case of broad money, the structural breaks are significant. Interestingly, these structural break years do no pertain to years that were related to financial reforms in respective countries except for India. The significant breaks are in year 1972 for Pakistan. In india, year 2006 is significant and year 1981 in case of Sri Lanka. The year 1972 in the history of Pakistan was an unstable year owing to a border conflict with a neighboring country in 1971. In sri lanka, 1977- 82 was the period of new policy environment. The country adopted export led industrialization policy and provided incentives for foreign direct investment. There was positive external assistance in the form of high remittances. This contributed significantly to economic growth and the demand for money. The year 2006 in India is considered as the post reform period. In the post reform period the key segments of the financial markets were developed and the interest rates were de regulated. This had an impact on the monetary transmission mechanism also.

5 Concluding Remarks

The researchers have long been interested in obtaining the accurate estimates of demand for money and its stability. There is vast literature that dwells deep on theoretical linkages and latest empirical methods to achieve the objective. Theoretically, the different variables that were considered as important determinants, were channelized in the theoretical models. This helped in reducing the specification bias. Empirically, the new estimation techniques are employed to get better insights into the stability of coefficient. It is imperative for policymakers to understand the relationship between money and its determinants as it helps in ascertaining the rate of monetary expansion that is consistent with the long run price level stability. Also, the interest elasticity of money demand helps in estimation the area under the curve, which aids in assessing the welfare cost of inflation. A stable money demand function is a building block of IS_LM models which in the era of and dynamic general equilibrium models has become less significant.

Nevertheless, following Friedman, this study shown that such a standard money demand function can be augmented with the use of human capital as an important part of the total wealth that effects the demand for money. These theoretical underpinning provide us the fundamentals for empirical analysis. The study analysis the long run relationship between demand for money and its determinants for three south Asian countries India, Pakistan and Sri Lanka using annual data from 1960 to 2018.

The empirical results show that real demand for narrow and broad money is cointegrated with income, interest rate, inflation rate and human capital for all three countries. The existence of cointegration rules out the instability caused by the financial reforms of the 90s. The johansen cointegration results show that the estimated income elasticities are closed to one and the estimated effect of interest rate is negative and smaller than income. The human capital as a part of total wealth plays a significant and positive role in determining the demand for both narrow and broad real demand for money. The CUSUM and CUSUMSQ test provides interesting results. The money demand function is stable in case of real narrow money. in case of broad money balances, the stability of the function does not correlate to the financial reforms of 90s for Pakistan and Sri Lanka

The study provides motivation to use strong theoretical foundations for estimation of money demand function. These theoretical underpinnings can help in identifying non-conventional variables to the policy makers. The results are consistent with the theory and other studies, still a larger sample with more frequencies can be used for further investigation as that would help in splitting the data in the before and after reform periods or for step by step analysis of parameter stability.

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Primary Paper Section: A

Secondary Paper Section: AH, AE

THE PROGRAM OF TRANSFORMATIONS OF DEMOCRATIC PARTY OF TURKEY AT A BOUNDARY OF THE 50TH YEARS OF THE 20TH CENTURY

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Abstract: The article is devoted to the transformation program of the Democratic Party of Turkey. The social and economic reforms in the Republic of Turkey, carried out by the Democratic Party in 1950-s, were an important milestone in the history of the country. Both implemented reforms and declared but not brought to a logical conclusion, they have largely become a reference point for the future. The objective and subjective factors that led to the mixed results of the changes made became largely a criterion for events that were prolonged for several decades to come. In the post-war period, Turkey's political elite faced a number of problems and unresolved issues, both political and socio-economic. The Republic of Turkey lacked basic democratic and constitutional freedoms.

Keywords: history, foreign regional studies, Turkey, modernization, A. Menderes, Democratic Party, etatism.

1 Introduction

The presidency of Mustafa Kemal Atatürk in 1923-1938 was marked by a profound transformation based on six principles of Kemalism or six arrows: Republicanism, Nationalism, People, Laicism, Etatism and Reformism [Teşkilatı Esasiye Kanunu (1924).].

Politically, the country established a one-party authoritarian regime of personal power of M. K. Atatürk and other kemalists represented by the party of power - the People 's Republican Party (NRP).

By the mid-1940s, there was widespread dissatisfaction with the existing order in Turkey. The bureaucracy and the policy of Etatism held back the development of the economy. In this situation, the President of the Republic of Turkey, Ismet Inenyu, abolished the one-party system in 1945 [Avcıoğlu D. (1969), p. 130]. Mindful of the bitter experience of World War I, Turkey avoided participating in World War II. It succeeded in concluding peace treaties of friendship with all parties to the conflict, then declaring neutrality. Having entered the war only on February 23, 1945, Turkey secured its participation in the UN, as well as in American programs of post-war reconstruction. The Truman Doctrine and Marshall Plan provided Turkey with economic stabilization and modernization of the economy, technical rearmament of the army and navy [Brzezinski Z. (1998), p. 28].

The political demands of the opposition, which reflected the immediate interests of the new political elite, were that the political hegemony of the People's Republican Party was a passed stage of development and could therefore no longer continue.

2 Methods

Methodological basis of the research are the analysis and synthesis as general scientific methods of knowledge and also, historical and system and comparative-historical, historical and typological methods of scientific knowledge.

The historical and systemic method allowed analyzing the political system of Turkey, to divide into its components: the state, army, parties, public associations and groups in their relations.

In considering the arguments of supporters and opponents of the policy of the Democratic Party of Turkey, in comparing what Turkish society under M.K. Atatürk and A. Menderes used a relatively historical method.

The historical and typological method in the work allowed identifying the main vectors of development of Turkish society, vectors of direction of the most important changes in Turkish society related to the policy of westernization and liberalization

3 Results and Discussions

The first experience of liberalization deserves special attention and in-depth analysis of how in the Republic of Turkey, with the most brutal authoritarian regime, with the principles of Etatism and Laicism, there was a policy of democratization and liberalization of society as a whole. The politics of the Democratic Party, as well as the period 1950 - "s, have not been sufficiently studied in the history of Turkey.

Concrete and fundamental research on the first experience of political, social and economic liberalization carried out by the Government of the Democratic Party is not available both in Russia and in Turkey itself.

Since the beginning of its formation, the new party has received full support from the ruling URP and Turkey 's commercial, banking and industrial circles, in particular in February 1946, the sponsors sent the party leader J. Bayar a check for 100,000 lire to cover party needs [Akşam», 13.II.1946].

On May 14, 1950, following a direct election, the DP received 53.6% of the vote, and the ruling NDP 39.9%, but thanks to the majority system adopted shortly before the election on the initiative of the NDP, the DP won 408 seats in the Majlis, and the NDP received only 69 [Ahmad F.,Turgay B.(1976), p. 107]. As a result of the victory of the Democratic Party in the 1950 elections, political power in the country was in the hands of representatives of the large urban and rural bourgeoisie. Accordingly, the interests of this bourgeoisie DP and represented and fiercely defended.

With the coming to power of Prime Minister Adnan Menderes, the Government of the Republic of Turkey set a course for an active policy of liberalization and westernization in Turkey. At the end of May 1950 Prime Minister A. Menderes presented and approved the government program in which he promised to ensure the creation of favorable conditions for the activity of private capital, limiting the policy of etatism; It also included measures to improve the economy, raise wages, guarantee the right to strike and organize a trade union movement, and provide freedom of speech and the press. A. Menderes noted that the new government, through the consolidation of national independence, will seek to fully expand economic, political, and cultural ties with the United States, as well as to attract foreign capital, establish friendly relations with neighbouring states, and promote world peace. At the same time, A. Menderes emphasized that his cabinet will punctually implement the American-Turkish agreement signed on the basis of the Truman Doctrine [T. C. Resmi gazette 3.VI.1950]. It was stressed that all measures will be taken to ensure legal security and further develop private initiative, introduce the practice of foreign monetary investments and technical innovations in production.

In the economic sphere, the Democratic government promised to limit state regulation of the economy, support private initiative and attract private and foreign capital to Turkey 's economy in every way possible. The very popular slogans were, "Grow a millionaire in every yard," turn Turkey into a supplier of the world's grain supplier, "and other demagogic calls.

In social policy, Democrats promised to grant broad political and democratic freedoms. Freedom of speech, press, religion and other democratic freedoms.

The Democratic Party in its program also promised a wide range of social reforms. These include the right of workers to strike, the right to form trade unions, social and health insurance, and the granting of pensions.

In villages and villages, the government promised to carry out roads, build infrastructure, and expand planting areas and endow peasants with land and machinery and means of production. Special attention was required: religious issue, working issue, infringement of constitutional and democratic freedoms.

Secularism policies also caused the ire of the majority of the local elderly population, raised in the spirit of the religious state of the Ottomans. It was the principle of laicism that was entrusted with the task of reducing the influence of Islam on society. At the same time, the national policy required the political elite got along with and the masses, as well as the creation of a system of national education [Imamutdinova A.M., Mefodeva M.A., Izmaylov R.I., 2019].

The next social problem to be addressed immediately was that of workers and the trade union movement. The number of hired workers was increasing, but there was no structure to establish relations between workers and employers. The rights and interests of workers were not respected, and there was no one to protect them.

One of signs of the democratic state is freedom of the mass media (MM). In the Republic of Turkey, the media were under a brutal press of censorship. Dissent and journalists who dared to speak up or condemn the ruling regime were subjected to repression. Newspapers and magazines, unwelcome to the ruling elite, closed.

First, DP leaders revised the IUU policy on religion. On June 14, 1950, the DP held a bill in Parliament allowing the reading of "azan" in Arabic. This was followed by the lifting of the ban on teaching religious subjects in both primary and higher education. Construction of new mosques and renovation of old mosques began everywhere in the country with public funds [Dönem Y. (2007), p. 9.]. Soon in 1951, a law promoting religious publications was adopted, and 250,000 lire were allocated for this purpose [Zafer», 30.VII.1950]. These measures have attracted the approval of a large part of Turkey 's believer population.

The next important social transformation in Turkey during the period under review was media reform. In June 1950, a number of amendments to the "Press Law" were adopted, and this reform led to the emergence of liberal publications [Başgil A.(1966)]. The abolition of censorship led to an increase in the number of printed publications, the opening of new newspapers and magazines, and the emergence of new radio broadcasts. The government of the Democratic Party sought, above all, to show its political opponents and friends from the West that they were very successful in instilling Western democratic values in Turkey.

An important and unresolved issue of Turkish society remained the working issue. For tactical reasons, the leaders of the DP criticized the anti-labour legislation adopted by the IUU and promised, through the amendment of labour legislation, to abolish fines, raise wages, reduce working hours, and expand the economic and social rights of workers in every way possible. The DP promised to recognize the right to strike for workers 'unions, provided that they "remain out of political influence" [Korniyenko P (1965). pp. 129-130]. In early 1951, the government promised that the bill on the right of workers to strike would be raised in the Majlis in the near future, but the bill was not passed by the Majlis.

Active DP members economists, professors Muhlis Ete and Scheffik Bilkur published "Turkey's Economic Development Program" [Ete M., Bilkur Ş.,(1950), pp. 9-15]. The essence of the program was in several provisions: the State should conduct and control the economic life of the country, but it should not be an entrepreneur, the owner of enterprises, except for certain large and special industrial institutions, the construction of which requires large investments, the establishment of a State monopoly or the activities of which are of a "popular nature." The State should not use funds collected through taxes and loans to support loss-making enterprises. Industrial facilities should be cost-effective. The State is obliged by all means to promote the development of private industry and to subordinate the activities of State enterprises to this purpose.

The program declared the need to protect the industry that consumes local raw materials, as well as "being profitable compared to the external market... The main slogan of industry "produce as best and as cheaply as possible" [Ete. M.,(1956) pp. 170-175]. Many state-owned enterprises were subject to privatization on favourable terms for private business.

"Etatism," the program said, "is the obligation of the state to start economic activity, as well as to achieve the rapid development of private initiative and capital." [Tunaya T. (1952)] All cost-effective production had to be transferred to the hands of private business, rather than cost-effective and resource-intensive production had to remain in the hands of the state. The private initiative on the economic program was to raise the agricultural sector of the economy as well. "Use of capital and private initiative," use of close contact "with foreign capital and were supposed to increase the profitability of agriculture of the Republic [Miller A. (1948)].

The country's banking sector also required reform. The government of A. Menders pursued an active banking reform, providing its patronage to state and commercial banks and organizations.

The leaders of the ruling party made a call for universal enrichment: "we will grow in every quarter of the millionaire," which was only an encouragement of private initiative and entrepreneurship, which can and should lead the country to prosperity and wealth. It was expected that only defense and metallurgical industries, electricity production, rail transport, ports, communications, forestry, as well as technical training would be left in the hands of the State. However, all these projects have not been implemented for a number of objective and subjective reasons.

In August 1950, A. Menderes's government introduced a bill to the Majlis encouraging foreign investment in the country 's economy. This led to a rapid increase in the rate of production, an increase in the economic indicators of the production sector [Zafer, 05.VII.1950].

Many state-owned enterprises have moved into private hands. The capitalization of production and the transition of public enterprises to the private sector have stimulated the development of the banking system. Banks issued loans for the development of production and the purchase of state-owned enterprises. Foreign capital was actively attracted to the oil industry. American and British oil companies British Petroleum, Mobil Oil, Royal Cottage Shell have become active participants in economic activity in the country [Vdovichenko D. (1966)., pp. 140-143].

However, A. Menderes 'policy of "growing millionaires in every quarter" and universal calls for enrichment have not yielded proper results.

Privatization of the public sector did not take place properly. The foundations of the processing (production) industry were not laid.

Foreign companies that signed agreements with Turkish firms mainly sought to reduce the risks associated with investing in the Turkish economy. Even given state guarantees, foreign businessmen were slow to invest their money in production in Turkey. Whatever liberal laws were passed, whatever A. Menderes did, private foreign capital to Turkey was slow. Rapid and violent flourishing and instant enrichment failed.

The reform policy in the village also faced a number of problems. Agricultural machinery, which provided a number of advantages in terms of manual labour, required petrol, oil and lubricants, and the price of spare parts increased steadily. The tractor park consisted of American and European-made machines, but the supply of spare parts came only from the United States, and there were simply no European models of spare parts machines.

The massive outflow of peasants from the village and the natural growth of the population, despite the increase in the sown area, meant that Turkey was unable to provide itself with grain.

Economically, the reforms carried out by the Government of A. Menderes aimed at industrialization and overcoming underdevelopment, lifting restrictions on state regulation of the market and transferring industrial enterprises to the hands of private businesses have not been brought to a logical conclusion.

During the second cabinet of the government of A. Menderes, the popularity of the ruling party fell sharply, and dissatisfaction with the political regime increased.

This is primarily due to a number of factors, both political and socio-economic. The tightening of the political regime was accompanied by the beginning of repressive policies, with restrictions on democratic and constitutional freedoms. The actions were met with sharp negative criticism, both among the Turkish establishment and within the party itself. The Cabinet of the Government of A. Menderes, which promised broad democracy, began to "tighten the nuts strongly," limiting the rights and freedoms of the citizens of the Republic, which he himself once generously gave. This could not but affect the political popularity of voters, and the growing dissatisfaction and strengthening of the opposition in Turkey.

4 Summary

The political program of the DP contained a number of fundamental reforms in both the political and socio-economic spheres of Turkey.

Considerable progress has been made in the political sphere, including the amendment of the electoral law, the abolition of anti-democratic and constitutional laws and the prohibition of the use of religion for political purposes. A decision was taken on cooperation between political parties and respect for their political freedoms.

After the death of M. K. Atatürk there was a reorientation of the national political elite to a new qualitative level connected with the development of the Turkish economy according to the Western market model. Market reforms required a full range of not only economic but also socio-political changes, both in the State and in society.

With the coming to power in May 1950, the government of the Democratic Party in Turkey, led by Prime Minister A. Menderes, began a new political course aimed at the general liberalization and westernization of all spheres of life in Turkey.

However, by the late 1950s, it became clear that the policy of "economic liberalism" had failed. Inflation is rising in the country; the exchange rate of the national currency is falling. The lack of a competent economic policy inevitably led Turkey to an economic crisis. The Democratic Party government was forced to comply with all conditions and requirements of Western investors.

Rural producers were devastated; the government did not protect the national industry and the rural producer. The national industry was never established.

The large abundance of unresolved social problems, as well as the narrow-minded pro-Western foreign and domestic policies of the DP government, has led to acute social contradictions in Turkish society, which eventually contributed to a rapid rise in protest sentiment among intellectuals and the military, which led to the 1960 coup d'etat.

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Primary Paper Section: A

Secondary Paper Section: AD

THE PRACTICE OF DISTANCE LEARNING

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Abstract. The quantity of advanced education establishments around the globe offering separation training programs has expanded altogether over the most recent two decades, and most nations have seen a development in separation training enlistments. This paper deals with topical issues of the organization of distance learning and its role in the educational environment of Russia. Both positive and negative sides of this form of education in higher education are considered. In the list of positive aspects of distance education, it is necessary to emphasize freedom and flexibility, the opportunity to study at any time of the day, the individuality of distance education systems, a personal approach. Furthermore, the use of the latest computer technologies can serve as an impetus for the development of computer skills for a number of elderly teachers. Unfortunately, the constant written basis of training, the problem of user authentication while testing knowledge, the absence or lack of practical classes in some programs can reduce the effectiveness of distance learning.

Keywords: distance education, distance learning, higher education, new information technologies.

1 Introduction

Distance learning in Russia is no longer a new form of organization of the educational process. At the beginning of 2020, modern realities and the threat of a pandemic forced all Russian higher education institutions to switch to a universal distance learning form. The mobilization took place within a few days: the contracts were drawn up between educational institutions and representatives of the companies providing distance educational services; software packages were installed on personal computers (laptops, tablets, smartphones); training sessions for the teaching staff were held.

What is distance learning, the only possible form of education in the context of the 2020 global pandemic? There are many terminological definitions; however, the following can be distinguished: “distance learning is a complexly organized pedagogical system that can satisfy the educational needs of the population, regardless of its spatial and temporal location in relation to the educational institution” [Abramovsky A.L. 2008, p. 86]. Different points of view were surveyed to recognize standards and instructional methods that undergird powerful web based learning. Three models, for example, Create a social/semantic wellbeing net, Organize addresses specifically and Draw on Schema Theory to associate ideas and substance were inferred [Zorfass, Judith, and Valerie Harlow Shinas. 2018. pp. 268-277].

A separation adapting course in semantics with respect to the points of interest of the course that utilizes current educational innovations was created. Logical and methodic noteworthiness of the investigation comprises in the way that the created online course is an imaginative portrayal of the consequences of methodic and logical exploration work of instructors and students [Skorikova, Tatyana Petrovna, Sergey Sergeevich Khromova, and Natalia Vitalievna Dneprovskaya. 2016: 3467-3476]. The execution of learning investigation may engage separation learning organizations to give constant criticism to understudies and educators. Given the main job of the Open University UK (OU) in exploration and use of learning examination, an exploration shared the exercises gained from the encounters of 42 members from a scope of personnel, scholarly and proficient positions, and aptitude with learning investigation [Bart, Rienties, Tom Olney, Mark Nichols, and Christothea Herodotou. (2020): 178-195].

In Russian and Kazakhstan colleges, e-learning is regularly mixed with the conventional kind of in-class instruction and is known as "mixed learning". A specific absence of examination on the utilization of separation learning in Russian colleges decided the subject of an exploration. Aftereffects of the examination show some intriguing perceptions on the demeanor of understudies and foundation educators to the utilization of e-learning. Likewise, the exploration shows positive consequences of the utilization of mixed learning philosophy in concentrating some broad specialized controls during baccalaureate program [Kireev, Boris, Aray Zhundibayeva, and Aiman Aktanova. 2019].

Elements related with view of the open advanced education foundations' picture from the point of view of DL understudies were distinguished. The investigation shows the multidimensionality of the picture and that the examined foundations' worldwide picture is related most emphatically with their emotional picture. Moreover, the outcomes show that the measure of time that an individual from general society associates with an association doesn't influence her view of that association's picture [Da COSTA, Fabio R., Anderson S. Pelissari, and Inayara VDP Gonzalez. 2018].

The basic standards and practices of separation instruction to comprehend ongoing advancements in the regions of on the web and mixed learning were analyzed. It was contended that standard separation training has not grasped the full collective capability of web based learning. Separation instruction keeps on holding to the standards of self-rule and self-heading [Garrison, Randy. 2009].

The minimum requirement for organizing distance learning is the need for a personal computer and Internet access from both the teacher and the student. Distance learning includes three main blocks: teaching aids, telecommunications, and television and broadcasting channels. The point of this paper is to manage effective issues of the association of separation learning and its job in the instructive condition of Russia.

2 Methods

The paper used the descriptive method applied in philology, logical analysis, a systematic approach, and others.

The scientific and methodical basis of the study was the work of Russian and foreign scientists on distance learning. The methodological base of the study was the work of foreign and domestic scientists [Colareza C.S. 2016; Kentnor H.E. 2015;Larionova V. 2018;Miller E.D. G.E. 2010; Zawacki-Richter O. 2015; Valeeva R.Z., Valeev E.R. 2013; Melnik T.E. 2017; Ainoutdinova I., Blagoveshchenskaya A. 2017; Ainoutdinova I., Blagoveshchenskaya A., Nurutdinova A., Dmitrieva E. 2019; Ainoutdinova I.N., A.N. Khuziakhmetov A.N., Tregubova, T.M. 2017].

The methodological structure of the exploration by Ainoutdinova, I., A. Et al [2019] work lays on a lot of social, educational, integrative, fitness and relative methodologies covering all parts of the two instructors' and understudies' scholarly 5520 exercises upgraded by the necessities and difficulties of the computerized period. A far reaching investigation of specialized, instructive and administrative issues of separation training as a productive gigantic online mode and type of study at college has likewise been given as a vital piece of the work.

3 Results and Discussion

Distance learning in terms of characteristics and organizational aspects resembles correspondence learning, which originated at the beginning of the twentieth century, but has noticeable differences. In the list of such differences, for example, we can single out a free study schedule, expanded opportunities for

communication with a teacher and the use of new information technology tools [Ainoutdinova I., Blagoveshchenskaya A. 2017; Ainoutdinova I., Blagoveshchenskaya A., Nurutdinova A., Dmitrieva E. 2019].

The classes at Russian universities were held in various forms, the first of which was a remote web lesson, during which students received materials for study, assignments on various platforms. Materials for study could be in video, audio or text format, it all depended on the creative approach, capabilities and motivation of the teacher. This form includes individual correspondence by e-mail or in social networks, as well as distribution of information materials and correspondence with the entire virtual study group at the same time using the mailing list. It is also necessary to include here individual counseling from the teacher in solving problematic issues within the discipline, which is traditionally provided through communication in social networks.

The second common form is telepresence, during which a video conference is turned on, teachers and students communicate at a distance and see each other at the same time.

Distance learning was technically organized on Microsoft Teams platforms (a corporate platform that combines chat, meetings, notes and attachments in the workspace), Zoom communication software (video conferencing, online meetings, chat and mobile collaboration), Moodle (virtual learning environment) , as well as on various other platforms depending on the institution (miSpring Learn, Mirapolis LMS, ShareKnowledge and others).

During distance learning, the interaction of the teacher (supervisor) and the student occurs at a distance. This form of training involves an independent form of training, which means that a student studying remotely needs to be more independent, mobile and responsible. He will not be able to learn without these qualities.

In the list of positive aspects of distance education, it is necessary to emphasize freedom and flexibility, the ability to study at any time of the day. In the case of distance learning, territorial and geographical, as well as some material problems associated with the trip, living in the city of the organization of traditional education, are resolved quickly enough, thus opening up access to quality education, regardless of the remoteness of the student [Ainoutdinova I.N., A.N. Khuziakhmetov A.N., Tregubova, T.M. 2017].

During and after classes, the teacher has the opportunity to directly contact a particular student, discuss various issues on the topics of classes, give individual tasks and check, thus providing advice on solving problematic issues within the discipline. This type of communication can be most productive in cases of psychological problems for non-communicative students (for example, in cases where the student has a fear of answering the teacher's questions before the entire study group). The same type of communication can serve as the basis for increasing intellectual and creative potential, for revealing creative features in cases of working with especially gifted students: individual tasks of increased complexity will help them master the discipline at a higher level.

It should be noted that distance learning cannot exist without the use of the latest computer technologies. This order of things served as a certain impetus for the development of computer skills even for a certain number of teachers, especially the elderly. At this time, there is an increase in the student's active role in his or her own education, which is also an undoubted advantage of distance learning.

At the same time, during the forced experiment with distance learning in universities in the second semester of the 2019-20 academic year, it was also possible to clearly highlight the drawbacks. The very first and insoluble drawback: the lack of direct full-time communication between students and the teacher. This disadvantage gives rise to the following problems: the student's motivation for acquiring knowledge disappears, and individual psychological conditions, for example, rigid self-discipline, are absent.

Although some experts believe that the quality of training does not depend on the technological sphere, but on the adequate certification of students: "If a student ... clearly knows the criteria for certification, then even with poor teaching, methodological and technological support for the educational process, he will be motivated to acquire knowledge, development of necessary skills and abilities" [Safin P.R., Starkova O.F. 2015, p. 77].

Unfortunately, referring only to some forms of conducting classes in a remote form leads only to a written basis for training, when there is a complete absence of an oral form.

The problem of user authentication in testing knowledge is also some kind of problem, although it is easily solved by setting the requirement for a student to turn on a video camera.

Some teachers and students consider the absence or lack of practical training to be the main drawback of distance learning, which is a huge problem when studying the exact sciences, when students cannot conduct chemical experiments or biological observations. However, in the preparation of philologists, journalists, for example, such a problem does not exist, because modern journalism can exist in virtual reality.

Separately, we should talk about the organization of scientific work of students in distance learning. Scientific work in the form of term papers or final qualification works, dissertations is the result of an independent theoretical, scientific study of a student.

The supervisor remotely introduces the student to the requirements for term paper; helps to choose a research topic, helps in the final formulation of the topic name. In the future, the joint work of the student and teacher is to determine the range of questions on the chosen topic and research methods. A plan compiled by the student is adjusted. If necessary, the teacher can give direction to the student in identifying sources and literature on the topic. Through various electronic communication methods, systematic consultations took place to provide organizational and methodological assistance to the student during the preparation and writing of the work. Systematic control and phased certification for the implementation of scientific work provides for verification of the performance of work in parts and as a whole.

Thus, students carried out scientific work in the distance learning form on their own, using the advice of the supervisor and reporting to him as individual parts and the work as a whole were completed. Therefore, the success of the student's scientific research activity depended on how efficiently and constantly the remote interaction with the supervisor was organized.

In the conditions of remote interaction, the student and teacher need to establish contact not only through training platforms, but also through various instant messengers, e-mail, and video communications. The disadvantage of such communication may be the lack of full understanding and interaction with the supervisor, because students are not always comfortable with this way of communication due to the lack of the ability to fully formulate their thoughts.

It must be emphasized that distance consultations by a scientific adviser should be permanent rather than single.

An important requirement in this interaction is that the time of work, communication between the supervisor and the student should be regulated. In the framework of remote contact, students may sometimes have the illusion that they can get in touch with the teacher at any time of the day, since this is what the Internet connection suggests. Nevertheless, do not forget that, despite the availability of training materials at any time of the day, scheduled classes, communication should be carried out at a strictly agreed time, according to a schedule. Otherwise, students will lose motivation for learning, self-discipline will

deteriorate. In addition, teachers should have a certain part of the day, intended for rest; compliance with subordination with such communication should also be maintained. To do this, you can regulate and announce hours of additional online consultations.

Unfortunately, virtual communication sometimes allows its participants to forget that it is the same communication with the same living people. Therefore, all moral principles and rules of conduct, etiquette must be observed on both sides. Only in this case the productive contact and full understanding between the teacher and the student can be possible. Remote communication involves a more patient attitude towards each other.

4 Summary

Distance learning requires a fundamentally new approach to the organization of the educational process, which is impossible to implement, relying only on old tricks and teaching methods. In this regard, new electronic textbooks and study guides are needed, as well as a revision of teaching methods and technologies that meet the telecommunication environment.

The remote format of interaction requires the student to be highly disciplined and responsible in the performance of work. In cases where all the boundaries of interaction are indicated, effective implementation of the curriculum and training program as a whole in the end result can be obtained. Freedom and flexibility, accessibility, the possibility of on-the-job learning at a convenient time for the student, the use of the latest computer technologies, an individual approach, the ability to work with gifted students make distance learning, as well as education, a good alternative to the traditional form, and in the global pandemic is the only one.

5 Conclusions

In conclusion, it should be noted that the development and intensive use of this form of organization of the educational process is considered as a rather effective means of forming the foundations of education in Russia in the 21st century, because it contributes to the widespread dissemination of education, making training courses more accessible compared to traditional full-time education.

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Primary Paper Section: A

Secondary Paper Section: AM

SIMILARITIES OF TOPONYMS WITH THE DENDRONYM COMPONENT IN ENGLISH AND TATAR AND THEIR SEMANTIC CLASSIFICATION

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Abstract: The purpose of the article is to reveal some basic similarities of toponyms containing the dendronym component in the English, Russian and Tatar languages. All toponyms have a complicated nature, thus causing some difficulties in their systematization. Some attempts will be made to offer the semantic classification of geographical names, the definition on this basis of general principles for the formation of names of geographical objects and the identification of the main-lexico-semantic groups among them. The material of this paper can be recommended for use in modern practice of higher institutions, as well as in the system of language training.

Key words: linguistics, foreign languages, onomastics, semantics, toponymy, classification, principle.

1 Introduction

1.1 The Importance of The Problem

Language is the most important and perfect means of human communication, a means of exchange of thoughts. Language can perform these diverse and complex functions because it is a very flexible and at the same time perfectly organized system. On the globe there is a huge number of languages, each of which possesses certain features common to other languages, as well as features that we find only in a separate language. General, structural features are found in a variety of languages that have no genetic relationship, such as in English and Tatar [Bol'shaja sovetskaja jenciklopedija [The Soviet encyclopedia]. 1988; Hisamova V.N. 2015]. Typological studies significantly extend the boundaries of linguistic research, moving them beyond genetically related languages, a circle of different and sometimes rare languages, enriching with this the material of little-known languages, which is attractive to research, and thus allows solve broad general language problems [Suleibanova M. U. 2009].

According to the figurative expression of E.M. Vereshchagin and V.G. Kostomarov, language is "a true mirror of national culture" [Smolickaja G. P. 2002; Vereshhagin E. M. Jazyk i kultura. 1990]. It reflects the way of life, mentality, worldview, national character, system of values, types of social behavior, traditions and customs, habits, beliefs of native speakers. A detailed comparison of the linguistic phenomena of the different-structural languages occupies one of the priority places in linguoculturology [Shajhullin T. A. 2011, 233].

The relevance of this study is closely intertwined with the general tendency of linguistics in determining the human factor in the language, since the most valuable results are found when comparing languages, both genetically related and unrelated.

The purpose of this article is the semantic classification of geographical names, the definition on this basis of general principles for the formation of names of geographical objects and the identification of the main lexico-semantic groups among them. Classification of geographical names is one of the important methods in their study, because the semantic analysis of toponyms "1) gives the basis for a correct interpretation of the etymologies of names, 2) makes it possible to study ancient or archaic words that are rarely or completely not used at present, preserved only in toponymic vocabulary, helps to restore the meaning of such words, 3) explains the regularities of the appearance of geographical names, 4) determines the nature and degree of the development of culture, life activity of tatar people in the period of occurrence of these names, "[Garipova F.G. 1998, 22-23].

1.2 Status Of The Problem

Wonderful words "Toponomy is the language of the Earth" belong to N.N. Nadezhdin.

In the Dictionary of literary Slovene [Bajec A . 1994, 1409] the term toponym is defined as "the proper name of a place or another part of the Earth's surface…"

The term geographical name is indicated as its synonym. Kladnik defines geographical name as a "type of proper name that is traditional by definition and unambiguously defines and individualizes a person, feature or concept (personal, objective and geographical proper name or toponym in a wider sense [[Kladnik D. 1999, 62].

Geographical names are necessary for society, because with their help a person can orient in the surrounding world. It is impossible to imagine the modern world without geographical names, otherwise all spheres of service will cease to exist. Also toponyms are valuable in that they carry different and valuable linguistic, ethnographic, historico-geographical and other information. It is also necessary to point out the fact that, in addition to the physical and geographical features of the object, the geographical names contain information about the people's traditions and outlook.

With a toponomy it is possible to analyze the relations among people, history, geography and culture. People with different professional backgrounds can find a lot of useful information in study of geographical names. Linguists may specialize in the historical and genealogical aspects of languages. Scholars and historians could use toponym research to trace ancient movement of people.

Basically place names contain a treasure of ancient language signs, which are known to store information on the history of settlement, the economic activities of the original settlers and political developments.

A knowledge of place-names (towns, mountains, rivers, lakes, springs and other geographical sites), can be of great help to history because place-names seldom change. Even their phonetic evolution hardly ever leads to radical modifications and seldom affects the old pronunciation and spelling. It is for this reason that the study of place-names can reveal facts relating to the past and so yield information concerning the history, religion and civilization of the first occupants of the places concerned.

Interest in the comprehension of geographical names arose at the earliest stages of civilization. Dendronyms, that is, names of trees, also reflect the oldest layer of vocabulary, and, being in the composition of geographical names, are of great interest for study. By means of dendronyms, the language reflects the understanding of nature, the attitude of people towards the flora and fauna of their predecessors. With the help of this lexicon, the following generations receive valuable information about natural objects, trees, before they meet them in reality.

One of the most important problems of onomastics is the study of the mechanism of nomination and correlation in the names of its basic concepts for onomasiology as "concept", "reality", "name".

[Akhmetzyanov I.G., Garaeva A.K. 2016] Geographical names are diverse in their semantics. A.Superanskaya notes the fact that "the semantics of a toponym is a complex of information about a named object, the attitude of a speaker to an object, familiarity with the semantics of the appellative toponym and its association in speech. To understand the meaning of the geographical name,

it is necessary to know the typical situations in which it is used "[Superanskaja A.V. 2009, 322].

A.R. Khismatova in her dissertation on the topic "Dendronyms in Bashkir and German" indicates the presence of toponyms with a component of dendronym in Bashkir and German languages. For example: toponyms formed from dendronyms: Imenlek "Dubniak, Dubrava" (Gafur.rn), Baytali "rich willow" (Kushnar district), Yukaelekel "lime-tree + lake" (Dyurt.rn); Eichstätt (Eiche "oak"), Birnbach "pear + creek" (Rheinland -Pfalz), Eichtal "oak + valley" (Ostholstein), in the Bashkir language: Seyetau "cherry-mountain" (Baltach.rn), Seyletuguy "Cherry meadow, floodplain" (Orenburg.), Birnfeld "pear + field" (Bayern).

Akhmetzyanov I.G., Garaeva A.K. 2016 When studying toponyms, it is important to remember the process of transonymization - the transition of names from one category to another. A.R. Khismatova writes that "our task was to trace the name of the tree / shrub to the toponyms. The study of the above examples shows the multistage nature of this process. For example: dendronym> hydronym / oronym> oikonym - Birkenbach "birch + creek" (Nordrhein-Westfalen); dendromym> oikonym> hydronym-Jukaleiort (Cig., rn); dendromonym> oikonym> urbanon - st. Sosnovskaya (Ufa) "[Hismatova A.R. 2005, Pospelov E.M. 2008].

2 Methods

Preparing this article for comprehensive analysis a set of basic methodological principles and ideas has been used. In the course of study of the problem contrastive-comparative, descriptive, historical methods for the investigation of geographical names were used.

Toponyms containing dendronym component in all three languages (Russian, English and Tatar) were collected (more than 120) for the needs of this research.

Methodological foundation of this work is based on the theoretical theses highlighted in the works of linguists in the sphere of onomastics.

As the methodological basis for writing this paper were the works of such prominent scientists as E.M. Murzaev, F.G. Garipova, E.M. Pospelov, A.V. Superanskaya, A.D. Mills and others. These scientists analyzed geographical names from various angles, focusing on different historical, cultural, etymological, semantic and sociolinguistic aspects. The lexico-semantic classification of toponyms with the dendronym component in our opinion can be carried out taking into account the generalizations and conclusions of the above studies.

3 Results And Discussions

The collected data was classified in different categories.

Material, drawn from toponymic dictionaries, we divided into three large groups:

1. Toponyms, in which there is a term denoting a piece of land on which trees grow.
2. 2.Toponyms with the dendronym component, denoting coniferous tree species.
3. Toponyms with the dendronym component, which denote deciduous tree species.

3.1 Russian, Tatar And English Toponyms, In Which There Is a Term Denoting a Piece Of Land On Which Trees Grow

Toponyms play an important role in the life of a person, performing a definite function. Let us turn to the toponym with the term "forest." The forest plays a certain role in human life, in other words, some call the forest "human lungs", because the forest enriches the environment with oxygen.

On the Internet edition http: //rustrana.rf/article.php?nid=3072, the definition of a forest is given as follows: "The forest is a natural complex of woody, shrubby, herbaceous and other plants, as well as animals and microorganisms are biologically interrelated in their development and influencing each other and the external environment. The forest forms a more or less closed forest stand. Forest has a great influence on soil formation, hydrologic cycle processes, climate, etc. The forest is one of the planetary accumulators of living matter in the biosphere. The forest actively interacts with the troposphere and determines the level of oxygen and carbon metabolism. "

Having studied and analyzed a sufficient number of Russian, Tatar, and English toponyms with the dendronym component (more than 120), it can be stated with some certainty that trees have played an important role in determining the residence of people from ancient times. One can notice that among the geographical names with the dendronym component there are more often toponyms with such terms as "les – (forest)", "roshca – (grove)" and "bor – (forest of coniferous trees)" in Russian, "urman – (forest)" in Tatar and "wood - (grove)", "forest - (forest)», « hurst - (wooded hill)» in English.

With the term "les" / "urman" / "forest", to which the definition is given above, both in Russian, in Tatar and in English, the following toponyms occur:

A) in the Russian toponymy:

Vizheles is a village in the Ryazan region,

Dereva - a village in the Leningrad region (dereva - an ancient word, known in Novgorod as forests),

Pereslavl-Zalessky - a city in the Yaroslavl region,

Vereya is a city in the Moscow Region (from the Russian dialectal dereva - a forest site),

Lesnoi - a city in the Sverdlovsk region,

Lesosibirsk is a city on the Krasnodar territory

Also, we can note the toponym Krasnyi Oselok (Oselok is a glade in the forest, burned to arable land).

B) in the Tatar toponymy:

Urman kule (Lesnoye) - the village of B. Klyari in the Kamsk-Ustinsky region,

Urman - a village in the Zelenodolsky district,

Urmanay - a village in the Aznakaevsky district,

Urmandy - a village in the Aksubaevsky district,

Urmanchy - a village in the Mamadysh district,

C) in the English toponymy:

Waltham – Kent,

Forest and Frith – hunting grounds Durham,

Forest Hill with Shotover – Oksfordshire Forest,

Frithville – a forest riverbank, a quay near the forest in Lincolnshire,

Firbank is a city in Westmorland.

The term "grove", "roshcha" is also widely represented in the toponymy of the languages in question. The large encyclopaedic dictionary [http://slovorus.ru/index.php?a=&ID=55574&pg=85&s=%D0&w=%D0%CE%D9%C0] suggests the following definition of this term - "GROVE, a small, often isolated from the main forest

area, usually consisting of single-aged trees of deciduous species (birch, oak, etc.)".

In English, the word "wood" is close in meaning to the word "grove" of the Russian language. These terms are found in such names as:

A) in the Russian toponymy:

Beryozova Roshcha is a plantation near Derbyshki village, Kazan.

Roshchino - an urban village in the Leningrad region.

B) in the English toponymy:

Woodthorpe is a town in Derbyshire,

Hazelwood is a town in Derbyshire,

Hurst is a small town in Dorset [Akhmetzyanov I.G., Garaeva A.K. 2016].

The term "bor" in Russian means "Coniferous, usually pine forest, growing on a dry, elevated place" (Modern Dictionary of the Russian Language by T.F. Efremova).

In the Russian toponymic dictionary of E.M. Pospelov (2008) there are many geographical names, which include the term "bor" [Pospelov E.M. 2008]. Unfortunately, in the toponymy of the English language on the material of this study, we did not find names with the above term. Perhaps more detailed and thorough research will allow us to identify the geographical names denoting "coniferous forest".

Despite this fact, we would like to give examples of Russian toponymy with this term, namely:

Bor is a city in the Nizhny Novgorod region,

Borovsk is a city in the Kaluga region,

Krasny Bor - an urban village in the Leningrad region,

Sosnovoborsk is a city in the Krasnoyarsk Territory,

Sosnovy Bor is a city in the Leningrad Region,

Borovoye Matyushino - a cottage community near the city of Kazan.

Zelyony Bor –a small settlement near the city of Kazan.

The above examples are an indisputable proof that the terms denoting land plots on which trees grow have played an important role in human life [[Reaney P.H. 1960].

3.2 Russian, Tatar And English Toponyms With a Component Dendronym, Denoting Coniferous Trees

Coniferous forest is one of the most interesting phenomenon on our land, and many scientists are still studying the heritage of these forests. Coniferous forests grow in areas with cold climate, and no wonder that in Russian and Tatar languages there are geographical names, in which you can see the names of coniferous trees, such as "sosna / narat – (pine tree)", "el / chyrshy – (fir tree)" and "listvennitsa – (larch)". For example:

A) in the Russian toponymy:

"Sosna"

Sosnovka - an urban village in the Kukmor district of Tatarstan,

Sosnovo-Ozerskoe is a village, a district center in Buryatia,

Sosnovy Bor is a city in the Leningrad Region,

Sosnogorsk is a city in the Republic of Komi.

Also with the name of this tree there are such names as *Sosnovoborsk, Sosnovskoe* and others.

"El"

Elniki is a village in Mordovia,

Yelnya is a city in the Smolensk region,

"Listvennitsa "

Listennitsa - a working village in the Irkutsk region, next to which larch grows.

B) in the Tatar toponymy:

"Narat"

Narat Asty is a village in the Sarmanovsky and Muslyumovsky Districts,

Narat Astinsky Bor is a natural reserve on the territory of the Muslyumovsky District,

Narat-Elga is a village in the Chistopol district,

Naratly, a village in the Almetyevsky and Bugulma districts,

Naratlyk is a village in Arsk and Vysokogorsky district,

Naratli Kichu - a village in the Menzelinsky district,

«Chirshy»

Chirsi is a village in the Elabuga and Vysokogorsky districts.

In Russian and Tatar toponymy, the dendronym with "sosna" component, "el", "listvennitsa ", although not very often, but occurs in the language, which cannot be said about the English toponymy – there were no names in the dictionaries in which the above-mentioned component could be present.

The occurrence of such toponyms in the Russian and Tatar languages speaks about the climatic features of the territory, the prevalence of taiga, coniferous forests .

3.3 Russian, Tatar And English Toponyms With a Dendronym Component, Which Denotes Deciduous Tree Species

A large Soviet encyclopedia says that "Deciduous forests consist of trees and shrubs with large or small leaves; are distributed in temperate, subtropical and tropical zones. To the deciduous forests one can refer to evergreen forests of tropical and subtropical belts - in these forests, the leaves change gradually, imperceptible to the eye, and deciduous forests, in which the leaves fall in different seasons: in temperate latitudes - in the autumn, in the cold season (summer-green forests), in the tropics and subtropics - in the summer, with the onset of drought (winter-green forests). " We refer the names of such trees as "birch", "beech", "elm tree", "willow", "maple", "alder", "linden tree", "poplar", "ash" [Bol'shaja sovetskaja jenciklopedija [The Soviet encyclopedia]. 1988] to the deciduous tree species.

In Russian, Tatar and English toponymy there is a sufficient number of toponyms, in which you can find the names of deciduous trees. For example:

"Beroyza" / "kaen" / "birchtree"

A) in the Russian toponymy:

Berezaika is a working village in the Tver region,

Berezniki is a city in the Perm region,

Berezovo is a workers' village in the Khanty-Mansiysk Autonomous Okrug,

Bereznyak is a village in the Kukmor district of Tatarstan.

B) in the Tatar toponymy:

Kayn Saz - a village in the Muslyumovsky district,

Kaenly-village in the Nizhnekamsk district,

Kaenlyk is a village in the Kukmorsky district,

Kayensar is a village in the Kukmorsky, Baltasinsky and Atninsky districts.

C) in the English toponymy:

Barclay - a city in Scotland, the form of "Berkeley" - in Scottish means "birch tree"

Birchanger is a town in Essex,

Birches is a city in Cheshire,

Birkdale is a locality in Lancashire.

Buk / beech tree

A) in the Russian and Tatar languages there are no examples.

B) in the English toponymy:

Beech hill is a town in Berkshire,

Beech is a city in Staffordshire.

"Vyaz" / "elm tree"

A) in the Russian toponymy:

Vyazniki is a town in the Vladimir region (the name is from the old-Russian vyaznik- the elm forest).

B) there are no examples in the Tatar toponymy

C) in the English toponymy:

Elm is a city in Cambridgeshire,

Elmton is a town in Derbyshire,

Elmsted is a settlement in Kent,

Elmore is a city in Gloucestershire.

"Iva" / "tal" / "willow tree"

A) in the Russian toponymy:

Ivnya is a working village in the Belgorod region (after the name of the river Ivnia - from Iva).

B) in the Tatar toponymy:

Talli Bulyak is a village in Aznakaevsky and Bugulma district,

Talli Kul - a village in the Bavlinsky district,

C) in the English toponymy:

Willington is a city in Cheshire,

Willey is a town in Stropshire,

Willenhall is a city in Staffordshire,

Willitoft is a town in Yorkshire.

Maple tree "klyon"/"maple tree"

A) in the Russian Tatar totoponymy there are no examples.

B) in the English toponymy:

Mapleton is a city in Derbyshire,

Mapperley is a city in Derbyshire,

Mappleborough is a city in Warwickshire,

Mappleton is a town in Yorkshire.

"Olcha" / "alder"

A) in the Russian toponymy:

Olkhovka is a Russian village in Mordovia,

Olshanik is a settlement in the Leningrad Region,

[1] *Olkhovatka* is an urban settlement in the Voronezh Region [Akhmetzyanov I.G., Garaeva A.K. 2016].
B) there are no examples in the Tatar toponymy

C) in the English toponymy:

Alderley is a city in Gloucestershire,

Aldershot is a city in Hampshire,

Alderwasley is a settlement in Derbyshire.

"Lipa" / "yuka" / "lime tree, linden"

A) in the Russian toponymy:

Lipetsk - a city in the Lipetsk region (next to the river Lipovka),

Lipnya - a village in the Nizhny Novgorod region,

Lipovoye - a village in the Mamadysh district of Tatarstan,

Lypky is a city in the Tula region.

B) in the Tatar toponymy:

Yukale is a village in Almetyevsky district,

Yukachy is a village in the Mamadysh district.

C) in the English toponymy:

Lindhurst is a city in Nottinghamshire,

Limehouse - the settlement in Greater London,

Linby is a city in Nottinghamshire,

Lindale is a city in Cumbria.

"Osina"/ "Aspen tree"

A) in the Russian toponymy:

Osinniki - a city in the Kemerovo region,

Osinovo - settlement in Yudino near Kazan,

[2] *Podisinovets* - a working village in the Kirov region [Akhmetzyanov I.G., Garaeva A.K. 2016].
B) there are no examples in the Tatar toponymy

C) in the English toponymy:

Aspley Heath is a town in Bedfordshire,

Aspenden is a city in Hertfordshire,

Aspull is a city in Lancashire.

"Yasen" / "Ash tree"

A) in Russian and Tatar toponymy there are no examples.

B) in the English toponymy:

Ashover is a city in Derbyshire,

Ashton is a city in Cheshire,

Ashfield is a city in Suffolk,

Ashcott is a settlement in Somerset.

"topol"/"poplar"

A) in the Russian and Tatar languages there are no examples [1].

B) in the English toponymy:

Poplar is a settlement in Greater London.

4 Summary

Toponyms are an important part of geographical and cultural environment. They identify some geographical entities of different kinds and represent historical, linguistic and cultural values of people. Place names are therefore of major social importance. A place name usually exists in relation to a geographical object. This important function of place-names means that they are essential linguistic tools for society and people. True understanding and classification (based on a definite component) of place names as a historical and valuable linguistic source has long been central for many scholars.

5 Conclusions

We have analyzed more than 120 toponyms with the dendronym component in Russian, English and Tatar languages. According to the results of our research there are some parallel toponyms in all three languages. To a larger extend they are closely connected with climate, landscapes inhabited by people. All the above examples show how much Russians, Tatars and English are actively using the names of different trees and lands in the name of their settlements. It is also important to note that some dendronyms occur in the toponyms of the languages under investigation, while others, namely “maple”, “beech” are found only in the English language. The majority of toponyms are regarded as a result of human activity and they represent the existing world round us.

The materials of this article can be recommended for use in modern practice of higher institutions as well as in the system of language training. Results of this research paper can be used by linguists in conducting studies on comparative typology, the history of the language and for further investigation of geographical names in contrastive-comparative terms.

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Primary Paper Section: A

Secondary Paper Section: AI

MORPHOLOGY AND STRUCTURE OF RED CLOVER (TRIFOLIUM PRATENSE L.) AND WHITE CLOVER (TRIFOLIUM REPENS L.) COENOPOPULATIONS IN THE REPUBLIK OF TATARSTAN

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Abstract: The article provides an analysis of the morphology, density and vitality structure of the coenopopulations of Trifolium pratense L. and Trifolium repens L., growing in different landscape subzones on the territory of the Republic of Tatarstan. The density of coenopopulations of red clover was 3.0-17.2 pcs / m², the low densities were different for cenopopulations in the subtaiga landscape subzone and in the south of the broad-leaved subzone. The density of shoots in the coenopopulations of white clover was 15.0-48.4 pcs / m², high density distinguished cenopopulations in the south of the broad-leaved subzone, low in the north of the broad-leaved subzone. Generative individuals (shoots) prevailed in the ontogenetic structure of coenopopulations of clover species. For red clover, a negative correlation between population density and the share of generative individuals in the structure of coenopopulations was revealed.

Keywords: red clover, white clover, Trifolium pratense, Trifolium repens, coenopopulation density; vitality structure of coenopopulation

1 Introduction

Red clover (Trifolium pratense L.) is widespread in meadow communities, as well as in the weedy places of the summer-winter-green rod grassy perennial growing in Europe, North Africa, West and Central Asia (Bakin, et al., 2000; Hagen & Hamrick, 1998). White clover (Trifolium repens L.) is a summer-winter-green or summer-green herbaceous perennial polycarpic plant with elongated creeping sympodially growing shoots, which is characterized by Euro-Asian distribution and is found in moist meadows, edges, coastal waters and near roads (Bakin et al., 2000). Both species are widely used in human economic activity, as excellent fodder, melliferous, soil-improving plants (Shpakov et al., 2002; Sagirova & Panina, 2016; Kirk & Howes, 2012). Red clover is one of the main legumes in the European part of the globe (Dabkeviciene, et al., 2016).

In addition, both types of clover are widely used in folk medicine for bronchial asthma, shortness of breath, cough, dysentery, pulmonary tuberculosis, metabolic diseases and urolithiasis, kidney diseases. Essential and fatty oils, tannins, glycosides, organic acids, vitamins accumulate in the green mass of red clover, flavones and flavonols, flavonoids, coumarin, triterpene saponins, phenols and other compounds accumulate in the flowers (Drenin & Botirov, 2017; Sabudak et al., 2008; Kamel et al., 2016; Zaitseva & Pogulyaeva, 2017). In the aerial part of the white clover plant, glycosides, flavonoids and tannins, essential oil, ascorbic acid, carotene, and other substances were found (Drenin & Botirov, 2017; Abramchuk & Karpukhin, 2019). A study of the biochemical productivity of red clover and white clover plants in the Republic of Tatarstan (Mikhailov et al., 2019) showed that the content of biologically active substances in plants depends on the location of clover coenopopulations.

The Republic of Tatarstan covers four landscape subzones: the southern taiga and subtaiga subzones in the boreal landscape zone, as well as broad-leaved and forest-steppe subzones in the subboreal northern seven-humid landscape zone (Ermolaev & Igonin, 2006). In connection with the diversity of landscape subzones in the republic, studies of the morphological characteristics of plants and the structure of natural coenopopulations of economically significant plants are relevant. These data are important for assessing the yield of wild resource plants of a particular region. The present study is devoted to the analysis of the morphology, density, and vitality structure of coenopopulations of Trifolium pratense L. and Trifolium repens L., growing in different landscape subzones in the Republic of Tatarstan.

2 Metods

Research material was collected in the summer of 2018-2019.
We studied 12 cenopopulations of red clover (CRC) in meadow and fringe communities located in all landscape subzones represented in the Republic of Tatarstan: southern taiga (CRC-1), subtaiga (CRC-2, CRC-3), broad-leaved (CRC-4, CRC-5, CRC-6, CRC-7, CRC-8, CRC-9, CRC-10 and CRC-11) and forest-steppe (CRC-12).

Also examined were 11 cenopopulations of Creeping Clover (CWC) in meadow, forest, forest, and roadside communities. They are located in the subtaiga (CWC-1, CWC-2, CWC-3) and broad-leaved landscape subzones (CWC-4, CWC-5, CWC-6, CWC-7, CWC-8, CWC-9, CWC-10 and CWC-11).

When assessing the ontogenetic state of plants, the development of N.P. Krylova and T.A. Rabotnova (Krylov & Rabotnov, 1975). As part of various populations of clover species, 5 plots 1–1 m in size were laid, on which all plants were dug for further morphometric analysis. In white clover, an escape was chosen as the counting unit. The height of the plants (shoot length of white clover), dry shoot and inflorescence biomass, reproductive effort (the ratio between the dry inflorescence and shoot biomass) were determined in the collected plants. Generative individuals were analyzed. The sample size for clover red was 11-43 plants, for white clover - 8-94 shoots. All data were processed statistically (Software package for statistical and biometric-genetic analysis in crop production and selection AGROS, 1999).

The vitality structure of the populations was investigated by the dry shoot biomass index taking into account the methodological recommendations of Yu.A. Zlobin (Yu & Zlobin, 2009). The type of vitality structure of coenopopulations was determined by the value of the Q criterion: 1. $Q = 1/2 (a + b) > c$ - prosperous; 2. $Q = 1/2 (a + b) = c$ - equilibrium; 3. $Q = 1/2 (a + b) < c$ - depressive.

3 Results and Discussion

The density of coenopopulations of red clover varied at different research points from 3.0 to 17.2 pcs / m² (Fig. 1, A). In the subtaiga landscape subzone and in the south of the broad-leaved subzone (CRC-9, CRC-10, CRC-11), the density of clover populations was the lowest. The maximum density of individuals distinguished 2 cenopopulations in the north of the broad-leaved subzone (CRC-4, CRC-5).

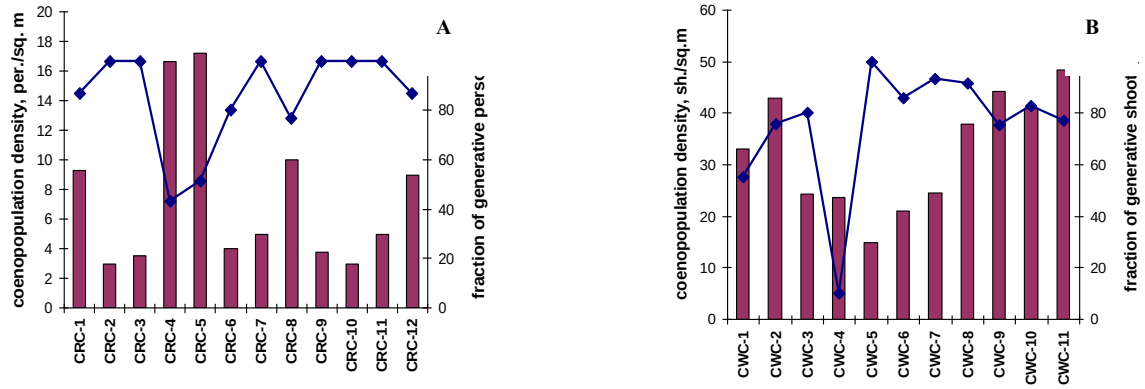

Fig 1: Density of coenopopulations and the fraction of persons (shoots) in the generative state in coenopopulations of red clover (A) and white clover (B).
Note: bars denote the values of the density of coenopopulation.

In white clover, the density of coenopopulations varied from 15.0 to 48.4 shoots per 1 m^2 (Fig. 1, C). The maximum shoot density was noted for cenopopulations in the south of the broad-leaved subzone (CWC-9, CWC-10, CWC-11); the minimum is for cenopopulations in the north of the broad-leaved subzone.

An analysis of the ontogenetic structure of coenopopulations showed that in clover species generative individuals (shoots) usually prevail in coenopopulations. The exceptions are CRC-4, CRC-5, CWC-4 and CWC-1. Among individuals in the pregenerative period, juvenile, immature, and virginal plants (shoots) were noted.

Relative negative correlation (r = -0.93) was revealed between the population density and the share of generative individuals in the structure of cenopopulations of red clover. Those. as the coenopopulations of red clover age, they gradually thin out, similar processes are described for many other plant species (Prokhorenko et al., 2018).

The results of morphostructural analysis showed that the height of red clover plants in the studied cenopopulations varies from 26 to 60 cm (Fig. 2, A). The price populations in the south of the Republic of Tatarstan (south of the broad-leaved subzone, forest-steppe subzone) are characterized by stunting. The tallest were the plants in the cenopopulations of the subtaiga subzone and in the north of the broad-leaved subzone.

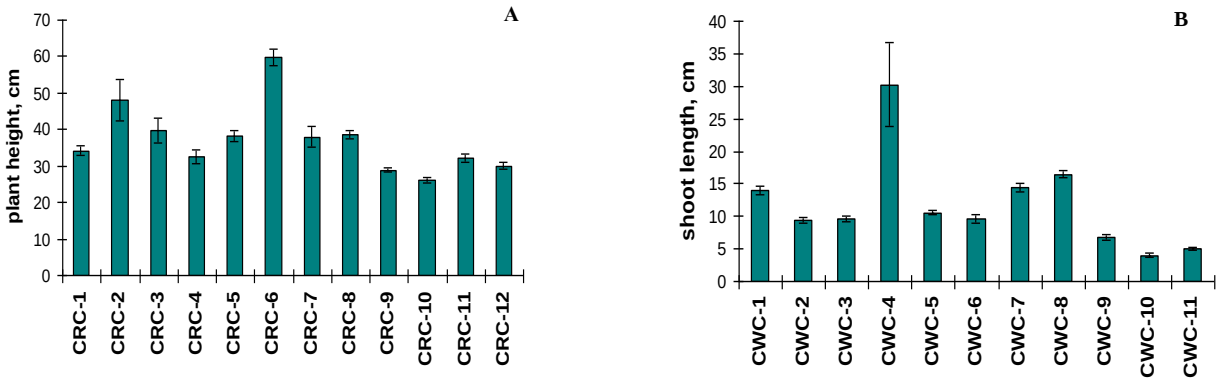

Fig 2: Plant height in coenopopulations of red clover (A) and shoot length in coenopopulations of white clover (B).

The parameter “dry shoot biomass” varies in plants of different coenopopulations of red clover from 2.4 to 8.7 g (Fig. 3, A). Assessment of the reliability of the difference in average values showed that CRC-3 and CRC-7 significantly exceed the other cenopopulations in the considered parameter. High parameter values are characteristic of coenopopulations of the subtaiga subzone and in the center of the broad-leaved subzone.
The reproductive effort of individuals in coenopopulations of red clover ranged from 0.09 in CRC-6 to 0.29 to CRC-9 (Fig. 4, A). These extreme values of the trait significantly differ from the indicators of other coenopopulations. A significant negative correlation was revealed between the reproductive effort of an individual and the height of plants (r = -0.69).

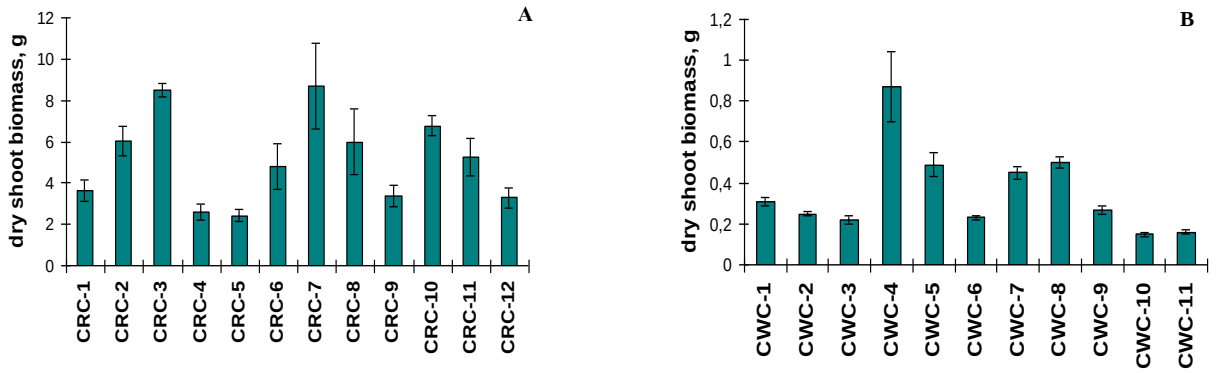

Fig 3: Dry shoot biomass in coenopopulations of red clover (A) and in coenopopulations of white clover (B).

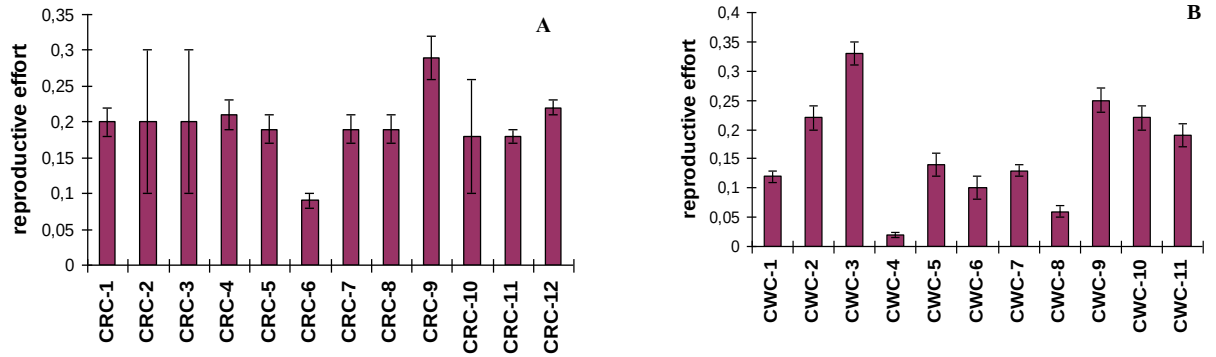

Fig 4: Reproductive effort in coenopopulations of red clover (A) and in coenopopulations of white clover (B).

Also, a significant negative correlation between dry shoot phytomass and cenopopulation density (r = 0.66) was found in red clover.

Cenopopulations of white clover demonstrate a wide range of variability on the basis of shoot length - from 4.0 to 30.3 cm (Fig. 2, B). Among other cenopopulations, significantly exceeding the others in the considered parameter, CWC-4 from the forest community stands out. Low values of shoot length differed in cenopopulation in the south of the broad-leaved subzone.

The parameter “dry shoot biomass” for white clover varies from 0.15 to 0.87 g (Fig. 3, B). The maximum value of the characteristic is characteristic for CWC-4. High values of the indicator characterize cenopopulations of white clover in the north of the broad-leaved subzone, low - cenopopulations in the south of the subzone. In addition, a significant positive correlation was found between the shoot length and its phytomass (r = 0.94).

The reproductive effort parameter for white clover varied from 0.02 for CWC-4 to 0.33 for CWC-3 (Fig. 4, C). The indicator in coenopopulations in the north of the broad-leaved subzone turned out to be significantly lower than in other coenopopulations. Reproductive effort is negatively correlated with shoot length (r = -0.72) and phytomass (r = -0.72).

We ranged individuals by vitality based on the characteristic dry shoot biomass (Tables 1, 2). An analysis of the data showed that among the studied coenopopulations of red clover, the depressive type of the vitality structure prevailed with coenopopulations. At the same time, two coenopopulations with an equilibrium vitality type (in the south of the broad-leaved subzone) and two coenopopulations with a flourishing type of vitality were found (CRC-5 in the north of the broad-leaved subzone and CRC-10 in the south of the broad-leaved subzone). A high proportion of individuals of the highest class of vitality in a population can be interpreted as a sign of its stability and prosperity (Prokhorenko et al., 2018).

We have previously shown that the vital type of coenopopulation of red clover is associated with soil fertility. On poor soils in the north of the subzone of broad-leaved forests, depressive populations form near red clover. Either equilibrium populations or thriving coenopopulations are formed on soils moderately provided with nitrogen and other elements of mineral nutrition (the southern part of the broad-leaved subzone) (Prokhorenko et al., 2020). The presence in the north of a broad-leaved subzone of coenopopulation with a flourishing type of vitality structure is explained by the unevenness of the ecological-coenotic growing conditions.

From the data of table 2 it is seen that all the studied coenopopulations of clover of the white depressive type, characterized by the predominance of individuals with low vitality. For CWC-4, in which vegetative shoots predominated, the calculation of the vitality type of cenopopulation for vegetative shoots was carried out, it also revealed a depressive nature of cenopopulation. We associate the formation of white clover depressive in structure of white clover in the territory of the Republic of Tatarstan with the presence of anthropogenic impact in the form of trampling in the places of growth *T. repens* .

	Q/2 (average share of individuals of higher and middle vitality in coenopopulation)	c (share of individuals of lower vitality in coenopopulation)	Vitality type of coenopopulation
CRC-1	0,265	0,47	depressive
CRC-2	0,295	0,42	depressive
CRC-3	0,285	0,43	depressive
CRC-4	0,203	0,59	depressive
CRC-5	0,398	0,20	thriving
CRC-6	0,275	0,45	depressive
CRC-7	0,250	0,50	depressive
CRC-8	0,320	0,36	depressive
CRC-9	0,333	0,33	equilibrium
CRC-10	0,365	0,27	thriving
CRC-11	0,334	0,33	equilibrium
CRC-12	0,210	0,58	depressive

Table 1: Vitality type of red clover coenopopulations

	Q/2 (average share of shoots of higher and middle vitality in coenopopulation)	c (share of shoots of lower vitality in coenopopulation)	Vitality type of coenopopulation
CWC-1	0,270	0,45	depressive
CWC-2	0,260	0,48	depressive
CWC-3	0,275	0,44	depressive
CWC-4	Not calculated due to small sample size (the number of shoots in the generative state)		
CWC-5	0,285	0,42	depressive
CWC-6	0,220	0,57	depressive
CWC-7	0,260	0,48	depressive
CWC-8	0,295	0,42	depressive
CWC-9	0,255	0,49	depressive
CWC-10	0,260	0,48	depressive
CWC-11	0,275	0,45	depressive

Table 2: Vitality type of white clover coenopopulations

4 Summary

1) The density of coenopopulations of red clover varied from 3.0 to 17.2 pcs / m². The cenopopulations of the subtaiga landscape subzone and the south of the broad-leaved subzone differed in low density. The density of shoots in the coenopopulations of white clover varied from 15.0 to 48.4 pcs / m². High density distinguished cenopopulations in the south of the broad-leaved subzone, low in the north of the broad-leaved subzone. Generative individuals (shoots) prevailed in the ontogenetic structure of coenopopulations of clover species. For red clover, a negative correlation between population density and the share of generative individuals in the structure of coenopopulations was revealed.

2) Morphometric parameters in cenopopulations of red clover were: plant height - 26-60 cm, dry shoot biomass - 2.4-8.7 g, reproductive effort - 0.09-0.29. In coenopopulations of white clover: shoot length - 4.0-30.3, dry shoot biomass - 0.2-0.9 g, reproductive effort - 0.02-0.33.

3) For red clover, significant negative correlations between plant height and reproductive effort of an individual, density of coenopopulation and plant phytomass were revealed. A correlation constellation of signs was found in white clover: shoot length - shoot phytomass - reproductive effort, while the relationship between shoot length and its phytomass was positive, the remaining correlations were negative.

4) The price populations of red clover in the south of the broad-leaved subzone, as well as one of the three studied cenopopulations in the north of the broad-leaved subzone, were distinguished by an equilibrium and prosperous type of vitality structure. The remaining cenopopulations in the north and in the center of the broad-leaved subzone, as well as the cenopopulations of the southern taiga, subtaiga, and forest-steppe subzones, were characterized by a depressive type of vital structure.

Coen populations of white clover in the subtaiga and broad-leaved subzones of the Republic of Tajikistan were characterized by a depressive type of vital structure.

5 Conclusions

It is recommended that the collection of medicinal raw materials be carried out in cenopopulations with high biomass productivity: for red clover, these are cenopopulations of the subtaiga subzone and the central part of the broad-leaved forest zone; for white clover, these are cenopopulations in the north of the broad-leaved forest zone of the Republic of Tatarstan.

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Primary Paper Section: A

Secondary Paper Section: AO

LEXICAL STYLISTIC PECULIARITIES OF THE ANALYTICAL MEDIA TEXTS ABOUT INTERNATIONAL RELATIONS AND POLITICS

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Abstract. This study intends to evaluate characteristic features of a media text, its lexical stylistic devices and expressive means, based on the material from the journal about politics and international relations "Foreign Affairs". Discourse analysis discovers lexical thematic groups of vocabulary, evaluative vocabulary and their frequency. The methods exploited for the study are: content analysis, stylistic, semantic and analytical analysis methods. The results exhibit that thematic content of the journal exerts effect on the lexical stylistic characteristics of the media text. The journal's commitment to a well-educated reader and adherence to a corporate culture of the periodical determines the usage of metaphors, similes, allusions, phraseological units, etc.

Keywords: media communication, media stylistics, political discourse, media text, political linguistics, international relations.

1 Introduction

Mass communication is a socially important sphere of a societal speech practice where mass media perform as a middleman in the perception of a human of the surrounding world. The world of symbols and implicated images that mass media create must be perceived by a reader as an explicitly sensed and experienced reality. It is known that the objective of mass media is first of all to exert influence on the consciousness of the reader. And communication process may be considered successful if this aim is reached (Mardieva et al, 2015).

The peculiarity of mass media texts is their documentary character. At the same time reality reflected in a media text is not an objective reality. The author of a published material presents facts amid different factors. Worldview created by linguistic means is interpreted with respect to personal attitude and views of the author, political focus of the media that orders to write material (the so-called corporate culture of the media outlet). In this way mass media fulfill a certain social and political order In this sense, media text represents a peculiar view point on a political reality that applies for social relevance. At the same time analysis of political media texts helps to get authentic data about the state of societal consciousness, dominating paradigms on social and political issues relevant to the agenda (Minaeva et al, 2019: Dobrosklonskaja & Medialinguistics, 2008).

The significant forms of expressing ideological attitudes, social and political moods of the society in media texts arouse natural research interest. The topicality of this study is determined, on the one hand, by the interest that political discourse being able to influence society sparks among linguists, political analysts, specialists in the sphere of international relations, sociologists, psychologists and others, and, on the other hand, by the role of a definite political media outlet and its linguistic embodiment in forming political settings and public opinion. The absence of a complex study and representation of lexical stylistic peculiarities of one of the leading analytical media outlets of English political discourse of the present day have determined the scientific novelty of this work.

The theoretical framework of the study is based on scientific works performed by Russian and foreign scholars (Budaev E. V., Chudinov, 2011: Issers, 2016: Klushina & Mediastylistics, 2018: Shejgal, 2000: Chilton & Schäffner, 2002: Solganik, 2012: Dijk, 2002: Wodak, 2011: Busby, 2018).

Political discourse alongside a number of sub-discursive types encompasses media political sub-discourse that in reliance on a communicative act structure can be represented by a communicator, i.e. a collective professional informant of political language (in other words it is an editing group of journalists and authors-analysts), a recipient, i.e. as a rule mass nonprofessional political language agent; the situation is viewed as official and the type of communication is intermediated or indirect. The scope of such media political discourse is determined by a certain media of communication and thematic specificity of a media outlet (analytical articles devoted to a current situation, printed interviews and expert discussions).

On the one hand the language of mass media exhibits certain uniformity and cohesiveness that is determined by peculiarities of speech patterns in mass communication sphere, set types of forms and thematic structure, and on the other hand mass media texts demonstrate functional stylistic variety that reflects the universality of the themes covered, openness and versatility of a mass media text in the context of its ties with other spheres of speech usage. This particular duality, i.e. structural uniformity and functional stylistic variety make up an important peculiarity of mass media language that enables to determine it as a peculiar type of functional stylistic unities. The language of mass media is stylistically diverse, syncretical in the context of applying written and oral speech forms, it is characterised by stylistic convergence and non-specificity of stylistic outlines (Gimadeeva et al, 2019).

Different media outlets of social and political character cover official materials, write about a wide range of subjects on the issues of internal, external and world politics. Very often they are aimed at highly-educated readers, meanwhile media communication is realized in the frames of ideological, commercial and other goals of a media outlet itself.

2 Methods

As the object of its linguistic and stylistic research the study defined lexical and syntactic expressive means that function in the analytical articles of the American journal on international relations and external policy of the USA namely "Foreign Affairs". The choice of the media source is determined by high authority of this media outlet in the questions of covering global challenges of the present day and a full-fledged publication tradition of the journal that was founded in 1922. Political articles were collected from the journal issues published in 2018-2020 and are related to such topical world problems as countering terrorism, situation in the Middle East, geopolitical order of world powers, security of cyberspace, the impact of ecological problems on world economy and international relations and other. The methods of content analysis, stylistic, semantic and analytical analysis were exploited for studying lexical and stylistic richness.

3 Results and Discussion

Taking the example of the named media in this section we are going to study how the agenda is formed, i.e. how groups of topical political problems for wide audience are selected and what lexical and syntactic means are used in creation of the narrative that is capable of exerting influence on recipient's consciousness and forming assessment of political and social events represented in the journal.

So, for example, the article devoted to such phenomena as climate change starts with the enumeration of problems that carry a threat for a global order: "The world seems to be in a state of permanent crisis. The liberal international order is besieged from within and without. Democracy is in decline. A lackluster economic recovery has failed to significantly raise incomes for most people in the West. A rising China is threatening U.S. dominance, and resurgent international tensions are increasing the risk of a catastrophic war" (Devermont & Temin, 2019). The author of the article refers to such a stylistic device as gradation, using highly emotional vocabulary of

pejorative meaning, presenting the present state of affairs in an extremely negative light. Thus, a permanent crisis will inevitably lead to a disastrous war, democracy will decline, the recovery of a stagnant economy has not been successful, and the liberal world order is being besieged on all sides. Using language tools, the author creates a dark picture of the future and draws an image of an external enemy, increasing the tension in the potential reader.

In a broad sense, gradation is understood as a stylistic figure consisting of such an arrangement of parts of a statement (words, sentence segments), in which each contains an increasing (less often decreasing) semantic or emotional-expressive meaning, which creates an increase (less often weakening) of the impression they make. In our case, we are dealing with an example of contextual gradation. It occurs in a specific context and is based on words belonging to different lexical and thematic groups, but united by a common concept, namely, "difficult situation". The most obvious gradation elements are three lexical units: crisis – decline – war. The rest of the context environment affects the entire phrase, and the effect is enhanced by other verbal and substantive lexemes, such as besieged, threatened, failed, tensions, risk, as well as adjectives and prepositional phrases permanent, lackluster, resurgent, catastrophic, from within and without. All these lexical units contain negative components of semantics and can cause feelings of fear and tension in readers.

At the same time, the author touches on the concepts that characterize the most important components of a prosperous and peaceful existence that have developed in Western society: a liberal world order, democracy, economic stability, and the superiority of the United States. The author's depiction of a comprehensive danger that threatens American society and traditional values contributes to the desired effect of excitement and anxiety.

Due to the special content orientation of the media outlet, covering current problems of modern international relations, the journal articles are characterized by the presence of emotional and evaluative vocabulary, mainly of pejorative meaning (to implode, disordered, stagnant, destitute, grinding poverty, popular frustration, popular insurrections, to be convulsed by internal turmoil and poverty, barbaric and self-destructive leader, to be disillusioned, unprepossessing start, to confound expectations, etc.). For the named lexical group, the more frequent syntactic connection is the construction ‘adjective’ + ‘noun’.

4 Thematic Sets of Lexical Units

As a result of the analysis of the material collected from “Foreign Affairs” journal articles, various thematic groups of lexical units were identified, namely, words and expressions denoting the opposition order-disorder, rivalry, demonstration of strength and power, war and conflict, position of priority and advantage, retreat and diplomatic relations.

Thus, the following lexical units can be classified as belonging to the order – disorder opposition: to stem the unrest, to generate new frustrations, to determine the rest, disordered, to dissolve, to exacerbate divisive consequences, popular insurrections, to be convulsed by internal turmoil and poverty, to quell the protests, to quell dissent, topple regime, protests unseated ten autocracies. Most of the presented units have a grammatical structure of V+N (verb + noun). Words within this lexical semantic group are linked by synonymy relations, while the internal semantic form of a number of verbal units refers to such areas as chemistry (to dissolve), biology (stem), physics (to generate), psychology (frustrations), mine-ware (to undermine), medicine (to be convulsed). The use of these lexemes in a political context contributes to the increment of meanings and serves to create expressiveness.

The thematic group "war and conflict" includes the following expressions: to devolve into civil war, upheaval, proxy conflicts, flash points, proxy struggles, to wage war with clean hands, atrocities, insurrections, to turn into a rout, to bloody an ally, to be embroiled in civil war, an open-ended war, military coup, a clash with smb., to stumble into war, to be entrapped in a wider conflict, to push someone back to war, to deploy troops, major combat activity, a treacherous conflict of unknown scale and scope, etc. This group is the most numerous, obviously, due to the content orientation of the publication "Foreign Affairs".

Among the lexical units, one can also distinguish the thematic group "rivalry": rivalries, competitors, challengers, antiestablishment movements, internal contradictions, to confront the other as a peer, to make inroads into its opponent's turf, all-encompassing rivalry, intense economic competition, to fall at each other's throats, political betrayal, a comparable adversary. Most of the units in this group are lexical synonyms, that may occur as in literary as in colloquial functional styles; however, there are also units that are stylistically low-colloquial and even rude.

The group "strength and power" can be represented by the following lexical units: to power forward, an economic takeoff, to seize by force, to overturn apartheid, to harvest globalization's benefits, to turbocharge the process, global military domination, to project power in all directions, robust liberal democracy, integrated world, to project power abroad, to gain the upper hand, displacement, grip on power, to strengthen the grip of authoritarian regimes. This group is characterized by the presence of phraseological units, as well as a number of expressions built on the basis of metaphorical transfer.

A relatively small group consists of the words of the thematic group "priority and advantage": to leap at the opportunity, to garner support, to gain the upper hand, authoritarian competitors gain ground, to move onward and upward. These expressions can be attributed to set-phrases, mainly of colloquial speech style.

To the group “diplomatic relations” belong the following lexical units: to foster good relations with, to negotiate a peace deal, to get (to demand) a seat at the table, to compromise, to negotiate a settlement, to ban negotiations, all to no avail, to miss best opportunity to find peace, overture, engaging in negotiations, to work towards a comprehensive cease-fire, over the course of nine rounds of talks, to develop a draft agreement, to meet conditions, to call off the negotiations, a clean break. This group consists of words that characterize positive diplomatic relations, as well as negative and neutral ones, or their absence.

Due to the fact that the articles of the journal "Foreign Affairs" quite often cover the issues of military actions, we have identified a small lexical group "retreat": to lay down the arms, to stage a comeback, a reduction in the strikes, withdrawal policy, a drawdown, a hint of retreat, to throw in the towel. Negative semantic orientation is achieved due to the internal form of lexical units, namely the presence of the negative semantics prefix re- or composite components like down, back in compound words.

The media industry, describing certain political and social events, often creates a particular image of reality, whether an outlook on the problem, personality of a politician, or a state leader, the image of the country, which is then presented to a mass audience. A picture or portrait created in this way can have an expressive effect on the reader, on his feelings and mind, forming a representation of the world in his mind, which often has little to do with reality. In this case, the socio-political orientation of the media has a special influence on the content and form of the media text, and the task is to keep the reader's attention. Therefore, the authors of articles often resort to metaphorical transformations, vivid comparisons, and use expressive vocabulary.

The authors of analytical articles of the journal “Foreign Affairs "often refer to the description of political regimes of a particular country, using various language tools to create a bright and memorable image. So, China is called the country of a cruel and corrupt authoritarian regime (thuggish and corrupt authoritarian regime), Russia – the country of a bandit kleptocracy (regime of gangster kleptocracy), Eritrea – the sworn enemy of Ethiopia

(Ethiopia's archenemy, Eritrea; where the word archenemy etymologically ascends to the name of the devil, i.e. originally especially Satan). Chinese statesman and politician Mao Zedong is named by "Foreign Affairs" journal as one of the most barbaric and self-destructive leaders in history. South Africa is represented as a country that has the potential to become a catalyst of growth in the entire African region (South Africa – an engine of growth for the whole region), and the Congo – a country whose economy has been on the verge of collapse for a long time (Congo – a long-standing basket case). It is interesting to note that etymologically the expression basket case goes back to the time of the World War I and denoted hopelessly wounded, and over time in a figurative sense came to mean a difficult situation, economic and financial (Cowie, 2009).

5 Expressive Means Of Creating Perlocutionary Effect

"Foreign Affairs" journal is aimed at readers interested in international relations and world politics, and the authors of articles always appeal to the fund of general knowledge and count on a certain intellectual level of the recipient. In this regard, media texts often use metaphorical reinterpretation of well-known concepts, appeal to allusions, resources of phraseology, including contextual transformations, periphrases in order to influence the readership and promote an unrecognized opinion. At the same time, stylistic tropes perform a heuristic function in the media text, serve as a means of understanding the constantly changing political reality and formulating new political programs, and serve as an argumentative function, serving as a means of persuading the audience.

So, in the article "Which World We Are Living in?", dedicated to the geopolitical alignment of the great powers, the author refers to such stylistic device as allusion, describing the opposition movements: "And in the decade following, antiestablishment movements have grown like Topsy" (Malley & Finer, 2018). Referring to the popular novel of the 19th century by American writer Harriet Beecher Stowe "Uncle Tom's Cabin" (1852), the author of the article mentions the young character – a slave girl Topsy, who said that she "just took and grew up". The expression to grow like Topsy started to mean a rapid and often uncontrolled growth: to grow very quickly, especially in an unplanned or uncontrolled way. The expression 'just growed (like Topsy)' in Oxford dictionary of English idioms is interpreted as follows: (saying) a person, institution, custom etc. has come into existence nobody knows when and how (McGregor, 2019).

In the same article, the author uses metaphorical transfer, calling Taiwan a 'thriving Asian tiger', i.e. a prosperous Asian tiger. And continuing this theme, emphasizing the attractiveness of Taiwan for China, the author poses a question: "Will an increasing powerful Beijing stand by and watch its long-sought prize slip away?". The relationship between China and Taiwan from the point of view of the latter is shown by the following example: "Taiwan, a self-governing island for decades, fears it will be gobbled up by the mainland". The country's fears of being influenced by mainland China and losing its autonomy are expressed by the verbal metaphor of gobbled up (i.e. to eat something very fast, in a way that people consider rude or greedy; or if we speak about business and politics that means to take control of smth (Kendall-Taylor et al, 2020: Gimadeeva et al, 2019: Smyslova, 2019).

A number of interesting author's linguistic solutions are the following examples: a "cyber – Pearl Harbor" – an extensive digital attack that can paralyze critical infrastructure, China's Great Firewall – a Golden Shield or great firewall that monitors what users read on the Internet (similar to the Great Wall of China), "halal net" – a system of restricted Internet access in Iran.

"As a protest movement heated up in Hong Kong last summer, for example, the Chinese regime simply strengthened its "Great Firewall", removing subversive content from the Internet in mainland China almost instantaneously" (Case & Deaton, 2020).

Using this lexical combination, the author of the article relies on the reader's background knowledge, thus creating a common communication platform (Tushev et al, 2019).

The author's allusion to well-known literary, in our case mythological, characters is presented in the following examples: some fundamentally new chimera – some brand-new pipe dream (fantasy), only a few Cassandras pointed out that culture was more powerful – only a few prophets pointed to the fact that culture is more influential; the combination of the historical image of a gladiator and slang demonstrates the following example: For today's gladiators to buck the odds and avoid falling at each other's throats like most of their predecessors did, how ever, four things will be necessary (Ilikova, 2019).

Political hyperbole is typical of the following example, where we can see the likening of two cognitively distant (not directly related) concepts, namely, unreasonably high costs and the disease cancer: This wasteful spending on health care is a cancer that has metastasized throughout the economy (Bullough, 2020). The article refers to the reduction of interest deductions for the health care system. The hyperbolized meaning is expressed in the form of an extended metaphor, the intensity of which is enhanced by the lexeme metastasized, formed by the conversion from the noun metastasis – the development of tumours in different parts of the body resulting from cancer that has started in another part of the body; one of these tumours.

In an article on the problem of corruption, namely the impact it has on the modern world order, this phenomenon is also compared to the disease cancer: In a speech he delivered in 1996, James Wolfensohn, then president of the World Bank, likened corruption to cancer. "Corruption diverts resources from the poor to the rich, increases the cost of running businesses, distorts public expenditures, and deters foreign investors," Wolfensohn explained (Coronel, 2019). The author uses the stylistic device of intertextuality in the form of direct quoting the head of the World Bank, increasing the credibility of the views expressed, creating the effect of documentation and reliability; thus a striking comparison is obviously taken out of context, and the reader only needs to guess whether the phrase is the original statement created by the expert, or is a more general conclusion of the author of the article. In any case, the author manages to reach the effect of influence, because such a comparison comes to the fore.

Both of these examples demonstrate how by exaggerating the problem (in our case, expenditures and corruption), the effect of importance and focusing the reader's attention on certain issues is achieved.

Emphasizing a negative sign and creating a negative image is typical of the following example, where the metaphor Red peril (red threat, danger) is used to nominate adherents of the Communist party in the Republic of the Philippines: These anticommunist vigilantes were egged on by incendiary radio broadcasts hyping the Red peril. In the same article, the author calls them recalcitrant Reds (disobedient, uncooperative Reds). The purpose of the statement is to create a perception of the object as suspicious and undesirable, to qualify it so as to cause dislike, disgust or hatred (Lynch, 2018).

In order to enhance the expressive color of the journalistic text, the authors of articles often turn to phraseology.

The United Arab Emirates took a back seat in Syria (Malkasian, 2020). (To take a back seat – to take a less prominent role in some situation).

At times, however, evidence of failure was purposefully swept under the rug (To sweep under the rug – to ignore, deny, or conceal from public view or knowledge something that is embarrassing, unappealing, or damaging to one's reputation).

At the same time, the roiling U.S. confrontation with Iran is a wild card that could alter nature of the Afghan war, including by re-entrenching the American presence. (A wild card – someone or something that is unpredictable).

In the near term, rapid technological change will likely produce a cat-and-mouse dynamic as citizens and governments race to gain the upper hand (A cat-and-mouse – informal a phrase used to describe the suspenseful relationship between one being pursued and the pursuer; keep somebody in a state of uncertainty, being sometimes kind, sometimes cruel); to gain the upper hand – to come to be in a position of advantage, power, and/or control over someone, something, or some situation).

The following are other examples of using phraseological units: to hold sway, i.e. to have power, control or great influence over somebody/something, to stem the tide, i.e. to stop something from continuing or worsening, off the table, i.e. to be withdrawn or no longer available, as for consideration, acceptance, discussion, etc., to toy with, i.e. to consider or think about an idea or plan, to rock the boat, i.e. to do or say something that might endanger a stable situation or upset the status quo, to clip wings, i.e. to restrict one's freedom, power, or full potential, a high-wire act, i.e. an especially risky or treacherous job, plan, action, or operation, alludes to an aerialist performance on a tightrope, to test waters, i.e. to try to get an idea of what something will be like before actually doing it. These phraseological units characterize the sphere of politics as an area where there are such concepts as rivalry, power struggle, instability and high risk.

The introduction of contextually transformed phraseological units into the text of a journal article allows to play on stable expressions, discover new meanings, convey additional information, and evoke new associations and emotions in the reader. Such creative processing of phraseological units gives them a new expressive color and increases their expressiveness. The method of replacing a component is typical for the following examples:

Australia happens to be smack in the path of China's expansion.

Smack in the eye – set phrase used to describe words or actions that have offended or otherwise upset someone (Flournoy & Sulmeyer, 2018).

Hack-by-hack approach – i.e. attack for attack when speaking of cyber attacks on the Internet; the phrase is formed by analogy with the well-known expressions eye for eye, tooth for tooth.

Facing for greater constraints, Obama had to play the cards he had been dealt (to play one's cards well – to act adeptly and with good judgment; to make the best and most effective use of the resources at one's disposal). Substitution and concretization of the meaning are typical for this sentence.

The change in the usual scope of the expression "rules of the road", i.e. traffic rules is influenced by the general context of the article devoted to security measures on the Internet. According to the author of the article, now this expression should be understood as 'norms of conduct in cyberspace during peacetime' (Flusberg et al, 2018).

In a slightly different meaning, this expression appears in the next sentence, where rules of the road refers to a set of established rules aimed at avoiding a conflict or unpleasant situation: The United States will also need to work closely with like-minded allies and partners to set and enforce the rules of the road, including by restoring U.S. leadership in multilateral institutions such as the United Nations.

The special organization of syntax in political articles also contributes to the creation of expressiveness and reflection of the problematic diverse nature of the subject matter. Thus, the journal "Foreign Affairs" is characterized by the presence of parallel constructions, in particular, antitheses, gradations, etc. Interrogative sentences also emphasize the ambiguous nature of the phenomenon under study, and make the reader search for answers to the tasks set.

The use of contextual antonyms helps to reveal the contradictory nature of objects and phenomena, to express contrast and show the completeness of the coverage of phenomena, as well as to give a bright expression, to strengthen the emotionality of speech.

Given the high costs and slim benefits of the war, why hasn't the United States simply left Afghanistan?

The intensifying digital repression in countries such as China offers a bleak vision of ever-expanding state control and ever-shrinking individual liberty.

Worried about rocking the boat in a seemingly fragile region, it (the USA) has supported trusted but flawed partners instead of pushing leaders to make real change (Kotkin, 2018).

And although the United States has brought the Sunni Gulf States into increasingly open alignment with Israel, this effort has been undermined by the Emirati and Saudi clash with Qatar.

6 Conclusion

The analyzed material allowed us to draw the following conclusions.

1. Media texts presented in the journal "Foreign Affairs" perform the function of informing, influencing, and aimed at manipulating the minds of readers.
2. Content analysis of the analytical articles allows us to identify the following thematic groups of lexical units: competition, demonstration of power and authority, opposition order / disorder, strength and power, priority and advantage, diplomatic relations, retreat, war and conflict (is the most numerous). Coverage of topical issues in international relations determines the presence of emotional and evaluative vocabulary of primarily pejorative meaning.
3. On the content and stylistic levels presenting information in media text plays a big role, namely: coverage of principal materials (events, problems, personalities) selected by editorial staff is presented under a certain analytic view, i.e. we can see the impact of corporate ethics on the content of the articles. Thus, we can say that "Foreign Affairs" articles combine materials of an oppositional, complimentary and neutral (often veiled) nature, reflecting the current geopolitical situation. In this way the building of media reality is formed that can use media interpretation of events to shape public opinion, influence the course of political life, exert ideological influence, and create the image of political figures and countries.
4. Orientation to the educated reader determines the widespread use of metaphorical reinterpretation of well-known concepts (especially in naming countries or events), allusions based on images from literature and mythology, often original and non-trivial, intertextuality techniques in the form of various types of citation, which gives the text a bright dialogic character and increases the authority and reliability of the events described.
5. Lexical-semantic and syntactic stylistic devices play an important role in influencing the reader. The most commonly used in the journal "Foreign Affairs" are contextual antonyms, antithesis techniques, gradation, for the purpose of expressing contrast and giving expression; phraseological units, including contextually transformed ones, which all contribute to the creation of new associations and increase the expressiveness of the media text.
6. Identification of the influencing potential of stylistically colored vocabulary and the special organization of syntax determine the theoretical and practical significance of the study. As a perspective for further study, we can outline the typology of metaphors, allusions, and euphemisms, including in a comparative aspect based on media texts in other languages, as well as the features of their translation.

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Primary Paper Section: A

Secondary Paper Section: AD

INTERACTIVE TECHNOLOGIES IN WORKING WITH SPORTS-GIFTED STUDENTS

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Abstract: This study deals with the interactive classes with sports-gifted students as a way of developing cognitive consciousness. Creative comprehension of available literary sources and personal work experience allows us to formulate recommendations on using the capabilities of interactive technologies for sports-gifted children. The work presents the most popular technologies for constructing an interactive lesson on the example of organizing a summer sports camp for students aged 13-16, namely the use of software for creating MENTIMETER presentations and the KAHOOT gaming platform, DEBATE technology, and the teaching techniques for Critical Thinking Development Technology.

Keywords: sports, gifted children, interactive technologies

1 Introduction

The requirements of modern life dictate the education system, including sports, the need to work on the formation and development of a socialized competent person. Modern approaches focused on creativity in students and on an independent search for a solution to a problem require the mastery of interactive technologies by teachers and trainers.

Interactive activity is of paramount importance for the comprehensive development of the personality, allowing you to master the deductive and inductive methods of cognition, when students learn to independently find the necessary information, getting acquainted with the primary research skills. One of the most important tasks of modern education is precisely the development of skills of consistent knowledge of the object of study, instilling a critical attitude to the acquired data.

Training and education of sports-gifted children should contribute to the formation of a person with basic skills in medicine, ecology, a healthy lifestyle, with knowledge of the basics of the functioning of a living organism. Teaching them requires a cognitive motive, creating a problem situation, and incorporating meaningful life tasks into the learning content. The teacher's task is to organize the collective search activity of students, for which interactive technologies are the best suited [Davletova, 2019; Kamahina, 2017].

The objective of the research is to analyze the possibility of using a number of interactive technologies as an innovative basis for improving the work with sports-gifted children.

The use of interactive technologies improves cognitive abilities. The role of analytical thinking is especially significant in achieving sports results in game sports, when it comes to the development of one of the sides of the intellect of athletes, namely game thinking.

The use of interactive technologies contributes to the formation of positive motivation to possess new knowledge among students and to simplify the preparation of mentors and teachers for the lesson, while improving its quality.

The article presents the most popular technologies for constructing an interactive lesson.

The use of interactive technologies helps to achieve high results by increasing the activity of each student in the process, the need to communicate, which leads to the development of communicative qualities, the ability to collaborate, listen to each other, criticize and accept criticism, which is especially important in team sports.

2 Methods

The "Champion's Way" educational program was developed by FSBEI HE Volga State Academy of Physical Culture, Sports and Tourism in the framework of the Temporary Research Team "Gold Standard for Child Development 2.0" in "Creating educational development modules in gifted areas and competency groups. "Sport" with the financial support of ANO "Kazan Open University of Talents 2.0" [Davletova, 2019].

The program was tested in the "Champion's Way" summer profile shift of the University of Talent in July 2019.

The article considers the possibility of using interactive educational technologies in the summer profile – namely, sports – school.

3 Results and Discussion

The innovation of interactive technologies is the development of students' analytical abilities aimed at self-study. Interactive interaction between students of the University of Talent and their tutors and experts can be considered as a complete methodological basis for the development of thinking: when studying general scientific methods of cognition, individual work is the best to develop the necessary degree of skepticism in the students' minds.

Lessons are developed as interactive trainings and sports reloads, turning the perspective of working with sports-gifted youth of the republic to the development of abilities and the formation of competencies aimed not only at achieving high sports results, but also monitoring the health status of young athletes [Davletova N.Kh. 2019].

4 MENTIMETER application features

Mentimeter is an easy-to-use software for creating interactive presentations (https://www.mentimeter.com/app). The program offers the most general recommendations for visualizing feedback. At the beginning of classes, to get acquainted with the position of the participants, it is convenient and methodically competent to use polls with ranking answers according to the degree of importance; true or false statements; and open answers.

When working with sports-gifted children, the issues of expectation from trainings, as well as the problems of doping in sports, the Fair play principles, the ratio of industriousness and sports talent, are important.

Visualization of feedback with open answers contributes to highlighting the most widespread opinion for a better acquaintance with the level of preparedness of participants for perceiving the stated topic and for correcting the methodology of the lesson subject to the characteristics of the students. It should be noted that when choosing a survey form with open answer options, the answers written by the participants and displayed on

the screen are impossible to predict. In a teenage audience, with a certain mood and composition of participants, a completely unexpected result may appear on the screen, up to profanity. There is a certain limitation in the possibility of using a form that can only be applied to an experienced facilitator with predictable participants.

At the end of the lesson, teachers can repeat the specified forms of feedback and not only clarify the mood of the audience, the degree of assimilation of educational material, a change in attitude to issues of moral standards, but also evaluate the dynamics, since all the information displayed on the screen is presented in percent.

At the end of the lesson of any form, especially game, competition or debate, it is convenient to summarize by voting for the proposed point of view, up to assessing the activities of the teacher himself. This kind of reflection objectively evaluates all participants in the educational process: both students - to identify the level of competencies, and the trainer (teacher, tutor, mentor) - to evaluate the effectiveness of his work.

Visualization of answers in real time creates a general emotional coloring of the atmosphere of the lesson when all the opinions of the participants are considered, which is extremely important in adolescence.

5 DEBATES opportunities

For “Is Sports about Winning” and "Messi or Ronaldo?" trainings the "Debate" technique is used. Debate is an intellectual game, a structured form of discussion, that follows clear, predetermined rules. The essence of the game is that the two teams put forward their mutually exclusive arguments about the proposed thesis in order to convince those present in their innocence. It is advisable to put the total duration of the discussion at 45 minutes, otherwise the participants get tired and the sharpness of the game is lost.

As the organizer of the discussion, the teacher should stimulate the productivity of ideas through questions, change the course of the discussion, directing it to a predetermined goal, for example, in “Is Sports about Winning” is the formation of true sports values. One of the most important tasks of a teacher is to create and maintain a high level of friendliness and sincerity.

At the beginning of the lesson, the host proposes a topic for debate: “Is Sports about Winning?” and according to a presentation prepared in advance in PowerPoint, the host announces the problem without expressing his personal attitude to it. Further, a video with problem situations (cutting from films about sports) can be shown. Mentimeter creates a word cloud from open answers. With a minimum of comments from the host and his alleged indifference, it becomes clear that the problem is very acute. Next, each participant chooses a role for himself and the debate itself begins. The debate ends with a vote. If the voting ends so that it becomes clear - the participants are for fair sports, the presenter can only thank the participants for their sincerity, sincerity in the conduct of the dispute, and, most important, for their life position in adopting true sports values.

It is much more difficult if it turns out that the audience will vote for the victory at any cost. For such a case, the host should have a prepared speech. In any case, it is necessary to thank the participants of the training for sincerity in the dispute and express hope that someday everyone will realize the importance of the principles of Fair play.

If necessary, you can once again watch the video and see the dynamics of the audience’s opinion in the Mentimeter program.

“Messi or Ronaldo?” can be conducted similarly, focusing on the fact that throughout the existence of mankind it is always interesting to predict the success of an athlete, namely the contribution of talent or hard work. It should be noted that Messi and Ronaldo are always opposed to each other by sports journalists as bright representatives of two different poles: talent and hard work. You can end the lesson with examples of amazing sports results, identifying the factors that determine the success of athletes.

6 Methodological techniques of the Critical Thinking Development Technology

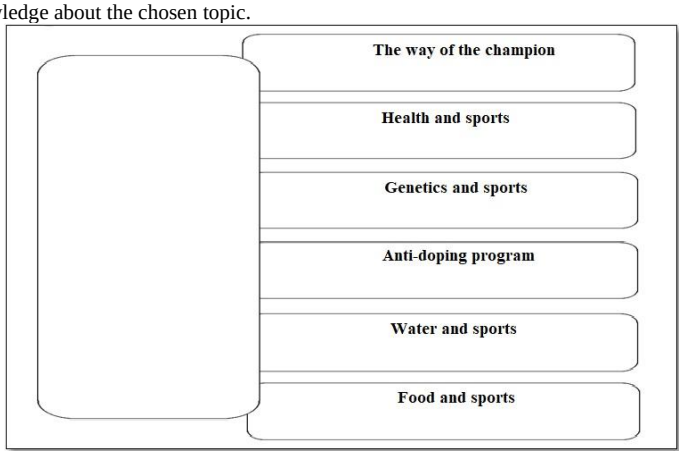
With the introduction of FSES, it is believed that the development of critical thinking is an integral part of updating the modern teaching methodology. The ability of a person to adequately assess the surrounding reality requires the development of critical thinking.

For the formation of critical thinking in classes, students need to develop a "habit" of evaluating the final results, i.e., to carry out a kind of reflection. Each lesson of “The Champion’s Way” ends with the “POPS formula” technique.

Let us consider the construction of an interactive lesson with specific examples. Table 1 shows the techniques for the development of critical thinking, the most popular in the organization of interactive classes [Shamsuvaleeva, 2018, Iakovenko, 2019, Kamahina, 2017, Multnix, 2010].

Table 1: Examples of techniques for the various stages of interactive classes

Technique	Description
“Call” Stage	
“Correct-incorrect statements” Table	The authoritative opinion "Water in the life of an athlete". At the beginning of the lesson, you need to determine the position "true or false", and at the end of the lesson – make corrections. Evaluate from the position: correct or incorrect? 1. It is important for Athletes to observe a drinking regime. 2. Per day, you must drink 2.5 liters of water. 3. Drink only when you feel thirsty. 4. Bottled water is tap water. 5. Plastic bottles can be reused.
Game «Do you believe?»	The authoritative opinion "anti-Doping program". Students must explain their response. Do you believe that… 1. Successful athletes use doping? 2. Do Sponsors not Fund sports with doping scandals? 3. If an athlete is ill, can they use any medication for treatment? 4. Is there a list of medications banned for athletes around the world? 5. Can I win a competition without doping?

«Bloom's Chamomile»	The diagram includes several types of questions: 1. Simple questions to identify the facts: "what time of day is better to train?". 2. Clarifying questions: "Are you sure your heart rate is an indicator of fitness?". 3. Unifying questions: "What is your opinion based on?". 4. Creative questions: "What would change...?". 5. Questions: "How is one event related to another?". 6. Practical issues: "How can these skills be useful in your sports life?".
Stage «Understanding»	
«Fishbone»	Problem: the main chemicals of sports activity. Upper ribs: protein, carbohydrates, water, calcium. Lower edges: value. The tail: the withdrawal.
Strategy «Article»	The strategy option is "Laboratory". Stage I - evaluate the measurement of functional capabilities of the body. Stage II - compare your indicators with the data of team members or with tabular data, paste the prepared drawings, diagrams, and diagrams on the sheet. Stage III - present the work.
PEEC- formula (Position-Explanation-Example-Consequence)	PEEC- formula can be the basis for solving any difficult question throughout the class, as well as PEEC- formula can end any class: a seminar, training, training, sports debate or competition.
Stage «Reflection»	
Cinquain	A specific non-rhymed poem can be used to summarize and summarize the main thoughts. The most acceptable form of cinquain we see the following: 1st line – 1 noun (name of the poem, subject); 2nd line – 2 adjectives; 3rd line – 3 verbs; 4th line – a four-word phrase; 5th line – 1 noun (possible synonym of the first line).
Venn diagram	This is a graphical way to identify commonalities in the areas being compared, highlight differences, and summarize knowledge about the chosen topic. 

7 KAHOOT Game Learning Platform for Evaluation Activities

Kahoot is an easy-to-use platform for creating games (https://kahoot.com/), which turns an activity into live interactive communication, as the program considers answers of each participant, which after each question itself shows the correct answer and shows the number of points scored by teams or players, and at the end of the game it identifies the winning team or the winning player.

During the final event of the "Sport must go on!" educational program a Kahoot-based intellectual team game is used to check the theoretical knowledge gained, create a functional portrait of a participant in “The Champion's Way” educational course, to control the level of formation of the necessary competencies, to take stock of the development of the entire course. During the final event, the facilitator must invite the participants to enter the site, enter the name of the game in the search bar - “Sport must go on!” or follow the link. Students enter the Game PIN code from their smartphone, which is automatically generated and changes each time they “start the game”. Then the participants enter their name, and when all the participants or all the teams are ready, the host starts the game by pressing “Start”.

"Sport must go on!" includes 25 questions. Maximum 90 seconds are given for thinking and introducing an answer.

8 Summary

The main criteria for the selection of interactive technologies for organizing work with gifted children were the ability to enhance the cognitive and emotional interest of students, as well as the ease of their development and use by the teacher.

MENTIMETER is appropriate for reflection on issues of expectation from trainings and determining the immediate mood of the audience, the Debate technology – for educational work, Kahoot – for summing up the results of mastering the entire course.

Features of the Critical Thinking Development Technology suggest its widespread use, including in various combinations with the above-mentioned interactive technologies.

9 Conclusions

Interactive technologies make classes a more exciting and interesting process and, as a result, contribute to a better formation of the necessary competencies; however, any tool used in the educational process is only one of the equal components of the didactic system along with its other links: goals, content, forms, methods, activities of the teacher and the activities of the student.

The use of interactive technologies in the lesson is not a guarantee of the success of this lesson, since the mere fact of their use does not solve all the didactic problems of the lesson [Iakovenko, 2019].

In this study, recommendations for using the capabilities of the most popular interactive technologies in working with sports-gifted children are aimed primarily at trainers and sports psychologists who, when designing interactive classes with pupils, solve both the issues of revealing potential opportunities of the pupil in sports and also questions of formation personality of the young athlete. Therefore, the use of MENTIMETER and KAHOOT, the DEBATE technology, methodological techniques of the Critical Thinking Development Technology, on the one hand, simplifies the teacher's work in preparing for and creatively designing classes, and on the other hand, has great importance for the development of analytical thinking as one of the sides of the intellect of athletes, in particular, game thinking. Working with young team sports athletes, such activities contribute to the development of socialization skills.

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GEOINFORMATION SUPPORT FOR ANALYSIS OF MARINE ECONOMIC ACTIVITIES OF RUSSIAN REGIONS

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Abstract: The article is devoted to the presentation of an approach to solving the problems of geoinformation analysis of modern sea economic activity of Russian regions, based on a comprehensive study of the structure and functioning of their marine economic complex. The tools for geoinformation analysis of economic activity and spatial organization of productive forces in the Russian coastal regions is proposed. The composition of indicators and the main characteristics of spatial databases of the specialized geoinformation system are considered. The current GIS project "Marine Economic Complex of Russia" will allow analyzing the dynamics of socio-economic and spatial development, as well as conducting operational monitoring of the economic activities of maritime regions.

Keywords: marine industry, geographic information systems, geoinformation analysis, maritime regions, Russia

1 Introduction

The factor of the seaside location has a great influence on the formation of economic specialization and spatial organization of economic activity in regions [Dupont et al, 2020; Eberhardt et al, 2013]. In our times, characterized by complex problems and challenges for socio-economic development, increased political tension, increasing competition for economic resources, the influence of this factor is growing up. This leads to growing attention to the study of the maritime economic sector [Böhnke-Henrichs et al, 2013], and its role in ensuring economic growth, strengthening integration and cooperation relationships between countries and regions [Strategiya prostranstvennogo razvitiya prostranstvennogo razvitiya Rossijskoj Federacii na period do http://static.government.ru/media/files/UVAlqUtT08o60RktoOXl22JjAe7irNxc.pdf].

The development of economy of the Russian maritime regions is largely due to their special transport and geographical location, huge resource potential, as well as promising opportunities to ensure the effective functioning of interregional and, especially, international transport routes and international transport and logistics systems.

The conspicuous Eurasian vector of the transport and logistics system development of the Russian maritime regions necessitates the construction of international transport highways and logistics centres, which will allow to form sufficient infrastructure to expand the Eurasian direction of international economic relations in Russia in future [Transportnaya strategiya Rossijskoj Federacii na period do 2030g. [Elektronnyj resurs] URL: https://www.mintrans.ru/documents/3/1009].

2 Problem Formulation. Outlook Study of Marine Economic Activity for The Maritime Regions of Modern Russia

The growth of marine economic activity in Russian regions is largely focused on solving the problems of developing economic relations with the countries of Eurasia. The huge natural resource and labour potential, positive economic dynamics allow us to give a high assessment of the prospects for the international trade growth in the Eurasian countries, and the formation of large international markets for goods, services and capital in them.

Problems of development of the Eurasian economic cooperation are largely determined by transport and economic factors [Gafurov et al, 2014: Druzhinin, 2016]. The leading role in ensuring Russian Eurasian economic cooperation should be played by sea transport and the developing systems of port economy in Russian coastal regions, which is largely due to their importance as a factor in the formation of a promising transport and logistics system in Eurasia.

Throughout the all post-Soviet period, the country's seaports were an important driver of the national economy and, at the same time, the main growth points of the Russian maritime economy. In 1994-2018, their cargo turnover had increased by 7.8 times, exceeding 816 million tons (up to 80% of this volume is accounted for export-import operations) [Vardomskij, 2019]. Expanding the participation of Russian producers in the dynamically developing markets of the Eurasian states, as well as realizing the country's Eurasian transit potential, should be implemented, inter alia, by creating stable functioning sea transport routes, as well as by increasing the capacity of the Russian Federation's seaports, including the ports of the Far-Eastern, Baltic, Arctic, Azov-Black Sea and Caspian basins.

A major role in the development of maritime activities will play the regions where port systems of the Northern Sea Route are localized. These systems have demonstrated the increased economic activity [Vardomskij, 2019] in recent years and have great potential for trade turnover growth between European Union countries and the Far East, especially China, Japan, and Republic of Korea.

The growing importance of the Northern Sea Route is due to the improvement of shipping conditions, the development of port infrastructure, the growth of economic cargo turnover in the ports of the seas of the Arctic sector of Russia, as well as due to the length of the route, which is several times shorter than the routes of the main trade routes "Far East – Europe" through the Suez or Panama Canals. The shorter route length of the Northern Sea Route provides an advantage in time for cargo delivery, reducing fuel costs and freight costs. An additional factor in increasing the attractiveness of the Northern Sea Route is the increase in its capacity due to global warming and growing opportunities for clearing the way by the icebreaker fleet.

The system of Chinese infrastructural megaprojects on the territory of Eurasia creates additional opportunities for the development of marine economic activities in Russian regions. It includes seven" belts " - transport, energy, trade, information, scientific and technical, agricultural and tourist [Bocharnikov, 2019: Liu, 2017: Song et al, 2013]. As part of this initiative, it is planned to support a number of international transport routes, most of which are not focused on the transport and logistics network of the Russian maritime regions. At the same time, the development of marine economic activity in the regions in the Northern Sea Route objectively contributes to the formation of a common economic space for both individual groups of Eurasian countries and the single Eurasian economic space too [Song et al, 2013: Panasyuk, et al, 2013].

Among new factors of the development of economic and transport and logistics activities in the Far North regions, we should also note the project "Northern latitudinal way" - a 707 - kilometer railway line under construction along the route Ob - Salekhard - Nadym - Novy Urengoy-Korotchayevo. The projected volume of transportation on this main railway line will be 23.9 million tons [Podpisano rasporyazhenie pravitel'stva RF po stroitel'stvu Severnogo shirotnogo hoda [Elektronnyj resurs] URL: https://news2.ru/story/551385/]. The completion of its construction will increase the economic potential of the maritime regions and ensure the growth of cargo turnover in their port systems by increasing the volume of cargo transported from the regions of Russia.

3 Methods

The complexity and lack of knowledge of various aspects of the state and prospects of development of marine economic activity in the Russian maritime regions necessitates the use of a wide range of analytical research methods – from simple quantitative analytical methods, methods of geoinformation analysis to methods of spatial statistics, spatial econometrics and methods of spatial (aquatic and territorial) socio-economic systems modelling.

In recent years, issues of developing a systematic approach to strategic planning and management of marine economic activities have become of great importance [El-Sabh et al, 1998]. In the conditions of intensive development of production and transport systems of the maritime regions, potential risks of conflicts in environment management, generated by anthropogenic threats to aquatic and territorial natural complexes, are growing. This implies the use of adequate analytical tools and a special computer environment for solving problems of analyzing the dynamic of marine economic activity in maritime regions. This possibility is provided by specialized geoinformation systems in combination with standard and special software packages for solving problems of statistical and spatial analysis of aquatic and territorial ecological-economic and socio-economic systems. Modern GIS have a wide analytical functionality and allow you to simply expand it on the basis of special project software, contributing to improving the quality and efficiency of analysis.

Analytical research carried out within the framework of the project "Eurasian vectors of marine economic activity in Russia: regional economic projections" is based on the development of the spatial databases system and the system of GIS- and web-maps formed on its basis. As part of the project, the development and implementation of a specialized geoinformation system "Marine Economic Complex of Russia" is envisaged.

4 Results And Discussion

The purpose of development of the geoinformation system "Marine Economic Complex of Russia" is to conduct comprehensive geoinformation analysis of the structure and functioning of the marine(sea) economic complex of its maritime regions. GIS will allow you to search for spatial and temporal constant patterns of development marine economic activity in new and existing regional systems on basis of analysis of social and economic space of the maritime regions, as well as to conduct operational monitoring of their economic activities.

Among the future tasks of GIS analysis of the marine economic activity systems in the maritime regions are:

- Analysis of the economic and geographical location of individual operational territorial units and their systems.
- Elementary spatial analysis problems: visualization of OTUs, analysis of their attributes, composition of thematic cartographic representations, graphs and diagrams, based on the attributes of homogeneous OTE systems - GIS layers.
- Spatial statistics (spatial distribution analysis, spatial structures analysis).
- Analysis of density and accessibility of economic space.
- Analysis of internal and external environment of OTU systems.
- Analysis of dynamics of the main OTU properties and their group properties.
- Network analysis.

The solution of GIS problems is based on fixing the systems of operational territorial units and the relationships between them. OTU is an atomic object of analysis. The OTU systems selected for GIS analysis not only determine the content of the cartographic base and spatial databases, but also the features of the applied analytical methods, the nature and format of the analysis results.

The core of the OTU system and, accordingly, the GIS spatial databases are formed by computer representation of such spatial formations as:

- seaport and its components;
- hinterland of the port or economic growth center of the maritime region;
- a municipality where marine economic activity is localized.

Their ensembles and combinations form GIS constructs of a higher level of spatial hierarchy, with a more complex structure. Among these are:

- maritime regions where information about ports, hinterlands, and municipalities is summarized;
- coastal sectors of marine economic activity;
- countries;
- world regions.

Information at the regional level, country level, or group of countries level serves as the basis for the software construction of individual spatial databases or is formed by the GIS itself as part of processes for solving analytical problems.

Economic activities carried out within individual seas (transport, fishing, oil and gas production, etc.) initially have a marked industry orientation and are not focused on the development of inter-industry cooperation and integration. Therefore, its results do not immediately form regional and interregional economic complexes and clusters. Only with the growth of economic and social relationships and the achievement of an optimal combination of main branches of economic specialization, joint marine economic complex on regional and interregional level is formed.

These circumstances, as well as the level of socio-economic development of the maritime regions, have largely determined the content and structure of the GIS spatial databases system. They include spatial data on individual industries and emerging marine economic complexes in Russian regions, their international economic relationships, as well as on vertical socio-economic relations between municipalities and regions.

GIS databases include the following groups of indicators:

1. The Russian Maritime industry and its regional localization

a) Main indicators of marine industry sectors

1.1. Seaports and maritime navigation.

1.2. Extraction of marine bioresources (including marine fisheries) and aquaculture.

1.3. Extraction of mineral raw materials (oil, gas) on the sea shelves and coasts.

1.4. Shipbuilding and ship repair; construction of equipment for development of shelf resources.

1.5. "Waterside" tourism and recreation.

1.6. Naval forces and their infrastructure.

1.7. Scientific and educational structures of "marine" orientation.

b) Indicators of economic sectors that are interconnected with the branches of the marine economic complex

1.8. Port industry (export-oriented or dependent on imports of raw materials, components, etc.).

1.8.1. Automotive industry.

1.8.2. Liquefaction and regasification of natural gas, other types of hydrocarbon processing.

1.8.3. Chemistry.

1.8.4. Food industry.

2. Economy of the maritime regions: structure, dynamics, comparative studies with the inland territories of Russia and average Russian indicators.

3. foreign Economic activity and international trade relations of the Primorye regions of Russia.

4. Demographic and social processes in the Primorye regions.

As known, the Register of seaports of the Russian Federation includes 67 ports that are united in eight sea basins and located on the shores of 12 seas of three oceans and the Caspian Sea.

When developing the structure of the GIS spatial database system "Marine Economic Complex of Russia", all the objects of analysis - the maritime regions, their municipalities, ports and port components were grouped on the basis of their geographical location into five sectors:

a) Arctic Sector, including the Republic of Karelia, Arkhangelsk oblast, Murmansk oblast, Nenets Autonomous Okrug, Yamalo-Nenets Autonomous Okrug, Krasnoyarsk Krai, Republic of Sakha (Yakutia).

b) Baltic Sector, including Kaliningrad region, Leningrad region, and Saint Petersburg

c) Black Sea Region Sector: The Republic of Crimea, Krasnodar Territory, Rostov Region, Sevastopol

d) Caspian Sector: The Republic of Kalmykia, Astrakhan Region, The Republic of Dagestan

e) "Pacific Russia" Sector: the Chukotka Autonomous Region, Kamchatka Territory, Primorsky Territory, Khabarovsk Territory, Magadan Region and Sakhalin Region.

The structure of spatial databases and the cartographic base of the GIS " Marine Economic Complex of Russia " are focused on seven levels of the spatial hierarchy - from the Eurasian level to the port locality (Table 1).

Table 1 Levels of the spatial hierarchy of the spatial databases of the GIS in scientific project "Eurasian vectors of marine economic activity in Russia: regional economic projections»

	Level name	**Databases (DB)**	**Map framework**
0	Eurasia (Russia and neighbouring countries)	√	√
1	Russia (Russian regions)	–	√
2	Maritime sectors of marine economic activity	Formed by the spatial databases of the maritime regions	√
3	Maritime regions	√	√
4	Port hinterland or hinterland of an economic growth centre	Formed by the spatial databases of municipalities and ports	Formed on cartographic base of municipalities and port
5	Municipalities where marine economic activity is localized	√	√
6	Ports and their parts	√	√

The key-note level is sublevel 3 "Maritime regions", which serves as a link between sublevels 2 and 4, 5 and 6.

The developed structure of GIS spatial databases will allow to switch to any of the selected maritime sectors with automatic construction of map layers defined for a given map scale. This makes it possible to conduct an intersectoral and interregional analysis of economic processes in the coastal regions, to conduct a comparative analysis with the inland territories of Russia and the average Russian indicators.

Of particular interest is the micro-level analysis and mapping, focused on the construction of GIS maps of ports and adjacent territories that are most fully involved in the processes of marine economic activity. The formed spatial databases assume future storage of information about each terminal of a port, which makes it possible detail analysis and assessing the degree of development of its economic relations.

A fragment of the "Pacific Russia" Sector map is shown in Fig. 1.

Fig. 1: Fragment of the "Pacific Russia" Sector map

5 Conclusions

The current geopolitical situation of Russia is increasingly determining the importance of its marine economic complex. By developing maritime economic activity, the country strengthens the multi-vector nature of its foreign economic policy, increasing the stability of economic growth [Druzhinin, 2016]. Activation of marine economic action is currently manifested, first of all, in strengthening the geoeconomic (including transport, fishing, offshore energy production, etc.) presence of Russia in the coastal territories of the country.

The solution of a number of modern geoeconomic problems in Russia is directly related to acceleration of the formation of large marine economic complexes, which allows to identify perspective territories within which new areas of concentration of productive forces will be formed, ensuring development of the economies of both individual Russian regions and countries of Eurasia. This determines the fundamental importance of solving the problems of both economic and spatial analysis of regional and interregional marine economic systems, creating prerequisites for detailed research of coastal territories using modern GIS technologies.

The geoinformation analysis of social and economic development problems of the country's maritime regions, carried out within the framework of development of the GIS project "Marine Economic Complex of Russia", will allow a deeper assessment of their economic growth potential, prospects for

participation in the development of the Eurasian economic space and international economic relations of the Eurasian countries.

Developed specialized geoinformation system will contribute to effective solution for a wide spectrum problem of spatial and economic analysis of state and dynamics of marine economic systems of coastal regions. GIS will also help to assess the extent of their involvement in interregional and international economic relations, allowing to identify and assess the intensity of economic relations both at regional and international level.

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FUNCTIONS OF FALSE ENDING IN AN EPIC LITERATURE

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Abstract: The author of the article studied vivid examples on the use of false ending in epic genres of literature in order to determine its functions. In general, the transition of particular functional properties of the false ending was traced. The researcher introduces the concept of “inverted”, in order to explain a special principle of constructing a false ending, illustrating his theory using examples from the novels of O. Henry. The common game with the reading expectation of the junction in the novella gets a new life in the modernist novel, while acquiring new, typical for the novels of the 20th century, features of modernistic game. For example, the false ending in V. Nabokov 's novel "Mashenka" acquires the patriotic pathos typical for V. Nabokov and Russian emigrants.

Key words: false ending, function, paradox, parody, irony.

1 Introduction

To date, the study of a false ending in literary studies is under development stage, therefore the theme of the article we have stated is relevant and promising.

The aim of the article is to determine the functions of the false ending in an epic literature. In order to achieve this aim, the following tasks were laid down: to study examples of the use of a false ending in epic genres, to determine the features related to constructing a false ending, to establish what functions, except the main one, that may have a false ending in an epic literature.

Certainly, it is not possible to explore absolutely all the functions of false ending in all epic genres of world heritage. The false finale of each individual literary work "acquires" its own additional functions. We assume that these "additional" functions with the development of literature, universalizes not only for literary work of the same genre, but also for works of other kind of epic genres. Therefore, for us it’s not important how many literary works have been studied or even the number of its functions, but an attempt to trace how the transition of the particular functional properties of the false ending are realized in practice.

2 Methodology

In the short story and novel, the false ending occupies a special place. Following Meletinsky E., who in his work “Historical Poetics of a Short Stories” noted that, “The separation of the short stories from other small genres, parts of which directly participated in its formation, is known difficulty. The difference between the novels and the short stories does not seem fundamental to me ”[3, p. 5], we will not differentiate between these small genres and will relate them to the genre of novels. The genre "Novel" originated from Italy in the XIV-XVI centuries, but its roots can be traced back to the ancient literature of the West and East. In the process of its formation as a genre, the novel underwent various modifications. However, situational or psychological surprises and acute conflict become an integral sign, precisely the strictness in terms of sense in the composition of the epic genre.

3 Results and Discussion

The "false ending" has been used by writers for a long time in a wide variety of literary genres, for example: W. Shakespeare’s comedy "A Midsummer Night’s Dream", A. Pushkin’s novel “The Undertaker”, V. A. Zhukovsky’s ballad “Svetlana”, V. V. Nabokov's novel "Mashenka" and others. In addition to its main function (misleading the reader), the false ending in different genres has its own specific functions. For example, in many fairy tales of the world there are “false” heroes, there is a false ending as a result of making a choice, false opportunities, predictions, testimonies ... Situations by choice, false omens, leading to the progress and ending of a false plot. This can also be observed in other genre formations. For example, in W. Shakespeare's play "Macbeth", the false ending is based on the pun principle that presents a falsely understanding of the predictions of the three witches. Macbeth is predicted: no one born of woman will harm him - Macduff was cut out with a knife from his mother’s womb; King Macbeth is promised a carefree life until the Birnam Forest enters battle with him - the soldiers of the rebellious MacDuff and the real heir to the throne, Malcolm, disguises themselves, picks up branches of trees, making it seem like a forest is moving. In a play, a false prediction is transformed into a false interpretation. Despite Macbeth’s attempts to know in advance his fate and influence its course (to become king, prevent his death), the prophecy is fulfilled, justice prevails. Thus, the function of the false ending of the play acquires an additional connotation: the fulfillment of the prophecy despite the interference of greed.

4 Application of "False Ending" In The Novel

Our scientific interest focuses on the ending of the early American novel, since it's from it that the formation of such American literature begins. The false ending and its producing effect was highly rated by Edgar Poe, a poet and theoretician of “deceived expectations”. He “<...> correctly rated, both in terms of metrics and psychology, a feeling of reward for the unexpected arising from the reader on the basis of the “expected” <...>" [Vern J. Biography/[Electronic resource]//Access mode: http://myaudiolib.ru/authors/77 - free, - Title from the screen.]. Features of poetry of Edgar Poe includes the frequent use of the false ending in novels serving as a source of creativity and inspiration for many of his followers. Like the world famous story “The Golden Beetle” which caught the attentions of puzzles, ciphers, cryptograms. In addition to "The Golden Beetle", “The Murders in the Rue Morgue”, “The Mystery of Marie Rogêt”, and “The Purloined Letter”, all became examples detective. Subsequent generations borrowed a lot from Edgar Poe (the detective plots, the ending schemes literary work, tricks ...); it will be legitimate to note that the world-famous detectives Cuff, Sherlock Holmes, Pater Brown, Hercule Poirot, Leacock owe their appearance to the novels of E. Poe.

In modern detective novels, in most cases the narrative never goes by without a false ending or a false plot: either someone is accused or arrested, after which it turns out that there was an occurrence of an investigation error. The option proposed by the author for decoupling a certain conflict, as a rule, is already exposed, considered as incorrect and quasi-complete. One of the striking examples of such “nose-breezing” of readers should be called hermetic detective by Boris Akunin “Murder on the Leviathan”, the composition of which is complicated by four versions of the ending: Inspector Gauche collects suspects four times in order to expose the murderer, but the real killer is not found by him but by Erast Fandorin, an erudite person, similar to a mechanism due to his ability to think accurately and clearly.

The acceptance of paradox for creating a false ending was borrowed from E. Poe by J. Verne. In the novel “Around the World in Eighty Days,” the reader is misled in an exquisite way: no one expects Phileas Fogg, who is always so accurate and pedantic to eccentricity to make a mistake in time. This seems unbelievable, but not due to a miracle, but science. Phileas Fogg, traveling around the world, moved to the East, therefore, moved

towards the sun, that's why his days (compared with days in London) were reduced by 4 minutes every day. The globe is divided by 360 degrees, therefore, 4 times in 360 gives an extra day. The idea of the novel by J. Verne was preceded by the appearance in the "Picturesque Journal" ("Le Magasin pittoresque", 1870), an article that talks about the opportunities that arose after the opening of the Suez Canal, travelling around the world "using various means of transportation in exactly eighty days (it used to take 7-8 months) "[Bazhanova E. A. 2013] and the short story by E. Poe "Three Sundays in a Week". The science fiction writer thoroughly checked the information, made accurate calculations and made sure that it was possible to travel around the world in 78-79 days. The remaining time might be needed on the way due to unforeseen delays. Further, J. Verne set about writing a novel. The false ending of the literary work confuses the reader, but the continuation of the novel and the real ending is possible due to the geographical paradox. However, the unexpected ending caused bewilderment among readers of the newspaper, which published parts of the novel from November 6 to December 22, 1872. "The Paris Geographical Society invited its full member, Jules Verne, to give explanations at an open meeting on April 4, 1873. The writer's message "Meridians and Calendar" was published in the writings of the Society and became the author's commentary on the novel..." [Bazhanova E. A. 2013]. Thus, as a false ending, the writer used the paradox of temporary inconsistency with geographical location that he studied. The false ending of the novel helps to reveal the ideological load of the literary work: the triumph of science helps to win the bet.

By the end of the XIX and the beginning of the XX centuries, the American novel as a genre undergoes changes: in it appears elements of parody and irony, brought to the game by the reader and his expectations, psychological analysis disappears, and constructive methods of constructing the literary work are simplified and formalized. With this clue the novels of O. Henry are developed, where the irony is taken too extreme and also to a point of becoming an anecdote.

Many scientific works have been devoted to the study of O. Henry's short stories. Of particular note is the scientific work of B. M. Eichenbaum "O. Henry and Theory of short story," in which the researcher analyzed the endings of a short prose writer. The scientist noted a special parody in the endings of O. Henry's short stories, which often plays "with the reader's literary skills", confuses and almost mocks them [Big Soviet Encyclopedia. Main editor: Prokhorov A. N., 1972]. The writer tests the attention of his reader. The ending of this work is not only a denouement, but also explains the meaning of the connection. B. M. Eichenbaum names a number of principles according to which the endings of O. Henry's short stories are constructed, which we define [endings] as false: omission or mutual misunderstanding, ambiguity ("Third ingredient", "the ransom of red chief", "A Service of Love"), analogy ("Third ingredient"), omission ("Jeff Peters as a personal magnet"), details that gain weight by the end of the work ("Love and money", "Furnished room", "Province", " Not literature»). However, the scientist notes that O. Henry almost never uses the usual secret. His mystery serves as a plot twist, giving the entire construction of the work irony, parody or game with the reader.

As a result of our research, we have identified inversion, which was not noted by B. M. Eichenbaum, as the principle of constructing a false ending for some of O. Henry's short stories. The term "inverted image" was introduced by Y. Lotman and denotes a pathway in which opposite images are replaced by dominant features [Bazhanova E. A. 2010]. The inversion that we observe concerns images and situations (for example, in the novels "the Burning lamp", "pig ethics", "the Pharaoh and the chorale", "the Shrine", "in the name of tradition", "the Shorn wolf", "the Conversion of Jimmy Valentine", etc.). let's Consider a few examples.

The false ending in "Princess and the puma" was achieved thanks to the "inverted images" of the main characters. Ripley Givens, who dreamed of marrying Josefa O Donnell, found himself in a ridiculous position when it was not him, but her, who saved him from the attack of a lion. Trying to save his reputation, Ripley invents a story about the escape of a tamed lion named Bill. Josefa does not immediately understand what is going on, but then later regrets killing Bill. Ripley feels that he is beginning to look like a hero, a defender of animals in her eyes. The girl becomes fearful, looking for support from the young man, he then becomes confident, brave and courageous. At the end of the work, the reader learns that in fact, Josefa killed the long-known Mexican "Carnouh Devil." Not wanting the person rushing to her rescue to feel offended, the girl pretended to believe in his story. Thus, the main characters seem to change positions: the humble and frightened Ripley suddenly becomes a hero, the brave and courageous Josefa turns into an ordinary fearful girl who needs to be escorted to the camp. The effect of false expectations is created using inverted images and recombination of the characters ' behavior (inverted situation).

B. M. Eichenbaum studied the short story "Theory and practice" as a "conversations" genre, but the situation of inversion that completes the literary work escaped from his field of view. The Westbrook editor's dispute with the writer Dow ends in opposing situations: the editor, confident that in dramatic situations people speak in a high style, once in it himself, spoke simply, confusing words and with tangled thoughts; the fiction writer who believes that in such situations people speak the same way as daily, never expressing themselves in a pompous manner, on the contrary, made a pathetic speech. The inverted situation plays the role of reinforcing irony in the ending of the work.

The main character of "Lost on a dress parade" trying to flaunt in front of an unfamiliar, seemingly poor girl, passes himself off as a rich man, not burdened with cares and not engaged in anything but entertainment. As a result, the reader learns that the poor saleswoman is a girl from a rich family, one of the enviable brides. The function of a false ending in this case is to bring irony to sarcasm: don't play with fate, otherwise it will play with you [Bahtin, 1975].

Parody, irony, inversion, omission, ambiguity, playing with the reader's expectation in the endings of O. Henry's short stories become typical schemes for the author to build a false ending. Moreover, they become typical and universal for a whole series of works by followers of O. Henry. In addition to its main function – misleading – false ending in the works of the writer acquires additional functions, among which are most often found: parody, irony, sarcasm, playing with the reader's attention and expectation.

A game with a reader's expectation of a denouement, widespread in the short story, gets a new life in the modernist novel, at the same time acquiring new features of the modernist game characteristic of a 20th century novel. For example, the false ending in V. Nabokov's novel "Mashenka" acquires patriotic pathos characteristic of V. Nabokov and Russian emigrants. However, Ganin does not meet with Mashenka - his meeting occurred in his imagination and proved its failure. The reader can't be deceived, even though throughout the novel the idea of a happy meeting of the characters has been whipped up, the reader becomes a witness not only to Leo's resurrection of the past and the living of this past, but also to the treatment of his soul by this past, emanated by emigration, its transformation and rebirth. After four days of memories and a longing to stay with Masha forever, a man of a new formation is born, strong and willing to live.

5 Summary and Conclusions

Summing up our research, we note that false ending as a false way to end work, has been used in literature for a long time, undergoing changes and acquiring specific genre and copyright features. In an epic work, a false ending can be based on the techniques of paradox, omission, inverted images and situations, antithesis, mutual misunderstanding, ambiguity, pun, violation of the traditional plot cliché, game poetics of the author… The main function of a false ending is a deceived expectation. Other important functions which it acquires in each individual case: maximum implementation of the work's ideological load, irony, sarcasm, following traditional - cultural norms, playing with the reader…By analyzing examples of epic works, we have proved the transition of the partial functional properties of the false ending to the general ones.

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Primary Paper Section: A

Secondary Paper Section: AJ

FORMATION OF COGNITIVE UNIVERSAL EDUCATIONAL ACTIONS OF STUDENTS IN THE PROCESS OF TEACHING BIOLOGY

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Abstract. The article presents the key characteristics of cognitive UEAs of a secondary school student, their structure, and also the features of their formation. Also, pedagogical tools for the formation of cognitive UEAs of students of the primary school were identified. Criteria signs of the levels of formation of cognitive UEAs of a secondary school student are presented. As part of the study, a set of laboratory works was developed and tested aimed at the formation of cognitive UEAs of students in biology classes and in extracurricular activities. Diagnostic results of the level of formation of cognitive UEAs of eighth-graders testify to their effectiveness and practical significance. The results can be used in the theory and practice of basic education in order to improve the quality of education through the formation of cognitive UEAs.

Keywords: cognitive universal educational actions, pedagogical tools, laboratory work, basic school, level of mental development, critical thinking.

1 Introduction

One of the most priority areas for improving modern education is the holistic development of personality by mastering the ways of activity by students, through the formation of universal educational actions that are the invariant basis of the educational process. Universal educational actions offer independent successful assimilation of new knowledge, skills and competencies, including the independent organization of this process. Learning UEAs by students acts as the ability to self-development and self-improvement through conscious and active development of new social experience.

In accordance with the Federal State Educational Standard, UEAs includes personal (self-determination, meaning-making, moral and ethical assessment), regulatory (goal-setting, planning, control, correction, assessment, forecasting), cognitive (general educational, logical, symbolic-symbolic) and communicative UEAs (Asmolov, 2011; Chulanova, 2017).

Cognitive UEAs are a system of ways of knowing the world around us, building an independent search process, research, as well as a set of operations for processing, systematization, generalization and use of the information received (Solovyeva & Smirnova, 2016).

Currently, the formation of precisely cognitive UEAs among students is one of the most important challenge of modern education, as the experience of practical teachers shows that students still find it difficult to effectively use teaching aids in situations close to real and in non-standard educational and practical conditions (Dulatova & Lapshina, 2018).

2 Methods

The authors of these articles used theoretical and empirical methods: theoretical analysis of scientific literature, normative documents in the field of educational policy; pedagogical experiment, testing, methods of mathematical data processing.
The developed set of laboratory works on biology was tested in 8 classes at the MAOU "Gymnasium No. 139 - Education Center", the Volga region of Kazan. The control group involved 8th grade students of the secondary school No. 171 with in-depth study of individual subjects, the Sovetsky district of Kazan.
The experimental (EG) and control (CG) groups included 27 people, a total of 54 people in the study.

To identify the initial level of formation of cognitive UEAs, we used a package of diagnostic methods, including: mental development school test ("MDST").

The MDST included 6 subtests aimed at identifying general awareness, the ability to establish analogies, logical classifications, generalizations, and finding the rules of the number series.

3 Results and Discussion

According to the FSES recommendations, each educational organization develops and approves the Program for monitoring the level of education of the primary educational institution for general education on the basis of the methodological recommendations of the "Exemplary program of psychological and pedagogical support of educational institutions during the transition to FSES CE" (Chulanova, 2017).

The effectiveness of the process of the formation of cognitive UEAs will depend on the set of pedagogical conditions of the educational institution, the interaction style of the teacher and students (authoritarian or democratic), the form of organization of educational activity and the choice of pedagogical means (Rodko, 2018, Kondratieva et al., 2016).

The result of the formation of cognitive UEAs is the ability to analyze, synthetize and compare; establish causal relationships, implement an advanced search for information, create and transform models and schemes for solving various problems, use symbolic and symbolic means, etc. (Vozniak et al., 2017; Grevtsev, 2017).

We should note the importance of laboratory work in teaching biology, which contribute to the improvement of students' skills, deeper and more meaningful study, the formation of experimental skills, the development of creative thinking, the establishment of links between theoretical knowledge and practical human activities, which facilitate understanding of factual material, increase interest students in the subject (Koriagin, 2015; Kabanov, 2016).

Figures 1–7 show the results of the summative stage of the experiment (SES), of which Figures 1-5 show the MDST method.

Figure 1 shows the obtained average values of the mental development of students in the control and experimental groups. The data obtained indicate that students did the "Awareness 1", "Awareness 2" and "Numeric series" subtests almost identically. The generalizing tasks were least successfully completed, which indicates difficulties in generalizing any material.

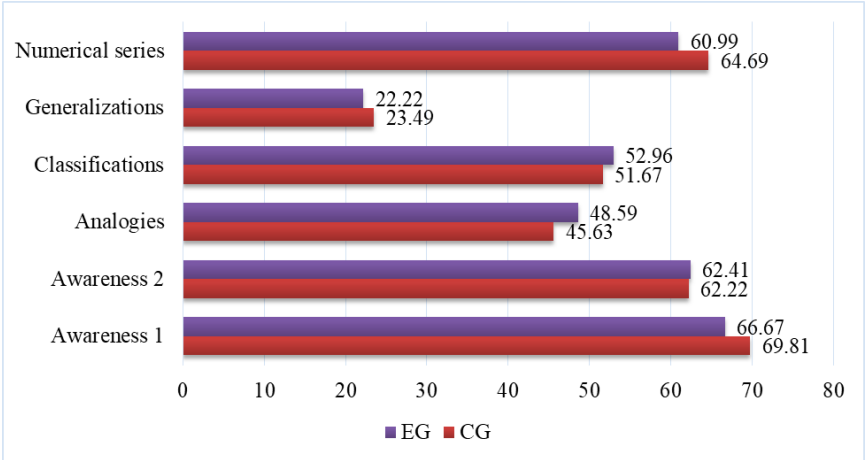

Fig 1: The levels of mental development of students (%) on the SES.

A comparative analysis of the experimental and control groups showed that the groups according to the data obtained are similar, i.e. we referred most of the students in the experimental and control groups to the category with an average level of mental development, which is natural.

For a more complete analysis of the mental development of students, we carried out a qualitative analysis of the results obtained by subtests. Thus, the data obtained for the first subtests of the EG showed that the awareness of students in concepts related to the scientific and cultural sphere slightly exceeds awareness in the socio-political sphere (Fig. 2). The control group showed the similar situation, which allows us to judge that students most often use scientific and cultural terms and concepts in their active and passive speech than social and political ones.

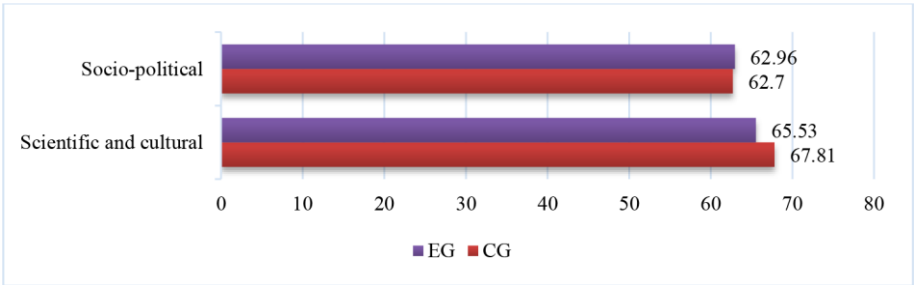

Fig 2: Awareness of students in the scientific, cultural and socio-political fields (%) during the SES.

Features of mental activity of identifying analogies, classifying the information presented and generalizing information by determining the relevance of subtest assignments to different school subjects showed that, in particular, on the subject of "Biology", students completed an average of 45.56% of the tasks in the EG and 39.26% tasks in the CG (Fig. 3). The results obtained indicate that the basic concepts from the school biology course, students have learned from a smaller part of students, which requires correction of the educational process.

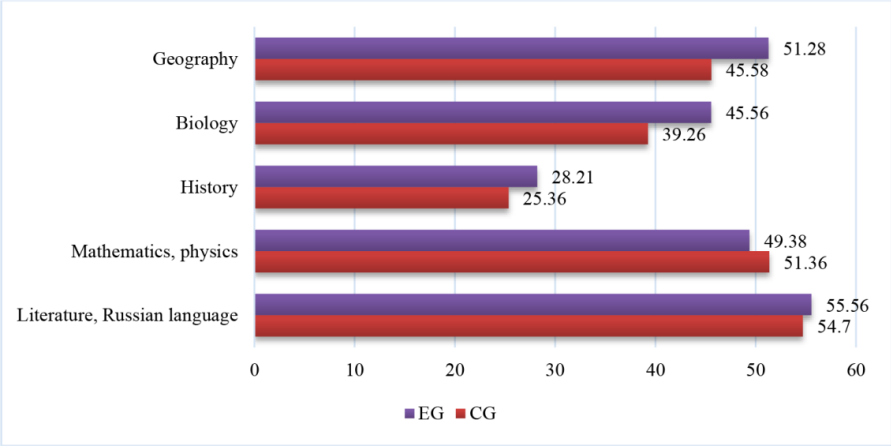

Fig 3: The total result of the "Analogies", "Classifications", "Generalizations" subtests by referring to different school subjects (%) during

The subsequent qualitative analysis for the "Analogy" subtest only was aimed at identifying students with analogue thinking as thinking in terms of criteria, classification, comparison (Fig. 4).

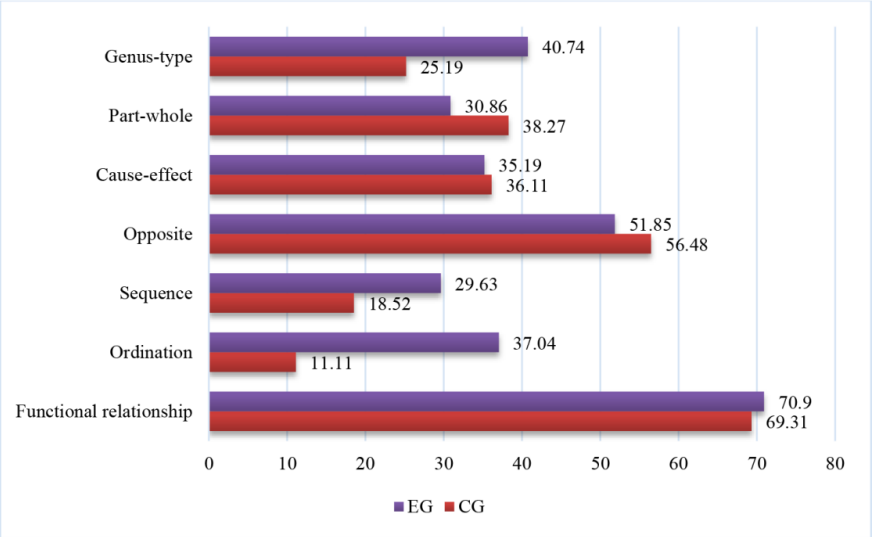

Fig 4: Formation of types of logical connections (%) during the SES.

This subtest revealed in both groups that the most successful students establish functional relationships and identify opposites, which is also signal information for the teacher regarding the improvement of the learning process.

When performing tasks with different types of concepts in the experimental and control groups, it was noted that the greatest number of errors was made in tasks with abstract judgments (Fig. 5).

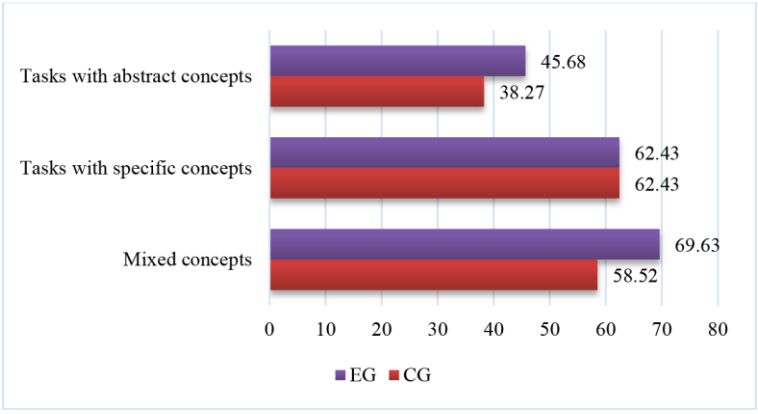

Fig 5: Level of skills to perform various types of tasks (%) during the SES.

Summarizing the results of the MDST summative experiment it should be noted that most students of the experimental and control groups have an average level of mental development.

Diagnostics aimed at determining intellectual lability according to Kostromina, namely determining the ability of students to switch attention without making mistakes (Fig. 6), revealed in EG ЭГthat the largest number of students (15 people - 55%) have average lability. Only one student from the group made more than 7 errors, that is, he may be unsuccessful, presumably in any activity.

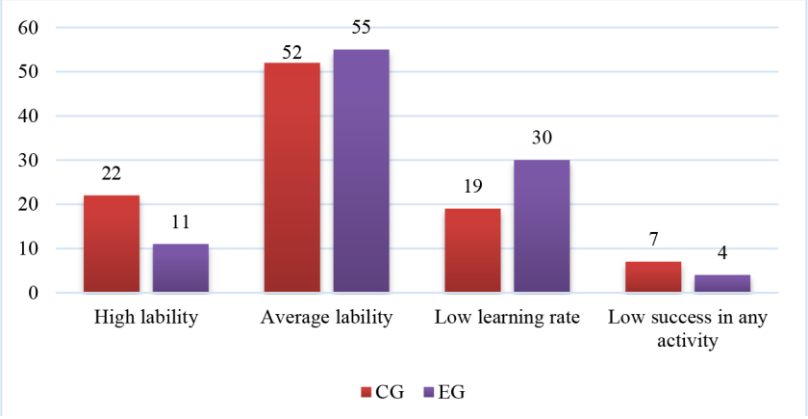

Fig 6: Intellectual lability of students (%) during the SES.

The results obtained in the CG showed that there were more students with high lability than in the EG - 6 people (22%). Low learning ability was noted only in 5 people (19%), less than in the EG. However, in the CG, two students (7%) made more than 7 mistakes.

Thus, the largest number of students in the EG and CG completed more than 80% of the tasks, which testifies to the ability of students to quickly move from solving one type of problem to another, with the minimum number of mistakes.
Diagnostics aimed at assessing the formation of reading skills (Fig. 7) showed that the largest number of students have the average level (zone 3) of reading skills. There were no students with a high level of reading skills (zone 5).

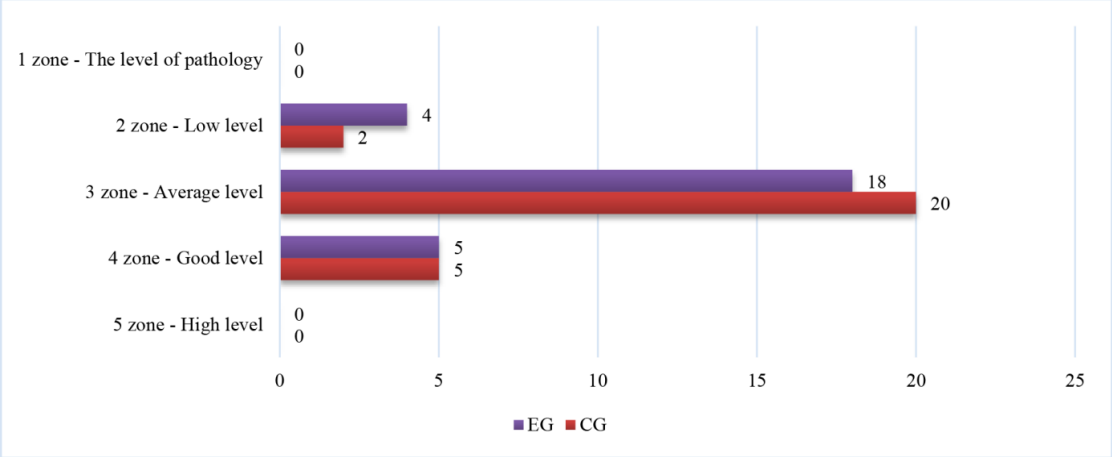

Fig 7: Level of formation of reading skills in the students (person) during SES.

Thus, according to the results of this technique, it should be noted that the majority of students in the experimental and control groups have a "fragmentary" perception of the text.

The experimental work was a set of laboratory works developed by us and aimed at the formation of cognitive UEA of eighth-graders in the process of teaching biology. The purpose of creating a laboratory course was the formation of a positive motivation to study the subject through practical activities; systematization and deepening of students' knowledge about the structural features of the life of the organic world; providing the opportunity to conduct fruitful practical activities in the study of theoretical material on specific topics.

The novelty of the works lies in the fact that they include both the theoretical part, consisting of analytical questions, and the practical part, including work with living organisms, a microscope, collections, herbaria. The course of laboratory work used in the process of teaching biology was based on some of the techniques of the Critical Thinking Development Technology. The main objective of this technology is to teach students to think critically. The use of various techniques of technology contributes to the information perception, systematization and evaluation.

One of the most important tasks of the school biology course is to develop the skills of thorough and consistent knowledge of the object of study, instilling a critical attitude to the acquired data. The deductive method of cognition, originating from Rene Descartes, is considered fundamental for all areas of scientific activity, which is why it is the methodological basis for school laboratory work in biology. School laboratory work can be considered as a complete methodological basis for developing critical thinking: when studying general scientific methods of cognition, individual work is the best to develop the necessary degree of skepticism in the students' minds.

The content of laboratory work ensures the achievement of a basic level of biological knowledge, the development of creative and naturalistic skills, a scientific worldview, as well as instilling independence, industriousness and responsible care with living organisms.

According to the subject of our study, semantic reading tasks were also applied. Reading skills are the foundation of all subsequent education, as students develop skills in understanding and searching for specific information, commenting on text, restoring a wide context, etc.

According to the quantitative processing of the data obtained during repeated testing of students using the MDST method, we found that the EG students improved their performance, which indicates the positive effect of the developed laboratory work on the level of mental development of students.
Figures 8-14 show the results of the control stage of the experiment (CES).

Figure 8 shows the indicators for each subtest.

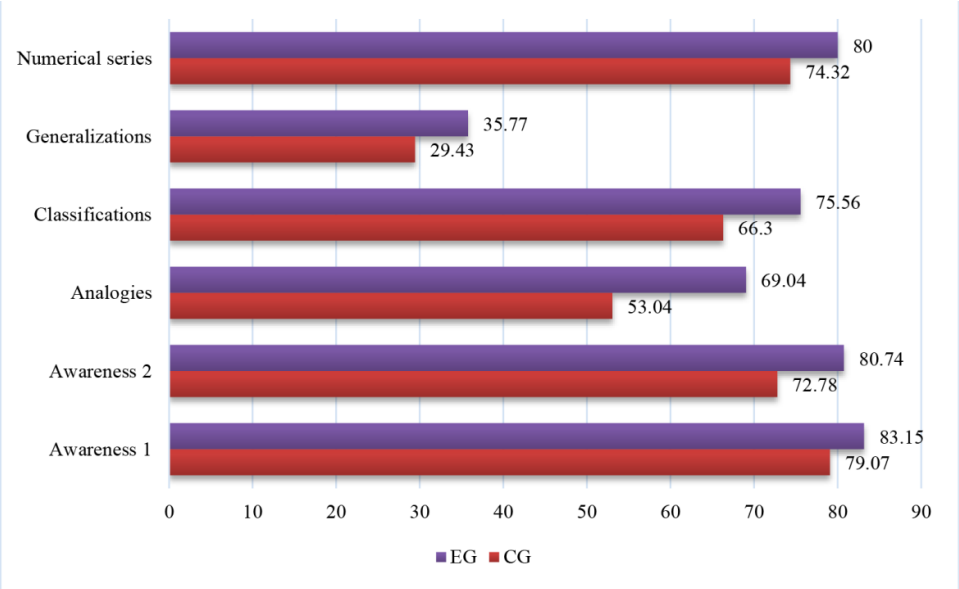

Fig 8: The levels of mental development of students (%) on the CES.

In the EG, a microgroup with a high level of development included a significant number of students. The presence of positive dynamics in the CG of students is explained by objective reasons, for example, the time factor, and also because the teaching methodology in this class can be quite effective, and students master the educational program, increasing their intellectual abilities. However, the scores of this group are lower compared to the EG.

The next three subtests – "Analogies", "Classifications", "Generalizations", showed that students of the EG improved their indicators for each of the school subjects (Fig. 9). The highest percentage on average was noted in Biology - 77.41%.

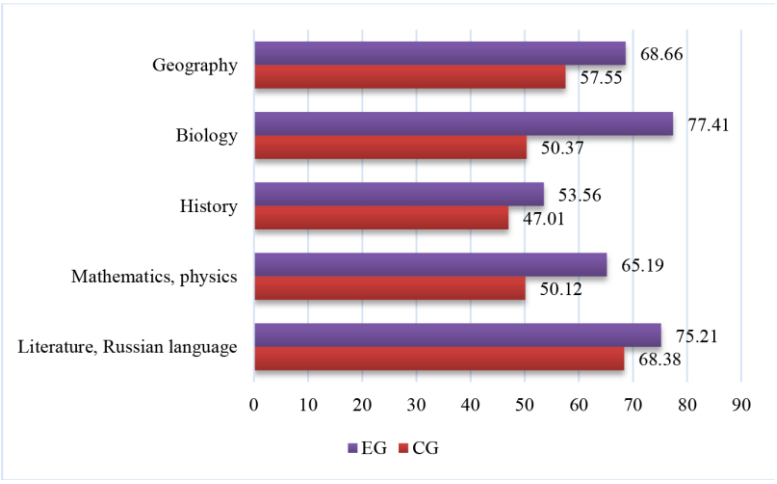

Fig 9: The total result of the "Analogies", "Classifications", "Generalizations" subtests by referring to school subjects (%) during the CES.

The results indicate that the students of the experimental group have better mastered the basic concepts of the school biology course, since there is a clear positive trend. The control group showed no positive dynamics.

The analysis of the obtained data of the "Analogy" subtest showed that the average indicators of the CG and the EG have slightly changed (Fig. 10). The EG improved its indicators for each type of logical links.

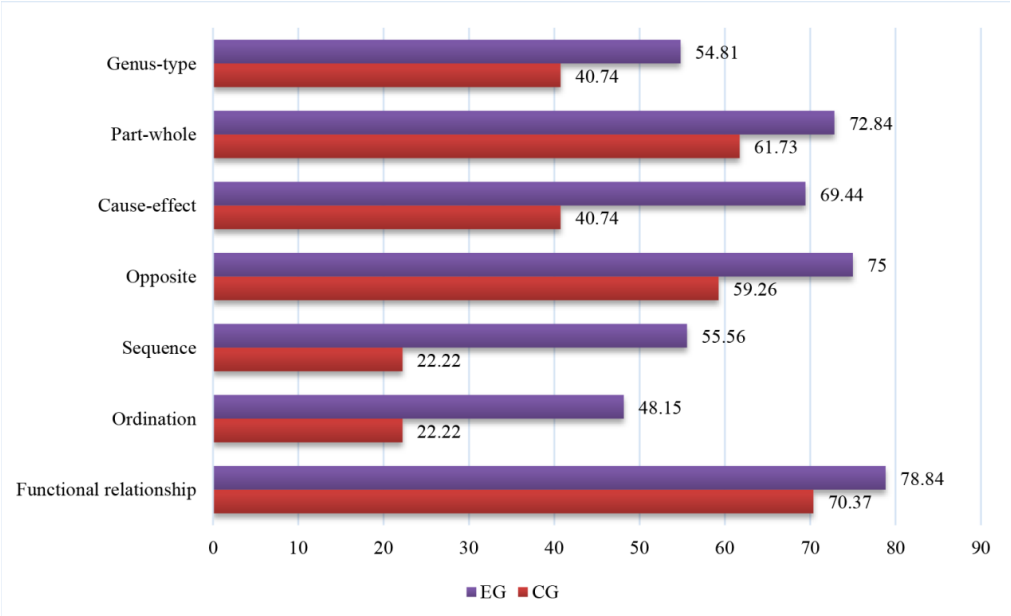

Fig 10: Level of formation of types of logical connections (%) during the CES

Interpretation of the results of the EG showed the successful completion of tasks with specific concepts (78.84%) and tasks consisting of mixed concepts (74.81%). However, one of the main results of introducing the developed laboratory course into the educational process is to consider the fact that when performing tasks with different types of concepts, tasks with abstract judgments, which, before the experiment, caused the greatest number of errors, were performed much better (Fig. 11).

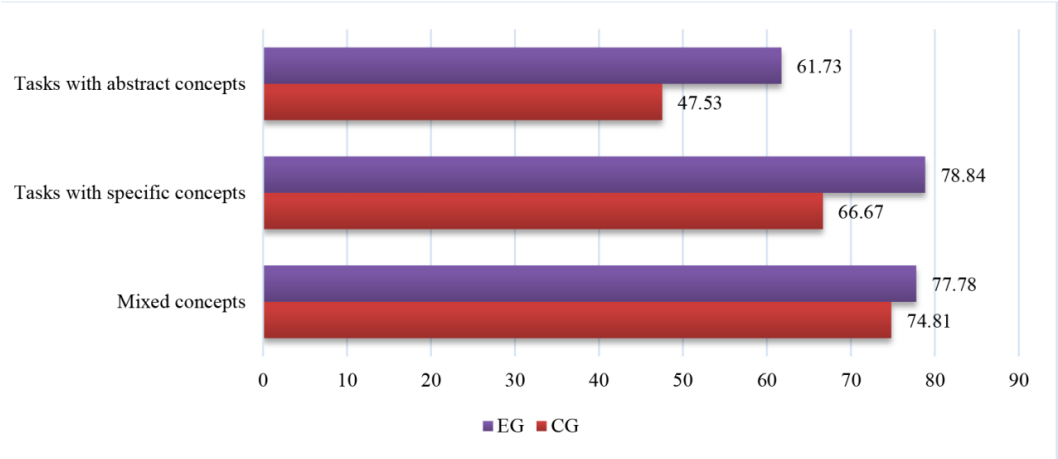

Fig 11: Level of skills to perform various types of tasks (%) during the CES.

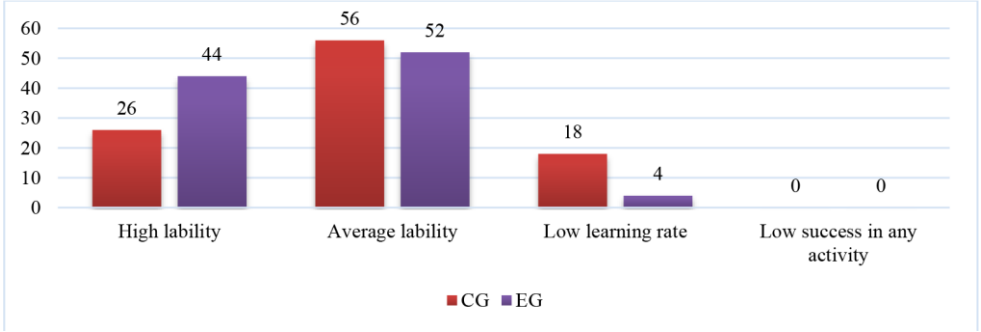

Fig 12: Intellectual lability of students (%) during the CES.

The largest number of students with high lability was noted in the EG. None of the students made more than 7 mistakes.

Repeated diagnostics of the formation of reading skills in the EG showed that the largest number of students (13 people) has a good level (zone 4) of the formation of reading skills (Fig. 13). In the CG, the largest number of students was noted with an average level of reading skill - 17 people. None of the students in the CG had a high level of reading skills.

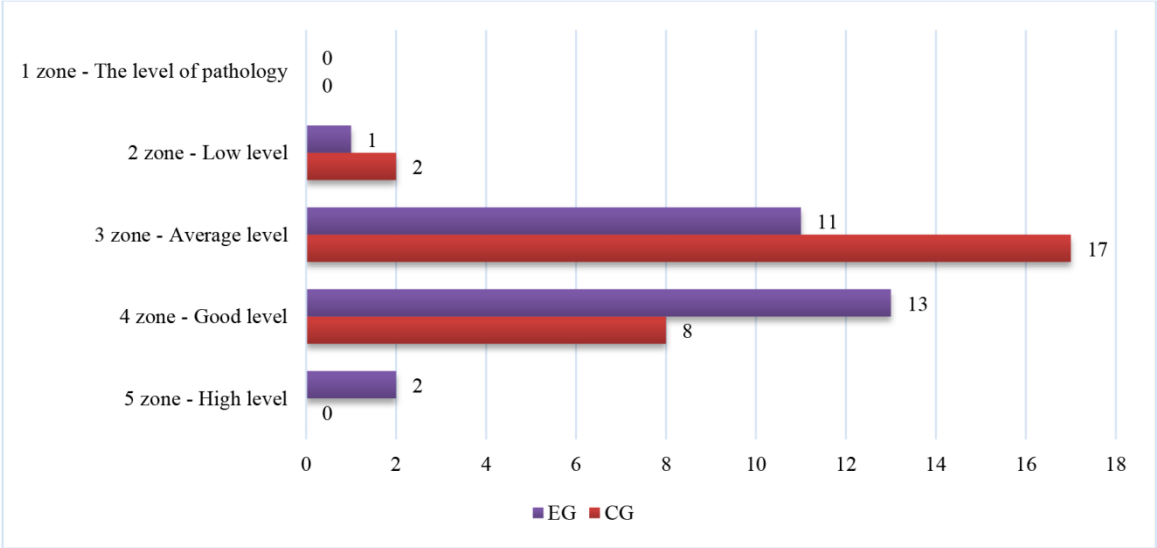

Figure 13: Level of formation of reading skills in the students (person) during KES.

Thus, according to the results of this technique, it should be noted that the majority of students of the control groups also have a "fragmentary" perception of the text, which was originally noted, but the EG showed positive dynamics.

4 Summary

1. The formation of cognitive UEAs in the educational process is a necessary requirement of time, which is considered as the subject's ability to self-development, self-improvement and independent assimilation of new knowledge and skills, including the management of this process.

2. The effectiveness of the formation of cognitive UEAs will directly depend on the teacher's choice of pedagogical means and creation of pedagogical conditions in the educational institution.

3. The use of laboratory works in biology classes developed on the methodological basis of the techniques of Critical Thinking Development Technology has great advantages for the formation of cognitive UEAs.

5 Conclusions

Cognitive UEAs are the most demanded in the modern educational process, as they provide the learner with the ability to search and find, analyze and use information, depending on the task. The use of modern teaching methods contributes to the formation of various psychological processes necessary for a person, and the development of abilities to solve any life problems, using the available knowledge and skills, which contributes to the education of a competent person.
A set of laboratory works, designed in accordance with the requirements of the Federal State Educational Standard, has a beneficial effect on the formation of cognitive UEAs. The designed set of laboratory works can be used by teachers in organizing the educational process at educational institutions.

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Primary Paper Section: A

Secondary Paper Section: AM

FICTION AS THE «SOFT POWER» FOR RUSSIA. VISITS AND CONVERSATIONS OF FOREIGN CORRESPONDENTS TO LEO TOLSTOY

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Abstract: This article raises the problem of studying fiction as a «soft power» in diplomacy. There are such figures in the history of world literature whose works contributed to the spread of the influence of a certain culture or country as a whole to other countries. In Russia, such a figure was Leo Tolstoy. The material of the article were the reports of European and American correspondents on visits to Tolstoy in the late 1890-1900 years. Thus, personal meetings of foreigners with Leo Tolstoy were the most important factor that led foreigners to the interest in Russia. The article raises methodological questions of how a country can identify those of its writers who will become arguments of «soft power».

Key words: international relations, soft power in diplomacy, fiction, culture, reception, Leo Tolstoy.

1 Introduction

Soft power is one of the most important tools of world politics. Formulated by American political scientist Joseph Nye, the idea of the effectiveness of «soft power» in the foreign policy of States is particularly relevant in the field of culture: «Soft power», as the researcher said, is the ability to attract, and attraction often leads to mutual understanding [Nye 2004].

For example, for Italy the main tool of «Soft power» is tourism, for the United States – education, for Russia – literature, especially classical literature of the XIX century. According to Nye, it is language and culture that is a «soft power» that plays a key role in international relations, influencing world politics directly or indirectly. In an interview with a Russian newspaper Nye said: «The soft power of a country depends directly on its attractiveness, which is based on its culture, values and their implementation, as well as on the state's policy — how much it is perceived as legitimate in the world. <...> You have a very attractive traditional culture: let's remember at least Russian literature, music, and fine art — in the eyes of other peoples, this looks very bright. And in general, we can say that culture is the main source of Russian soft power» [Nye 2019].

One of the most striking figures in Russian literature is Leo Tolstoy, author of great novels, religious thinker, and author of political and ethical treatises. It was thanks to Leo Tolstoy that at the end of the nineteenth century Russia's influence in Europe and America expanded as a country where the most important issues for humanity are raised and discussed. Tolstoy's influence continued in the twentieth century and is very strong in the twenty-first century.

The problem of Fiction as a soft power of world politics was practically not considered in the study of «soft power». Of course, we can talk about the influence and role of literature primarily in connection with the era of literary centrism, i.e. the dominance of literature among other forms of art, which is characteristic of the culture from the XVII to the first half of the XX centuries. Today, visual arts have taken the first place: if in the 1960s the Soviet people's fascination with American culture was associated with the name of Ernest Hemingway, then today it is associated with American cinema. Nevertheless, the influence of literature persists.

Our study examines the role of Leo Tolstoy and his perception in Western culture as a soft power of Russian influence.

At the end of the XIX century and the beginning of the XX century, the world's attention to Tolstoy was shown in the publication of his works (for example, the novel «War and peace» was published in New York in 1886 and 1889, «Anna Karenina» in 1886, «the Death of Ivan Ilyich» in 1887, «Confession» in 1887, «So what should we do?» in 1887, and so on, in three years the American reader has become familiar with all the main works of Tolstoy), especially religious and ethical treatises. Translations of Tolstoy's novels «Anna Karenina» and «Resurrection» caused many critical articles and letters to Tolstoy from European and American readers. The authors of the letters say: before meeting Tolstoy, no writer had ever stirred them with the same force, did not deliver such a high spiritual joy: «I am not able to convey in a letter the delight with which the English public met your works. Whatever words I choose, they cannot express my admiration for your books» (Stanley Withers. Britain, in 1889); «...Only twelve months ago I got acquainted with your works, read «Resurrection» and «Confession». I've got all your books translated into English. What a divine joy! I could hardly think or talk about anything other than Tolstoy and his works», wrote worker Victor Lungrem from Scotland in 1902 (all the letters are in the collections of the Department of manuscripts of the State Museum of L. Tolstoy in Moscow).

This followed the correspondence, which is associated with the appearance of many of his publications - the response letter became a separate article. L. Tolstoy's letter to R. Rolland appeared in the newspaper in 1888 under the title «About manual labor». The article «Non-Doing» was prompted by the Telegraph query «What does humanity expect? » from the editor of the magazine «Revue de revues». And so on. We have a lot of articles devoted to that situation.

However, one crucial aspect was completely left out. From all this arises an interest in Tolstoy's personality. Tolstoy himself did not go abroad in his mature years. Therefore, correspondents of foreign Newspapers came to his estate Yasnaya Polyana, interviewed and told about their visit in numerous Newspapers and magazines.

Russian writer S. Stepnyak-Kravchinsky recalled: «A well-known American journalist and art critic, with whom I once talked about Tolstoy, said that for the pleasure of shaking hands with this wonderful Russian writer, he would be ready to take a trip to Russia» [Stepnyak-Kravchinsky]. And many Americans did cross the ocean to see and hear the great man. Among Tolstoy's American guests were political and public figures, writers, journalists, translators, and priests. Here is an incomplete list of Americans who visited the writer at various times: Eugene Schuyler (1840-1890), translator and diplomat (1868); George Kennan (1845-1924), journalist and traveler (1886); Thomas Van Ness (1859-1931), Unitarian Minister (1888); Andrew Wyatt (1832-1918), U.S. Ambassador to Russia (1894); Ernest Crosby (1856-1907), writer, lawyer, and politician (1894); Jane Addams (1860-1935), suffragist, pacifist (1896); Josiah flint Willard (1869-1907), author (1896); Peter McQueen (1865-1924), pastor (1901); William Jennings Bryan (1860-1925), leader of the Democratic party of the United States (1903); Kellogg Darland (1881-1911), sociologist and author (1906); Herman Bernstein (1876-1935), writer, translator, journalist and diplomat (1908); Henry George Jr. (1862-1916), journalist, legislator and economist (1909).

In fact, they turned out to be diplomats, ambassadors of «soft power» diplomacy. Many of the publications in which their stories were published are now inaccessible. However, these publications became a source of information about Russia and Russian culture for European and American readers. These publications became the material of our research, they analyze Tolstoy as a creative person, as a symbol of Russia.

Some of these publications have been the subject of research by literary scholars. We are not interested in the factual side of the issue, not in finding out new names or texts, but in the General cultural characteristics of this phenomenon and its significance for Russia and the world.

2 Methods

We have studied articles about visits to Tolstoy by correspondents of foreign Newspapers and magazines as a way to spread information about Russian culture, mechanisms of understanding Russian culture, the creation of a symbolic image of the Russian writer, and the understanding of the writer as simultaneously «strange» for Western culture and at the same time «universal».

Research methods are determined by the goals and objectives of the work. This study examines the problems of sociology of culture. The author's text often unconsciously reflects the fundamental features of collective ideas and collective fantasies; great writers «symbolically embody the ideologies of their contemporaries». Literature reflects the values, and it is necessary to identify the nature of these values, ideas about man and the meaning of life. «Talking about values» is the basis of the relationship between the writer and his audience [Laurenson; Jameson]

3 Results and Discussion

In 1891, the critic N. Strakhov wrote: «The slightest news about how to write and how to live in Yasnaya Polyana Newspapers place on a par with the best treats they treat their readers, i.e. on a par with political news, with fires and earthquakes, scandals and suicides» [Strakhov]

However, the tradition of pilgrimage to Yasnaya Polyana began not with the Russian public, but with foreigners, and only in the 1900s many representatives of the Russian intelligentsia began to consider it their duty to «go to Tolstoy».

In 1886 the writer G. Danilevsky complained: «An express train of the Kursk road, before reaching Tula, stopped for two minutes at the Yasenki station. I got out of the car and got into the tarantass. Anyone who cares about the name of the most beloved of Russian writers, the Creator of "War and peace" and "Anna Karenina", will understand with what feeling, having received an invitation telegram on the way, I went to visit the owner of Yasnaya Polyana. Foreigners, and especially Englishmen, are especially fond of receiving in print descriptions of the homes and domestic conditions of their writers, artists, public and statesmen. The Grafic, the Ilustrated London News, and other publications have long contained excellent photographic engravings and descriptions of the country homes of Tennyson, Dickens, Gladstone, Walter Scott, Collins, and others. It shows not only the «offices», «reception rooms», and «dining rooms» of the best servants in England, but also the places where they take their usual rural walks, benches under their favorite trees, views of fields and ponds, and so on. It is a pity that we have not yet introduced the views of the estates of Gogol, Aksakov, Ostrovsky, Khomyakov, Grigorovich, FET, Leo Tolstoy and others to the Russian society. This especially comes to mind when visiting Yasnaya Polyana». And so he spoke in detail about the «structure». It is significant that the very interest in the personality came to Russia primarily from European culture. [Danilevsky].

Indeed, in Russia it was not customary to show the interest in the biography and personality of the author, while in Europe it was a fact of culture.

For Russians the world of Yasnaya Polyana was a mythologized sacred space of Utopia, where the righteous man lived, it was opposed to St. Petersburg, the world of civilization. A guest comes to Yasnaya Polyana from the world of evil to the world of nature, from the world of evil to the world of good. On the opposite, a foreigner comes from the world of civilization, which has its own problems, but it is not a world of evil. He goes in a world strange for him, illogical, unreasonable, so the attitude of foreign guests was full of curiosity and attention to detail, but more rational. Russia first of all strikes the foreigner with its poverty, misery, and strange organization of life. An od man with a big beard and strangely dressed comes out to meet the guest. And with this perception of «strangeness» begins the comprehension of Tolstoy's figure.

They formed the «formula» of the narration about the visit to Tolstoy.

Part one. Most often, the morning at the entrance to Yasnaya Polyana. The world is full of chaos, filth, and horror. The weather is often bad. The narrator is usually confused and afraid of meeting a great man, but it is necessary to go.

French journalist Octaves Goudaille wrote: «To go from Petersburg to Yasnaya Polyana, where Count Tolstoy lives, is a sharp transition. To leave the huge city, still full of echoes of the Kronstadt demonstrations <…> and find yourself in the secluded retreat of the great Russian writer - it should make a striking contrast and make a strange, special impression. And I experienced it during our recent trip to Russia, when, in the company of Charles Richet and Professor Grote, I had the good fortune to spend a whole day under the hospitable roof of Count Tolstoy»[Goudaille]. Pianist Wanda Landowska said: «On Christmas eve, we arrived at Shchekino station. The sledge that had been sent for us was already waiting for us. It was a ten-mile drive to the manor. The weather was terrible, a real Russian winter: a frosty blizzard and snowstorm in all its charm. My harpsichord was placed on one of the sledges, and we sat on the other. We were wrapped up in fur coats sent by the Count and Countess; but in spite of this, thanks to the 30-degree frost, we arrived at the manor quite frozen. As we set off from the station, a blizzard swirled so that the sleigh was driven not by the driver, but by horses who knew the road well. After several hours of wandering, they finally brought us to the house of the great writer. The desire to see the great man was so powerful, and the charming reception that met us was so captivatingly charming, that the impression of a dangerous journey was quickly dispelled» [Landowska].

The road looks like a road to a magic castle: «A terrible snowstorm raged all day after my arrival at the Count's Chateau. The chateau bell was kept ringing. Nevertheless two wayfarers were discovered next morning frozen to death in the snow not far from the house. Snow was still falling upon tomorrow…» [Steven]

Part two. First impression of the estate. The weather is getting better. The soul comes to rest. And the owner of the estate appears. His appearance is always unexpected and causes a shock. The famous German playwright, theater Director Dr. Oskar Blumenthal took advantage of his stay in Moscow to see Count Leo Tolstoy: «After going through a series of long corridors, I finally found myself face to face with this remarkable man. Tolstoy is exactly as the famous portrait showing him to the European audience: in a broad peasant's shirt tied with a single-color belt, with a long white beard, melancholy blue eyes and gray hair, with a forehead pitted with deep wrinkles - a worker of thought and rough, with hands used to hard work, which he willingly puts into his belt in conversation. The deep, soul-grabbing earnestness that seems to flow from his face gives the impression of meeting a biblical figure. Count Tolstoy seems to have suddenly come to life as the Apostle of Leonardo da Vinci, but to this impression is added the pleasure of civilized taste, which does not have the slightest trace of deliberate originality. His aloofness from society and its prejudices harmonizes so perfectly with Tolstoy's reclusive figure that even his oddities seem quite natural. The monastic simplicity of the room corresponds to the quiet grandeur of its occupant. White walls without any decoration, black leather chairs, a shelf with a small number of books and a birch table littered with freshly written quarters of white paper - this is the secular cell of this monk by conviction» [Blumenthal].

Part three. Conversations with Tolstoy. Here expectations and reality collide: an ordinary old man (and household details are specially emphasized) and an unprecedented strongman in spirit. The visitors give an attempt to convey conversations with Tolstoy - they are shocking, make you think, open your eyes,

seem strange, paradoxical – but Tolstoy has the right to do this, so the narrator accepts that they should be recorded and transmitted to the audience.

For a foreign visitor, the world of Leo Tolstoy is the world of a particular great man and, above all, of a social thinker. Tolstoy's social ideas caused heated debates in Russia and were often condemned even by fans of his artistic talent. A characteristic phrase found in many articles about him by his contemporaries: «Tolstoy is a great writer, but unfortunately a bad thinker».

Thomas Stevens wrote: «I had previously heard about this article of Tolstoi's. A week before, when I arrived in Samara from Patroffka, I found that the townsfolk were discussing it with some vehemence and excitement The prevailing opinion appeared to be that the author of the article was mad, and ought to be shut up in a lunatic asylum.

A tchinovnik's wife exclaimed in my hearing, "He ought to be sent to Siberia, for he is stirring up the people!" To this Samara an old friend of mine, who has been exerting himself to the utmost on behalf of the peasantry, replied "Well if they did cut my throat it would not surprise me although I have helped them as well as I could. They are unable to distinguish friends from enemies" Thereupon an official of high rank who overheard the conversation said , with a frankness which I did not expect to find in one of his class, "I believe that every word Count Tolstoi written is perfectly true; nevertheless, he has no rifht to let the common people know the truth». [Steven]

In the late 1890s and early 1900s in Europe and America social processes and disputes were very important, and Tolstoy's ideas about a just society without a revolution enjoyed much more attention there than in Russia, where even attempts to liberalize society were severely suppressed. It was thanks to foreign correspondents that Tolstoy's views became known in the West, and through them they came back to Russia.

Paul Boyer (1864-1949), French Slavist, editor of the «Revue des etudes Slaves» introduced readers with his conversation with Tolstoy. Tolstoy said: «I am considered an old chatterbox. But what should I do? I can't say I'm wrong when I'm sure I'm right! The question, as a matter of fact, is solved very simply. Where is the source of the evil that afflicts Russia and which, according to some (of which I am not one), leads it to death? The evil is that in Russia there is neither power, nor authority. But we must decide: what is meant by the word power? There are two types of power. External power, supported by force, not approved by conscience, is a power that relies on soldiers, gendarmes, and constables. Internal power, based on the free consent of citizens, and therefore moral and good, is a power conditioned by universal obedience to the law. Unfortunately, in our time in Russia, we do not have either one or the other power. I am one of those who think that no society can exist without power. The inner power I am telling you about is possible only with a moral connection. And the socialists? The anarchists? However, their negative criticism is fair and deeply true. But how pitiful their constructions are, how barren they are, how they are based on sand! Take, for example, an 8-hour working day! What if I work 15 hours today and only one hour tomorrow?! Anyway, Russia is now facing two main issues: the transfer of all land to farmers, i.e. direct producers, and the introduction of a single tax under the George system. With the resolution of these two questions, the working question will also be resolved. Rural youth will no longer leave the wide fields where life is free and free, and will no longer exhaust their strength in factories and factories. Civilization will lose nothing if people are convinced that 90% of factory products are useless. They will tell me that they are all chimeras. This would be true if we were talking about England, where there are ten peasants for every hundred inhabitants, but not here, where the peasants make up 99% of the population. We cannot, in fact, demand that we, the Russians, make a revolution on the Prussian model. We will act in our own way, and leave the discussion of draft constitutions "made in France, in Englande or in Germany" to the Duma speakers. Their recipes tell me nothing: I am Russian and I want to have Russian dishes» [Boyer].

Part four, the final. Day is coming to the end - the time cycle is completed. The fear has disappeared – the guest feels like at home thanks to the goodwill of the host, the guest has a sense of his own importance: as a person who will tell the world about Tolstoy. And no matter what the weather was, no matter how dirty and difficult life was, the life of the narrator has changed forever, his world was transformed.

The French journalist and writer Octave Goudaille saw in Tolstoy a man who all the time thinks about human sufferings: «And just the day before we were looking at an art gallery in Moscow, and I was still under a heavy, almost overwhelming impression of it. There is no naked nature, no cheerful, full of bliss and passion images, nowhere even a light color and light play of colors - everywhere is death and human suffering, which the artist studies and paints from all sides and points of view with a cruel insistence. <…> When we spoke to Tolstoy about this desire of Russian artists to precisely flaunt the gloom of their subjects, depicting only death and suffering, he told us: "Death is ugly and terrible only on the canvases of our artists. Here, in our villages, it has majestic simplicity and is almost joyous." Surprised, we looked at him. <…> And Tolstoy spoke of suffering. In his opinion, it is necessary. It is not only a property of our nature; there is something shining in it. This is a mystical law that cannot be destroyed; there won't be any benefit from its destruction». For a Frenchman with a completely different way of thinking (his comments about the exhibition are not accidental), it was a kind of insight: «I retired to the library, turned into a bedroom. But I couldn't sleep. Large black flies, probably lured by the warmth of the day, buzzed around me. I got up and sat down by the window. I listened to the monotonous chirping of the grasshoppers in the park, and inhaled with avidity the delicate fragrance of the flowers that streamed through the window. I stared out into the night, which merged with the half-light of the moonlight that shone through it, and thought. The breeze touched the tops of the old trees, making a slight flutter and rustle in them, and in these vague sounds I seemed to distinguish quiet lamentations, in them I heard the voice of all the human sorrows that the author of "Anna Karenina" had mourned in this lonely corner, during the thirty years of life that had passed under these silent trees, among this friendly nature. And I thought of what Tolstoy had said, of humanity plunged into an inexhaustible misery, enclosed in a dark circle of calamities. I saw this philosopher, who loves people so much that fame could not comfort him and close his eyes to their sufferings, now preaching the necessity of these sufferings, whose works of genius represent a fervent protest against the sorrow and insignificance of earthly existence» [Goudaille] Although Tolstoy wrote in his diary about the guests of thas day «of little interest», for the visitor the shock was the same as for other guests, and the space of Yasnaya Polyana was mystical, filled with voices, thoughts of suffering humanity, and majestic nature.

Let's remember Steven's words again:: «In parting from Count Tolstoy, he gave utterance to the following remarkable and sad words: «I do not know whether what I am doing is for best. Or weather I ought to tear myself away from this occupation. All I know is that I cannot leave this work. Perhaps it is weakness; perhaps it is my duty which keeps me here. But I cannot leave it up, even if I should like to. Moses on Mount Horeb, I shall never see the fruit of my labours. I shall never know whether I have been acting for the best or not. My fear is what I am doing is only a palliative. Surely, when the historian comes to cover the canvas of the latter half of the 19 century, he will find no more pathetic figure for his painting than that of the great genius Tolstoi, battling with famine and fever, and striving with all he might and main to bring about the universal brotherhood of mankind and yet pursued by doubts as to whether, after all, there is not some better way which he does not see» [Steven].

So the narration of the visit to Yasnaya Polyana is based on the formula: the world is plunged into chaos, the narrator makes a

difficult way and gets into the space of utopia, almost paradise, where he communicates with a celestial who changes his consciousness, and returns to a life full of chaos, but now he has a power to live.

Note that this story is not so much a story about Tolstoy, but about... himself. The impression that Tolstoy makes on a guest is more important than Tolstoy himself: the person who has been there will find meaning in life, his chaos will be momentarily transformed and become a cosmos, and the memory of it will remain forever. Moreover, the guest is influenced not only by Tolstoy's personally, but by the entire situation – from the beginning of the trip to its final.

For the European guest, it is a discovery that Tolstoy as a Russian thinks about all mankind, that the thoughts of an old man in the middle of Russia are interesting to everyone, even in distant countries. There is also an intuitive comprehension of the illogical Tolstoy and the illogical Russian life, which is given by the author as a shock, an insight, as a overcoming of his traditional Western rationality.

4 Summary and Conclusions

Tolstoy is a symbol of Russian culture, he has a universal (the dream of social justice for every person) and Russian (the ability to see the highest, the meaning of life in the private and everyday, illogical understanding of the world) sense.

Symbols of «soft power» are an element of culture, and their use in politics depends on a large extent on the types and levels of development of political culture. Political culture uses the role of various symbols in ensuring the legitimacy and political influence of state power – therefore, in order to implement «soft power», it is necessary for the country to choose a writer who could become a symbolic figure, who could talk about what makes general sense for people, connect the national, global and private interests of ordinary people [Shahidani, Penkovtsev].

The more successfully a political culture uses a set of symbols, the more effectively it can use «soft power» for national interests.

In this regard, Russia's activities are not always effective. The poet Alexander Pushkin, a Russian European, has been nominated as a national symbol – a Westerner does not feel Russian specifics in this figure, on the one hand, and does not understand his European origin, on the other hand, since it is difficult to translate his poetry adequately to other languages. At the same time, despite the popularity of Leo Tolstoy in Russia, the authorities feel his hostility to them and do not fully use the opportunities associated with the «use» of Tolstoy as a soft power: «Tolstoy, of course, is deeply disgusting to me», said at a meeting in the Public Chamber in May 2014 Vladimir Krupin, Secretary of the Russian writers' Union.

But the desire for a fair way of life for the hole humanity - that could make Tolstoy a symbol for soft power politics [Krupin].

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FEATURES OF THE NARRATIVE DISCOURSE IN THE NOVEL BY V. NABOKOV

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Abstract.The author of this article made an attempt to study a narrative discourse of V. Nabokov's novel *Despair*. To implement this purpose the author selected the object-oriented approach for information analysis. The chosen method allowed to consider a discourse with other, than it was traditionally accepted in relation to the novels, point of view and allowed to receive the important result connected with writer's postmodern game with Freud's ideas.

Key words: V. Nabokov, discourse, object-oriented approach, object, information.

1 Introduction

V. V. Nabokov remains one of the most popular writers among the readers, literary critics and philologists. There are many years spent on studying different aspects of his artistic heritage, but it is early to speak of a sufficient knowledge of his works.

2 Methods

The methodological basis of our study is the object-oriented approach which helps to study the information of the work of art. V. V. Nabokov's discourse has been studied and still continues to be studied by the leading specialists. If V. V. Nabokov's contemporaries, for the most part, did not accept the novel *Despair* (Jean-Paul Sartre, G. Adamovich, etc.), today there is the rethinking of this work. The researchers' special attention is paid to Nabokov's reinterpretation and replay of F. M. Dostoevsky's works (A. Dolinin, L. Tselkova, etc.).

3 Results and Discussion

The Study of The Narrative Discourse of The Novel Despair By Vladimir Nabokov

To achieve this goal, we set the following tasks: to study how the information in the work is submitted, to attempt to decipher this information, to compare the final portion of the information of the work with its final.

Nabokov's novel *Despair* is a complex system in which the information flow is presented textually on behalf of Herman, the main character of the work and the author of *Despair*. Deciphering this information is a new vector of the study of Nabokov's creativity, and therefore it is relevant.

Studying the novel *Despair* we noted some remarkable facts at deciphering of the information given by Herman. We should consider them.

Herman gives the recipient the information about the brilliant plan, careful preparation for the murder, the commission of one and the subsequent unsuccessful result. If we retrace the state of Herman, we can note a curious detail: being the main object, he always tries to prove to himself that he is better than Felix, that Felix is like him, and not vice versa. 'I saw my double in him, a creature that is physically equal to me – this complete equality excited me so painfully.' [Blo Jean. Nabokov. 2000, p. 404].Herman as an object affects the state of other objects:

- Felix: inspires him to hope for a job, helps to find the benefits in such an acquaintance;
- Lida: gives her a precise instructions on what to do and how to do after her imaginary death;
- Ardalion: sends him to Italy hoping to get rid of him forever, because he is sure that he will not have money for the return trip;
- the doctor: at first he causes a sense of guilt, and later – professional curiosity and even help.

Giving the first portion of the information about the seen double, Herman presents it not at once, but tries to recreate the entourage and emotional state, usually experienced by people at a circus performance in front of a dangerous or especially difficult performance: 'Orchestra, play the fanfare! Or better: the ruffle, as in a choking acrobatic trick! Such an incredible minute!' [Blo Jean. Nabokov. 2000, p. 400]. The information is given in an unusual way: with the pomp, brought to the props, and its sense is stretched over the several pages. Such an external effect, categorically attracts the attention of the recipient of the information. This is more like a theatrical performance than the transfer of the information, which is what Herman wants, considering the author's cherished dream of turning a reader into a spectator.

Obviously, Herman has no information about the influence of Felix as an object on the state of any other objects. It indicates only the change of Herman's state under the influence of Felix, for example: 'I slowly raised my right hand, but his left hand did not rise, and I almost expected it. I squinted my left eye, but both his eyes remained open. I showed him my tongue.' [Blo Jean. Nabokov. 2000, p. 403].

We should focus on the information containing in the separate places of communication, but united by a common sense: Herman has difficulties in writing his message. These are the difficulties of the creator (there are blotches of autocommentary how someone should begin to write, what style it would be better to choose and so on, although the author claims that he is able to write; sometimes it feels like he forgets what he was talking about before) and the difficulties of the physical state (his hands shake when he can not tell his story properly; he physically feels the discomfort being aware of the incompleteness of the work).

Analysing the information about Herman from his own narration, we determined a whole set of qualities, basing on which we can say about the obvious mental illness of the author. Of course, Herman suffers from a nervous disorder:

- he often feels bad for no reason: his heart 'itches' (cardiophobia) when he writes the text, there are the signs of suffocation, sleep disturbance (the novel has been written for a week), tearfulness, sudden changes of mood, the feeling of fear not to have time to finish the work;
- - the moment of candaulism is described (German made Lida sit naked for Ardolino) – the pathology when a person takes pleasure in demonstrating to others a naked partner or his/her images and photos. There is dual candaulism in the submitted information: Herman demonstrates not just his wife, but forces her to sit for, and makes Ardalion draw a nude model;
- Herman confesses his philemaphobia – the fear of kissing. He never kissed his wife because of the dislike of touching his lips to the epithelium of the lips of his wife. However, going 'to the patient', he suddenly wanted to kiss her, only her head, in a fatherly way;
- it seems to the author of the message that he is prevented from speaking, although his text is a monologue that is written in loneliness. The repeated mention of the memory as an assistant suggests that the one who interrupts Herman is his memory, that is, he does not just talk to himself (the written text), but even argues and quarrels with himself. At

the time, Orlovius says that Herman wrote himself the letter – this is both true and not true: he really wrote to himself, with 'other' handwriting, but he did it consciously, with the intent to divert suspicion from himself;

- Herman is prone to onychophagy – he bites his burrs waiting for the letter;
- Herman admits the obsessions in himself: '< ... > this lonely pillar, later turned into an obsession for me. <...> Seeing it for the first time I recognised it <…>'[Blo Jean. Nabokov. 2000, p. 417];
- the author of the message seeks to shift the guilt of the conceived murder and the letter written by him to the random girl who at his request put the letter in a mailbox;
- the author has the narcissistic traits: talks a lot about himself, considers himself as an ideal husband and man. He has an extremely low opinion about his wife. He considers other people to be narrow-minded: he does not respect Orlovius, Ardalion because, in his opinion, they are poor losers;
- there is a big interest in his own and someone else's faces, which is reflected in the narration, for example:

* Lida likes looking at Herman's appearance, she measures his face with two fingers like with a divider;

* Lida lets out smoke, twisting her mouth;

* the face of Ardalion is 'big-nosed';

* Orlovius pulls himself over the earlobes, when he is dissatisfied or puzzled;

* with the help of painting techniques Herman describes his facial features, compares them with Felix's ones;

* Herman tries to find out the opinion of Ardalion as an artist about different types of faces.

According to Herman, he has no mirrors in the house. However, he has an increased interest in faces and types. Here we see the dysmorphic disorder – a mental disorder in which a person pays excessive attention to the features of his body or appearance. We are not talking about the defect or delusions of the physical disability. On the contrary: German is so perfect that it seems improbable the existence of another person with the same facial features. In Herman's message there are a lot of mirrors, reflections, reflexes and hints at the mirrors. He writes that when he first met Felix, he asked him to look in a small mirror to help him understand the resemblance. The mirrors, many times encountered in the information, show the change of the object's states (Herman) : from admiring to a panic fear, bordering on spectrophobia;

there is a noticeable aggression of the message sender towards the recipient: 'I wish at all costs and I will have to convince all of you to get you villains, to be sure, <...> what I talk about' [1, p. 406]. This outburst of negative emotions can be explained by the pain of speaking out in a way that is understood correctly, as if the author is suffering from obsessive-compulsive disorder, as a result of which he writes his work. This is very similar to the method of free association, which was the basis of Z. Freud's work with his patients. According to this method, the patient was offered to freely, without concealment, tell everything that came to his or her mind, even if it seemed that it has no weight or value, even if it seemed disgusting or obscene. The scientist believed that thoughts did not arise by themselves, they unconsciously moved in the direction of what caused troubles, so it could help to get a better idea of the nature of neurosis or mental abnormality. The doctor's task was to decipher the hidden unconscious in the conscious said, overcoming the patient's resistance by creating a friendly atmosphere.The relationship between what happened and its reproduction in each case may be different. The doctor should help the patient to relive the event, because of which he perceives real life as the reflection of the forgotten and pushed past. It seems that the displaced unconscious is written by Herman and entitled as *Despair*.

It should be reminded of the extreme skepticism that V. V. Nabokov experienced in the methods of analysis and treatment of Dr. Z. Freud. The presence of so many mental disorders and such a variety of personal characteristics of Herman Karlovich indicates a deliberate parody of the method of self-analysis of Z. Freud and his medical practice in General.

There is a tendency to the invention and falsification in Herman, he accuses himself in it in the beginning of his narration, describing the mother as an old princely lady in purple, he recognises that it is not true, in fact, she was the daughter of a small tradesman and wore not silk, but a short jacket. The lady in purple is depicted on the wrapper of the chocolate bar, that is not invented, but borrowed by Herman from the real wrapper for him

In our opinion, this image was given to Herman by V. V. Nabokov, in this place prompting additional information to the recipient: the lady on the chocolate wrapper was a hint at the picture of M. A. Vrubel *The Lady in Purple*, at the technique and color spectrum of M. A. Vrubel.

There is the virtuoso technique of M. A. Vrubel, drawing certain forms of color shades, which is why there is an effect of crystal faces, and the picture resembles a stained glass window. It is his technique that Herman tries to imitate. Vladimir Nabokov – the writer – peeks through the veil of the narrative of Herman, and character of the lady in purple gives a hint of 'artificiality' of the statements, of Vrubel's style in the creation of Herman. Imitating M. Vrubel's technique is also confirmed by the description of the finished portrait of Herman, created by Ardalion. The style, with which the portrait was painted, was a geometric figure, similar to a loop or gallows.

Vrubel's style is found in the non-standard text of the message of the unfortunate genius: the plot elements are in the most unexpected places, they are mosaic, the 'joints' of the narrative are very noticeable, as at the stage of the creation of the artistic canvas the joints of planes and shapes are visible, transmitted by curved polyhedra. It is also easy to retrace a subtle hint of Herman's mental disorder: he, like the creator of M. A. Vrubel, was obsessed with his creation, outwardly his insanity is noticeable, his physical state is deplorable, but the creator is still alive and continues to improve his work.

4 Conclusions

Herman, being an unreliable narrator, cannot serve as a source of true information – his message should be taken into account, and nothing more. The information given by Herman is sometimes contradictory (for example, he writes that he offered Felix to look in the mirror at their first meeting, later he assures that he does not use mirrors), which proves the far-fetched similarity of Herman and Felix.

Thus, offering the reader to believe the story of Herman, V. V. Nabokov hyperbolises the diagnoses of the narrator, ridiculing the method of the doctor Z. Freud, who is unloved by him. The saturation of the mental flaws should alert anyone exploring the information of the novel. This postmodern game with the reader begins to acquire its evidence precisely because of the object-oriented approach to the study of the work

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DEVELOPMENT OF TATAR PUBLICISM IN THE BLOGOSPHERE

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Abstract: This article is devoted to the development of Tatar journalism on the Internet, namely in the blogosphere. In addition to traditional media, publicists maintain their own blogs, which are increasing day by day. The authors note that the texts in the Tatar-language blogs are distinguished by their journalistic style, linguistic identity, and semantic content and ideological novelties. Therefore, the preparation of texts for Tatar blogs requires both authors' skills and experience. Unfortunately, recently journalistic speeches are shifting into the format of short posts, which for their part harmfully influence on the level of texts' structure.

Keywords: journalism, blogging, social networks, media text.

1 Introduction

In the century of information technologies, it is particularly important to study the journalistic speeches of individual authors of certain blogs. In the modern world, the Internet is the most efficient tool that meets the requirements of time and society. Publications on the Internet have complete freedom of placement and distribution, they are practically free from any censorship, so the audience should be able to choose and perceive this information correctly. Journalistic speeches are currently posted by many authors on their personal blogs and social networking posts.Blogging is considered to be a well- developed area on the Internet. The blogosphere is a space of special information and culture. Currently, the creation of a blog has become available for almost every Internet user. The modern synthesis of journalism and blogging, in our opinion, has two aspects: blogs are a source of information for professional journalists; active bloggers, on the other hand, acquire journalism skills and thereby enrich traditional journalism. According to the results of our surveys conducted between journalists writing in the Tatar language, 6 out of 10 journalists in their daily professional activities use various blogs and social networks to obtain information. This fact indicates a fairly high level of confidence of journalists in such sources of information.

2 Methods

Descriptive, comparative methods, logical analysis, systematic approach and others are used in this paper. The investigations of Russian and foreign scientists in media science became the scientific and methodological basis of the study [Boyd D. and Ellison, N. 2007;Dahlgren Peter. 2013; David Domingo, 2008; Guseinova A.A, Zayni R.L., 2019; Hewitt, Hugh. Blog: 2005; Kalmykov A.A. 2012; Sarah Van Leuven and Peter Berglez. 2016]. The publications on the Internet in the Tatar language were used as the empirical basis of the study.

3 Results and Discussion

Currently, most Tatar readers have switched to the Internet from the traditional print media. The blogosphere in the national language is also actively used to obtain information. Is informational blogging a new type of journalism, a new distributive channel for the printed word?

Blogs in the Tatar language function in different forms and types. Their first function is to expand the scope of the use of the Tatar language, pointing out the possibility to use the national language in a new space.

In the Tatar Internet space there are many informative authoring blogs. They clearly express the author's attitude, opinion on various events, phenomena, situations and problems in society. Therefore, we can note this phenomenon as a capacious concept of "personal journalism", although these authors are not always, or rather, very rarely professional journalists.

Defining the concept, it is necessary to add that it is traditionally believed that personal journalism is, firstly, a phenomenon of the Enlightenment period, when authors published only magazines, and secondly, the phenomenon of the industrial era, which was expressed by the fact that the media owners dictated the information agenda.In the given article we use the concept "personal journalism" to explain the sociocultural phenomenon that exists on the Internet in the form of personal sites and blogs. Modern personal journalism in the Tatar language also has an educational character. While outside Russia blogging platforms were often organized as a form for easy reading, in Russia they became a platform for expressing political views and publishing the results of creative activity. It is generally accepted that the fundamental difference between texts posted on blogs and texts of traditional media is the lack of professional editing. But in terms of linguistic and stylistic features and grammatical accuracy, publications in Tatar blogs do not lag behind professional media.

As examples of personal blogs we can point out blogs of a journalist, poet, writer, author of popular lyric songs Rustam Zaripov, a publicist, teacher Rashit Fathrakhmanov (writes under the pseudonym Bulat Khakov), a teacher Farit Vafin, and simply a beautiful intelligent woman Sumbel Gaffarova. On the personal website of the writer Marat Kabirov, there is a section "Notepad" that resembles a blog format. Regular and freelance journalists of the " Seyembike" magazine publish personal blogs on the journal's website.

It should be noted that some blogs in the Tatar language have gone far from the very idea of the blog and gave to their offsprings the format of an independent site. For example, a teacher Farit Vafin abundantly names his brainchild-blog concisely and designates its position as a site - "Notes of the teacher. Personal website of Farit Vafin: pedagogy, journalism, creativity. "The speeches of Farit Vafin are devoted to the problems of education, enlightenment and relate to school life, so they are always relevant. He knows how to present information easily, using satirical techniques in speech, but at the same time how to do it interesting and convincing. He shares his experience, gives a piece of advice to young teachers. He shares his opinion in relation to the modern Russian education system, compares it with the Soviet one. Unfortunately, in recent years, Farit Vafin writes less. Perhaps the reason is that he has his own blogs on several platforms (including the Belem Ru portal, well - known in the Republic of Tatarstan).

His journalism consists of works devoted to current problems and phenomena of the current life of society, which once again proves that journalistic articles can be not only articles in newspapers and magazines or materials of electronic print forms, but also other ways of presenting information. The journalism of Farit Vafin is necessarily based on real facts. His journalism may be inherent in author's speculation, but only within the framework of well-known real facts.

In his blogging articles, Farit Vafin talks about the work and life of a school teacher, about problems in the field of education. He bases on personal experience, his own observations, his speeches are rich in examples, analysis, comparisons, which further brings readers closer to journalism. When analyzing contemporary problems concerning schools, he does not always criticize and dwells only on negative examples; at the same time, positive cases are also analyzed.

Bulat Khakov constantly publishes in the "Akcharlak" (Swan) newspaper, at the same time he posts observations on current topics in his blog on a weekly basis. He writes about society and politics; He argues his thoughts and visions with examples; through comparisons, he tries to convey the reader to the essence

of the issue; emphasizes where the described event can lead to and comes up to a hypothesis. The language and speech features of this author are quite complex, in each publication the focus of the item is his own opinion. Bulat Khakov is not just an ordinary school teacher, he is PhD and writes both in Russian and Tatar languages.

The journalism of modern bloggers is not only distinguished by the fact that the authors use new speech patterns, claiming their existence in society, but they themselves actively create them, enriching the national language. And this can lead to the fact that new meanings and a new grammar will change the age-old traditions of the language. In any case, the modern language in Tatar journalism reflects the mentality of the nation and traditions, the cultural customs of the people that have developed over the centuries. Tatar journalism, taking into account the national characteristics of language and mentality, seeks to figuratively describe events in human life and their problems through the disclosure of facts of greater social significance.

Rustam Zaripov also has a strong position as a publicist. Comparisons, irony, expressive means of language are used in his speeches. Also he likes to draw parallels between history and modernity, past and future. He writes on the topics of literature, culture, history, music and art. He has a lot of readers. This author collaborates with the newspaper “Tatarstan Yashlare” (The Youth of Tatarstan).

The publications in the blogs of “Seyembika” magazine also make the readers to think. In a word, journalistic materials on blogs are distinguished by the fact that they are voluminous, they express the opinion of the author, and different language tools are successfully used.

There are several reasons why the number of blog readers in the world is increasing every day. Firstly, it is connected with the dissatisfaction with the set of publications that is offered in traditional media. Secondly, due to the fact that bloggers are independent authors and do not receive financial support from any structures, they are more trusted. Thirdly, blogging provides the opportunity for creative participation in discussions on a particular issue or news fact. And fourthly, it should be noted that the blogosphere appeared thanks to computers and affordable software.Until the twenty-first century, the creation of journalistic material required three stages of the preparation and dissemination of information such as collection, processing and creation of a media product, but with the development of various digital technologies and Internet communications, the extremely necessary fourth stage - interactive communication with the audience was added.

At the same time, many blogs are updating very quickly and provide readers the opportunity to participate in discussions, which are conducted on-line. “The comment function allows tracking the feedback from readers quickly and accurately. In fact, the message itself is not a complete text, since it receives its dynamic development in the comments of readers and the answers of the author of the blog that allows presenting a journalistic blog text as a semiotic unity with a more complex structure than the "traditional" journalistic publication in the press. " [Sarah Van Leuven and Peter Berglez. 2016, p.150]

Regardless of whether blogs have the opportunity to leave comments, there are few comments under journalistic speeches in the Tatar language on the Internet which contain readers’ own opinion, attitude to the issue under consideration, the audience does not try to argue, dispute, share their impressions. This does not mean that the topic is irrelevant or the quality of the presentation is bad, but it is explained by the passivity of the audience in relation to blogs. Only undisguised provocative personal texts can collect a considerable number of responses and comments.

At the same time, social networks are very active, they write posts daily, make videos, record podcasts, like and post comments. The virtual world is active. Various social networks are one of the effective channels of interactive communication with the audience. And it should be noted that social networks have a high level of influence on the formation of the Tatar-speaking media audience.

Unfortunately, in modern virtual reality, the pages of authors in social networks writing in the Tatar language gradually are supplanting their own blogs, so the Internet journalism is making its own adjustments to the development of the Tatar Internet space. It seems to us that this can lead to disappear of blogs that we previously studied in the framework of author journalism and they would remain only in history.

4 Summary

Despite a common vision and understanding of the functions and directions of Tatar blogging, Tatar blogs in the modern media system are more perceived as ordinary diaries, although until that time they contained publications combining a journalistic concept, a perfect language and a complete text.

It should be noted that most of the speeches on Tatar blogs are dedicated to resolving the national issue, which includes educational and cultural topics. [Sarah Van Leuven and Peter Berglez. 2016] The themes of politics, economics, social life remain beyond the scope of bloggers. Only a national-cultural topic may seem uninteresting and irrelevant to a certain audience of Tatar bloggers, perhaps one of the reasons for leaving the blogosphere to social networks is the narrowness of topics. For this reason, arises the question of expanding the themes of the Tatar blogosphere.

Unfortunately, nowadays, Tatar-language blogs with copyright journalism are losing positions in comparison with social networks. Blogs began to lose their functions, gradually turning into the semblance of the same social networks. At the same time, it shall be observed the gradual passivity in blogging and activity on the social networks of the same authors. This phenomenon began to harm the language standards, the purity of the language. All this leads to the disappearance of copyright journalism in the Tatar language on the Internet.

5 Conclusions

The Internet allows delivering any information to an audience instantly. Technologies developed in the field of journalism, allowed the creation of a convergence phenomenon. Any traditional means of disseminating media has its own website on the Internet; new types of media have emerged. As part of the information network, blogs also play a role in disseminating information and even compete with traditional media. Therefore, it is important to investigate the essence of blog development. Are bloggers journalists and are they always objective? These questions cannot always be answered positively. Nevertheless, any blogger or author dealing with serious public problems should have the skill of analysis, own opinion and the ability to write or speak in a simple language.

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Primary Paper Section: A

Secondary Paper Section: AJ

C CHEMISTRY

CA INORGANIC CHEMISTRY
CB ANALYTICAL CHEMISTRY, SEPARATION
CC ORGANIC CHEMISTRY
CD MACROMOLECULAR CHEMISTRY
CE BIOCHEMISTRY
CF PHYSICAL CHEMISTRY AND THEORETICAL CHEMISTRY
CG ELECTROCHEMISTRY
CH NUCLEAR AND QUANTUM CHEMISTRY, PHOTO CHEMISTRY
CI INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING

MINERAL COMPOSITION OF SAPROPELS OF LAKES OF THE LEFT AND RIGHT BANKS OF THE OB RIVER

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Abstract: The objective of this work is to study the mineral composition of botám sediments of ten small lakes situated on the right bank of the Ob River in the Surgut District of the Khanty-Mansiysk Autonomous Okrug – Yugra and ten small lakes situated on the left bank of the Ob River in the Kondinsky District of the Khanty-Mansiysk Autonomous Okrug – Yugra. The research was carried out using wave dispersive X-ray fluorescence (WDFR) spectroscopy. We determined the content of bitumen, organic substances, ash in the studied samples, also the chemical composition of the ash. Based on these data, the studied bottom sediments were classified, and the bottom sediments of the lakes of the right and left banks were compared.

Keywords: Sapropel, Trace Elements, Organic Matter, Wave Dispersive X-Ray Fluorescence Spectroscopy.

1 Introduction

Sapropels are modern or subfossil, fine-structured, colloidal deposits of continental water reservoirs. Sapropel composition includes the remains of microscopic aquatic organisms, a considerable amount of organic matter, a certain amount of inorganic components of biogenic origin, as well as mineral impurities of a salutary nature. Peat is genetically close to sapropels. The main difference between sapropels and peat is their finer structure. In addition, the primary sources of organic matter are different. Peat is biogenic humic formation, the primary sources of organic matter of which are carbohydrates of peat-forming plants. In sapropels, the primary sources of organic matter are fats and protein substances of sapropel-forming organisms - plankton and algae, which determines the difference in the chemical composition of peat and sapropels. According to the content of the organic and inorganic components, sapropels belong to the organic-mineral and organic groups of bottom sediments. Sapropels are contrasted to high-ash lake deposits, such as clays, sands, marls, taking 15% organic content as a conventional border for this distinction [Korde, N. V.: 1960].

Sapropel deposits draw the attention of researchers due to the possibilities of their practical use. Sapropel is used in medicine as applications, diluted baths for mud therapy, in agriculture as fertilizer, in animal husbandry as a mineral supplement [Shtin, S. M.: 2005]. The theoretical interest in sapropels is connected with the opinion of a number of scientists that a long time ago sapropels were the material that carbon sedimentary rocks were formed of [Zanin, Yu. N., Zamirailova, A. G., Livshits, V. R., & Eder, V. G.: 2008].

The objective of this reserch was to study the mineral composition of sapropels of ten lakes of the right bank and ten lakes of the left bank of the Ob River (Western Siberia). These results are generalizing from previous and new studies [Sartakov, M.P., Osnitsky, E.M., Kudrin, K.Iu., Larina, N.S.: 2019;Sartakov, M.P., Osnitsky, E.M., Larina, N.S., Komissarov, I.D., Litvinenko, N.V.: 2019;Sartakov, M.P., Osnitsky, E.M., Kudrin, K.Yu., Larina, N.S., Komissarov, I.D.: 2019].

2 Research Objects and Methods

Sapropel was sampled from ten small lakes situated on the right bank of the Ob River in the Surgut District of the Khanty-Mansiysk Autonomous Okrug – Yugra and ten small lakes situated on the left bank of the Ob River in the Kondinsky District of the Khanty-Mansiysk Autonomous Okrug – Yugra. Geomorphologically, the lakes of the right bank of the Ob River are situated on the second supra-floodplain terrace. The surface area of the lakes ranges from 2.2 to 154.7 ha; the water depth reaches 4.8 meters. The lakes of the left bank of the Ob River are situated on the second supra-floodplain terrace. The surface area of the lakes ranges from 3.9 to 120.3 ha; the water depth reaches 6.1 meters.

Most of the lakes are supplied by spring floods and precipitation. The lakes are situated among cedar, pine, birch forests, and vast swamps. The type of overgrowing of water reservoirs is mixed - a combination of rafts and vast thickets. The bottom of the lakes is covered with a layer of macrophytes.

The sampling of sapropels and lake waters was carried out according to the “Guidelines for methods of hydrobiological analysis of surface waters and bottom sediments” [Sartakov, M.P., Osnitsky, E.M., Kudrin, K.Iu., Larina, N.S.: 2019;]. The sampling of lake water for general chemical analysis was performed at a depth of 1m into a 1L plastic container. The determination of macro- and microelements was carried out in dry sapropel samples using wave dispersive X-ray fluorescence (WDFR) spectroscopy in the engineering center of composite materials based on compounds of tungsten and rare-earth elements of the State Agrarian University of Northern Trans-Urals. Samples were analyzed on an ARL Optim’X spectrometer equipped with the OXSAS IT complex for instrument control and result processing [Sartakov, M.P., Osnitsky, E.M., Larina, N.S., Komissarov, I.D., Litvinenko, N.V.: 2019;]. The sample preparation and analysis were performed in accordance with GOST 33850-2016 “Soils. Determination of chemical composition by X-ray fluorescence spectrometry”. The concentrations were calculated using the method of fundamental parameters with correction coefficients of the interelement influence of the UniQuant module [Sartakov, M.P., Osnitsky, E.M., Kudrin, K.Yu., Larina, N.S., Komissarov, I.D.: 2019].

3 Results and Discussion

Figures 1 and 2 show charts of the content of organic matter (OM) in the studied sapropels and silicon oxide in the ash for bottom sediments of the lakes on the right and left banks of the Ob River.

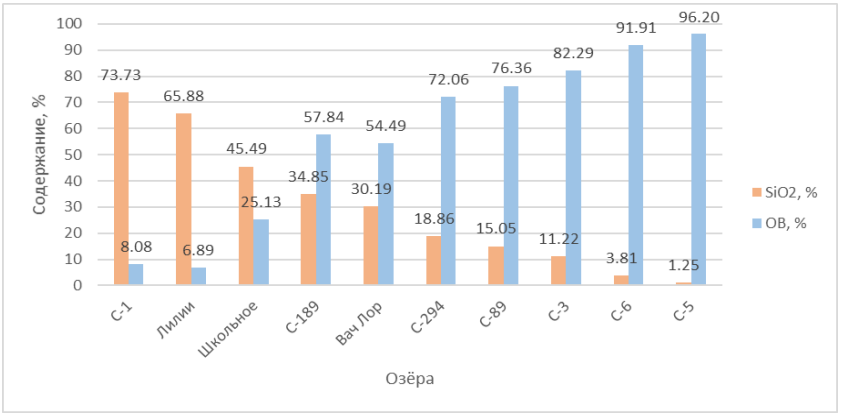

Fig 1. OM content in sapropels and SiO_2 in ash of bottom sediments in lakes of the right bank of the Ob River.

Bottom sediments can be grouped in accordance with their OM composition. Less than 10% organic content is characteristic of siltstone sands and clay silt; 10-30% organic content - weakly sapropel siltstone and clay silt; 30-50% organic content - clay sapropelic silt, 50-70% organic content - sapropelic clay silt; more than 70% organic content - sapropels [Shtin, S. M.: 2005]. According to this classification, bottom sediments of such lakes on the right bank of the Ob River as Lake S-1, Lilii are siltstone sands, Lake Shkolnoe - weakly sapropel siltstone and clay silt, lakes S-189, Vach Lor - sapropelic-clay silt, lakes S-294, S-89, S-3, S-6, S-5 - sapropels. Bottom sediments of such lakes on the left bank of the Ob River as 7, Baybalak 2 are siltstone sands; Lake 6, Dorozhnoe, Baybalak 1, Lesnoe - weakly sapropel siltstone and clay silt; lakes 4, 1 - clay sapropelic silt; Lake 8 - sapropelic-clay silt; Lake 9 - sapropels.

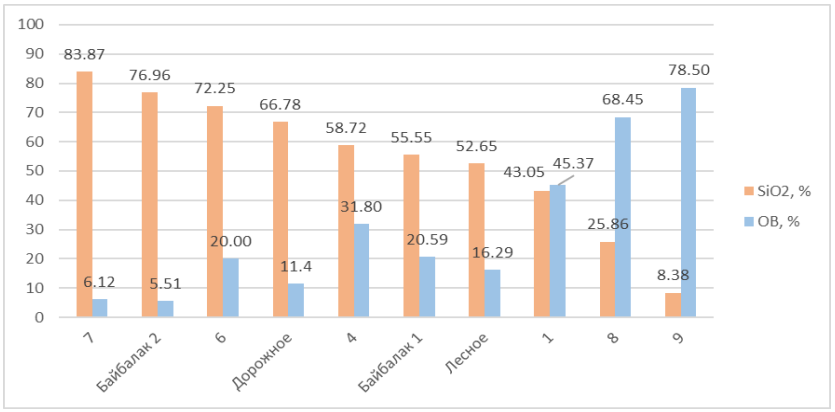

Fig 2. OM content in sapropels and SiO_2 in ash of bottom sediments in lakes of the left bank of the Ob River.

According to another classification, sapropels can be divided into type, class, and kind according to the content of ash, calcium and iron oxides, biological and mineralogical composition [Shtin, S. M.: 2005]. Table 1 presents this classification for bottom sediments in lakes of the right bank of the Ob River. Table 2 presents this classification for bottom sediments in lakes of the left bank of the Ob River.

Table 1: Classification of studied sapropels of the right bank of the Ob River.

Lakes	Content, %			Biological and mineralogical composition	Type	Class	Kind
	Ash	CaO	Fe_2O_3				
S-5	3,80	0,434	0,383	Organic residues > 45%	Biogenic	Organic	-
S-6	8,09	0,625	0,536				
S-3	17,71	1,190	0,746				
S-89	23,64	2,550	0,898				
S-294	27,94	1,120	0,876				
Vach Lor	45,51	1,480	2,160	Organic residues - 45%, SiO2 > 30%	Clastogenic	Organic-silicate	Organic-sandy
S-189	42,16	0,995	2,450				
Shkolnoe	74,87	1,300	4,830	Organic residues < 45% SiO2 > 30%		Silicate	Sandy
Lilii	93,11	1,300	3,200				
S-1	91,92	1,100	1,200				

Sapropels of lakes S-5, S-6, S-3, S-89, S-294 belong to a biogenic type and organic class. They can be used as fertilizers, feed supplements, therapeutic mud, for the production of building materials, adhesives, and drilling fluids. The sapropels of lakes Vach Lor, S-189, Shkolnoe, Lilii, S-1 are classified as clastogenic, but differ in class and type. They can be used as fertilizers, therapeutic mud.

Table 2: Classification of studied sapropels of the left bank of the Ob River.

Lakes	Content, %			Biological and mineralogical composition	Type	Class	Kind
	Ash	CaO	Fe_2O_3				
9	21,50	3,070	3,940	Organic residues > 45%	Biogenic	Organic	-
8	31,55	0,631	0,564				
1	54,63	0,527	3,260	Organic residues > 45%, SiO2 > 30%	Clastogenic	Organic-silicate	Organic-sandy
4	68,20	1,050	2,540	Organic residues < 45%, SiO2 > 30%		Silicate	Sandy
Baybalak 1	79,41	1,780	3,180				
6	80,00	0,221	0,924				
Lesnoe	83,71	1,980	5,150				
Dorozhnoe	88,60	1,380	2,680				
7	93,88	0,158	1,070				
Baybalak 2	94,49	0,752	2,170				

Sapropels of lakes 9, 8 belong to a biogenic type and organic class. They can be used as fertilizers, feed supplements, therapeutic mud, for the production of building materials, adhesives, and drilling fluids. Sapropels of lakes 1, 4, Baybalak 1, 6, Lesnoe, Dorozhnoe, 7, Baybalak 2 are clastogenic but differ in class and type. They can be used as fertilizers, therapeutic mud.

The bitumen content in sapropels of the right bank is shown in Table 3, in sapropels of the left bank - in Table 4.

Table 3: Bitumen content in bottom sediments of the right bank

Bottom sediments	Lakes	Bitumen, %
Siltstone sands	S-1	0,64
	Lilii	0,70
Weakly sapropelic siltstone silt	Shkolnoe	0,20
Sapropelic clay silt	S-189	2,70
	Vach-Lor	4,97
Sapropel	S-3	3,75
	S-5	10,00
	S-6	11,13
	S-294	11,60
	S-89	12,88

The bitumen content is the highest in sapropels with high organic content; the sample taken from Lake S-3 is the exception. It contains bitumen at the level of sapropelic clay silt.

The bitumen content is the lowest in siltstone sands and weakly sapropelic siltstone silt.

Table 4: Bitumen content in bottom sediments of the right bank

Bottom sediments	Lakes	Bitumen, %
Siltstone sands	7	0,85
	Baybalak 2	0,90
Weakly sapropelic siltstone silt	6	1,11
	Dorozhnoe	2,00
	Baybalak 1	0,75
	Lesnoe	0,81
Clay sapropelic silt	4	0,50
	1	1,59
Sapropelic clay silt	8	0,50
Sapropel	9	5,68

Table 5 presents the main elements included in the ash of the studied sapropels of the lakes on the right bank of the Ob River.

Table 6 shows the main elements included in the ash of the studied sapropels of the lakes on the left bank of the Ob River.

Table 5: Elemental composition of sapropel ash of the right bank of the Ob River

Elements	Lakes									
	S-1	Shkolnoe	Lilii	S-189	Vach Lor	S-294	S-89	S-3	S-6	S-5
Si, %	34,470	30,800	21,270	16,290	14,110	8,820	7,040	5,240	1,780	0,583
Al, %	5,390	6,750	6,800	1,050	3,780	1,840	1,120	0,955	0,565	0,361
Fe, %	0,840	2,240	3,370	1,710	1,510	0,613	0,628	0,522	0,375	0,268
K, %	1,980	1,800	1,560	0,192	0,994	0,590	0,259	0,204	0,154	0,038
Na, %	0,825	1,100	0,589	0,063	0,287	0,116	0,057	0,067	0,096	0,016
Ca, %	0,787	0,931	0,930	0,712	1,060	0,804	1,820	0,850	0,447	0,310
Mg, %	0,348	0,983	1,260	0,164	0,390	0,141	0,132	0,126	0,066	0,054

Among the elements presented there can be distinguished two groups. The first group of elements (Al, K, Na) constitute the terrigenous (clastic) part of the bottom sediment. The second group of elements (Ca, Mg) make up carbonates. Sr, also included in this group, was not found. The third group of elements (Zn, Cu, Hg), associated with anthropogenic effect, was not identified.

Table 6: Elemental composition of sapropel ash of the left bank of the Ob River

Elements	Lakes									
	Baybalak 2	7	6	Dorozhnoe	4	Baybalak 1	Lesnoe	1	8	9
Si, %	35,980	39,210	33,770	31,220	27,450	25,970	24,610	20,130	12,090	3,920

Al, %	4,380	2,940	2,110	4,590	1,560	5,050	7,270	2,170	0,958	1,440
Fe, %	1,520	0,748	0,646	1,880	1,780	2,220	3,600	2,280	0,395	2,760
K, %	1,140	1,120	0,808	1,400	0,265	1,570	1,530	1,140	0,187	0,296
Na, %	0,476	0,152	0,208	0,595	0,079	0,757	0,702	0,210	0,076	0,153
Ca, %	0,538	0,113	0,158	0,988	0,752	0,757	1,410	0,377	0,451	2,200
Mg, %	0,627	0,159	0,144	0,718	0,192	0,755	1,010	0,138	0,118	0,207

4 Conclusion

The bottom sediments of the right bank of the Ob River classified as siltstone sands are in S-1, Lilii. Siltstone sands of the left bottom of the Ob River are 7, Baybalak 2. All these samples are of clastogenic type, silicate class and sandy kind. Their bitumen content is less than 1.00%. They are characterized by a high ash content, more than 90%. The ash of the right bank samples is characterized by a higher content of elements constituting the terrigenous part (Al, K, Na) compared with that of the left bank samples. No traces of anthropogenic effects have been identified. The main field of application is fertilizers and therapeutic mud.

Weakly sapropelic siltstone silt of the right bank lakes is Shkolnoe. Weakly sapropelic siltstone silts of the left bank lakes are 6, Dorozhnoe, Baybalak 1, Lesnoe. All these samples are of clastogenic type, silicate class and sandy kind. Lake Shkolnoe has the lowest bitumen content among all samples studied – 0.20%. The bitumen content in bottom sediments of the left bank lakes ranges from 0.75% to 2.00%; the ash content – from 74.87% to 88.60%. Lakes Shkolnoe and Baybalak 1 have the highest content of elements constituting the terrigenous part. No traces of anthropogenic effects have been identified. The main field of application is fertilizers and therapeutic mud.

Clay sapropelic silts are not found in bottom sediments of the right bank lakes. Clay sapropelic silts of the lakes on the left bank are 4, 1. The bottom sediments of Lake 4 are of clastogenic type, silicate class and sandy kind. The bottom sediments of Lake 1 are of clastogenic type, organic-silicate class and organic-sandy kind. The bitumen content is 0.50% and 1.59% respectively; the ash content – 54.63% and 68.20%. They are characterized by a high content of elements constituting the terrigenous part. No traces of anthropogenic effects have been identified. The main field of application is fertilizers and therapeutic mud.

Sapropelic clay silts of the right bank lakes are S-189, Vach Lor. Sapropelic clay silt of the left bank lakes is Lake 8. The bottom sediments of lakes Vach Lor, S-189 are of clastogenic type, organic-silicate class and organic-sandy kind. The bottom sediments of Lake 8 are of biogenic type, organic class. The bitumen content of the right bank lakes is 2.70% and 4.97% respectively; that of the left bank lakes is 0.50%. The ash content in the right bank samples is 45.51% and 42.16% respectively; that of the left bank samples is 31.55%. The ash of the right bank bottom sediments has an average content of elements constituting the terrigenous part in comparison with other studied samples. The content of these elements in the left bank samples is minimal. No traces of anthropogenic effects have been identified. The main field of application of the right bank sapropels is fertilizers and therapeutic mud; the left bank sapropels are mainly used as fertilizers, feed supplements, therapeutic mud, for the production of building materials, adhesives, and drilling fluids.

Sapropels of the right bank lakes are S-3, S-5, S-6, S-294, S-89. Sapropel of the left bank lakes is Lake 9. All these samples are of biogenic type and organic class. The bitumen content in bottom sediments of the right bank lakes is more than 10%, except S-3 sample with the bitumen content of 3.75%. The bitumen content of the left bank sample is 5.68%. The ash content of the right bank samples ranges from 3.80% to 27.94%; that of the left bank sample is 21.50%. No traces of anthropogenic effects have been identified. The main field of application is fertilizers, feed supplements, therapeutic mud, for the production of building materials, adhesives, and drilling fluids.

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Primary Paper Section: C

Secondary Paper Section: CA, DB

D EARTH SCIENCES

DA	HYDROLOGY AND LIMNOLOGY
DB	GEOLOGY AND MINERALOGY
DC	SEISMOLOGY, VOLCANOLOGY AND EARTH STRUCTURE
DD	GEOCHEMISTRY
DE	EARTH MAGNETISM, GEODESY, GEOGRAPHY
DF	PEDOLOGY
DG	ATMOSPHERIC SCIENCES, METEOROLOGY
DH	MINING INDUSTRY INCLUDING COAL MINING AND PROCESSING
DI	POLLUTION AND AIR CONTROL
DJ	POLLUTION AND WATER CONTROL
DK	CONTAMINATION AND DECONTAMINATION OF SOIL INCLUDING PESTICIDES
DL	NUCLEAR WASTE, RADIOACTIVE POLLUTION AND CONTROL
DM	SOLID WASTE AND ITS CONTROL, RECYCLING
DN	ENVIRONMENTAL IMPACT ON HEALTH
DO	PROTECTION OF LANDSCAPE

AFRICA: COMPARATIVE ANALYSIS OF MODERN REMOTE SENSING DATA AND OLD MAPS (BY HAND-ATLAS VON AFRIKA, 1831)

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Abstract: Cartography, despite its long history, up to the present day remains one of the most relevant areas of research in the world. It considers modeling and displaying of spatial objects, which tend to change and, therefore, science itself must change as well. the article proposes a methodology for the analysis of old maps, based on comparative-analytical method, using remote sensing data. Its application allows us to evaluate the accuracy of old maps and to better understand the features of the cartographic school of past eras.

Key words: old maps, gis, karl ritter, maps reliability

1 Introduction

Cartography, despite its long history, up to the present day remains one of the most relevant areas of research in the world. It considers modeling and displaying of spatial objects, which tend to change and, therefore, science itself must change as well. As it develops, many important new developments have appeared in cartography, including research using methods of remote sensing of the earth. For the study of ancient maps, geographic information systems are more frequently being used, due to their capabilities there is an opportunity to track changes in objects mapping. [Cillis, g., statuto, d., picuno, p. 2019]. One of the areas of cartography is an atlas mapping. As it is known, atlas is a systematic collection of maps that form an integral cartographic work. An atlas makes it possible to describe basic properties of geographical systems and how their functioning in more detailed way. Old maps and atlases serve as evidence of past states of space and time, and represent valuable data sources for the history of the world. [Blanco, a., de bustamante, i., pascual-aguilar, j.a2019]. Therefore, we can conclude that analysis of the mapping features used in such geographical atlases can help to assess the development of cartographical science.

By the middle of the xix century, german cartography was considered to be one of the most advanced in the world, especially in the field of design and publication of maps. It is worth noting that in many countries, along with military topographic departments, civilian cartographic institutions have also begun to emerge, providing the creation of general geographical, special and thematic maps. During the nineteenth century there was a rapid development of german cartographic science. Germany was an infant as a single state and therefore there was a great need for compiling new topographic maps of both the state itself and overseas territories and colonies. Among the cartographic works of this period, the german company justus pertes, which published the world atlas of stieler (1823), the physical atlas of g. Berghouse (1836-1841), which included a volume of text descriptions and 90 sheets of thematic maps, stands out clearly. It was this company that published the most accurate and complete maps in germany in the 19th century [I.j. Demhardt, 2003]. Maps of the company were distinguished by their geographical reliability and informativeness and often served as models for other publishers. Since the mid-nineteenth century, this publishing house has become known for its innovative design and drawing of maps, as well as a center for foreign research cartography. The atlas of this particular company was used in this study. [I.j. Demhardt ,2000]

2 Materials And Methods

Compact atlas of the african continent (german: “hand-atlas von afrika”), authored by the famous german geographers karl ritter and franz august ezel, was published in berlin in 1831 [Arantes, l. 2016]. This cartographic work has 14 different maps in its composition, which together create an integral and detailed description of the continent. From a very voluminous introduction to the atlas, you can find out that it serves as an addition to the 1st volume of the fundamental work of karl ritter, “die erdkunde im verhältniss zur natur und zur geschichte des menschen”, which was published in 1822 and devoted to africa [Schenk, w. 2018]. In the annotation for each map, a link to a page from the book is given, where the main description of the part of the continent that is depicted. The publisher of this manual atlas was george andreas reimer, a german publisher and book dealer.

To study atlas in this paper, comparative and analytical method was mainly used. Initially, a detailed analysis of all maps included in this atlas was carried out. So one can identify all key features of mapping objects, determine how maps correspond to trends of cartography development and how they reflect the reality of a particular era.

The next stage of the study was the selection of a number of maps of the atlas, and their subsequent digitization and import into gis software. In this case, the digitization was a scan of the necessary maps. For the analysis, maps of various scales depicting large relief forms were selected. Maps for comparative analysis were the “map of africa” (german karte von afrika), the “map of the southern tip of africa” (german karte des südlichen endes afrikas) and their modern analogues, made in the same geographical projections, as well as a section of the base map of arcgis servers (table 1). This base map is an orthophotomap and consists of satellite images of a number of satellites: terracolor (small and medium-sized scales from 600 to 72 thousand), spot (from 288 to 72 thousand), digital globe, geoeye, ikonos, aerogrid and ign spain . This is very convenient in the context of searching for satellite images for a particular region of interest, such an orthophotomap has several advantages for conducting a qualitative study of the territory.

Table 1. List of the compared maps

The atlas map	Modern map
Karte von afrika (1822)	Map of africa (2015)
Karte des südlichen endes afrikas	Suidelike afrika (1972)
	Satellite image of south africa (basemap – portal for arcgis)

Then, a comparative analysis of the selected atlas maps was carried out by superimposing them on modern analogs and on the base map section of the servers of the geographic information system. This combination of data in comparison can provide more information when you analyze old maps. We can get an additional way to check by comparing with modern maps. Orthophotoplans can often be made in a different cartographic projection than the map under study). So we can get more map distortion. This is especially true for maps that show a very large area. This was done in order to determine and most clearly identify all the inaccuracies of the old maps in comparison with modern ones. To do this, use the spatial reference function of the raster at least 4 points [Heitzler, m., hurni, 2020].

Using this method, of course, inaccuracies cannot be avoided, however, the presence of the most recognizable and characteristic objects on the compared maps can more accurately make a binding. This method using geographic information systems and remote sensing data provides a fairly visual approach to the study of old maps, when other more accurate procedures are not available [Dmitry a. Shcheglov, 2016].

3 Results And Discussion

Overlay and comparative analysis on the example of two maps that are part of the investigated atlas made it possible to assess the degree of their reliability. It was possible to identify that these maps have a fairly high accuracy of the description of the territory, but at the same time have a number of inaccuracies and distortions. A description and results of the comparative analysis are presented below.

3.1 Comparative Analysis Of The Atlas Map Of Africa

This map of africa is made in a pseudo-cylindrical cartographic projection. To avoid large distortions, a modern political map was found, which was created in the same projection. It is worth noting that most modern maps use an azimuthal transverse projection to more accurately represent the african continent. Comparison with a modern analog will be more effective for studying really large areas. It is better suited for depicting the equatorial part of the planet. When superimposed, we can observe that, on the whole, the map compiled in the first half of the 19th century practically coincides with the modern one (figure 1).

Fig 1. 19th century map overlay on a 21st century political map

However, there are a number of inaccuracies. The main differences can be seen along the northwestern coast of africa, right up to the gulf of guinea - a mismatch with the real border of the coastline and islands (figure 2). Also, one of the main inaccuracies is the image of lake nyasa - on the map of the xix century it is located northeast of the true location (figure 3). A noteworthy detail is that the map does not contain some large geographical features, such as lake victoria. This is due to the fact that it was discovered in 1858, that is, 27 years after the publication of this atlas [R. Finsterwalder / e. Hueber, ernst (1943): vermessungswesen und kartographie in afrika, berlin,pp. 272-273.]. At the time of the creation of this map, this site was one of the poorly studied due to inaccessibility.

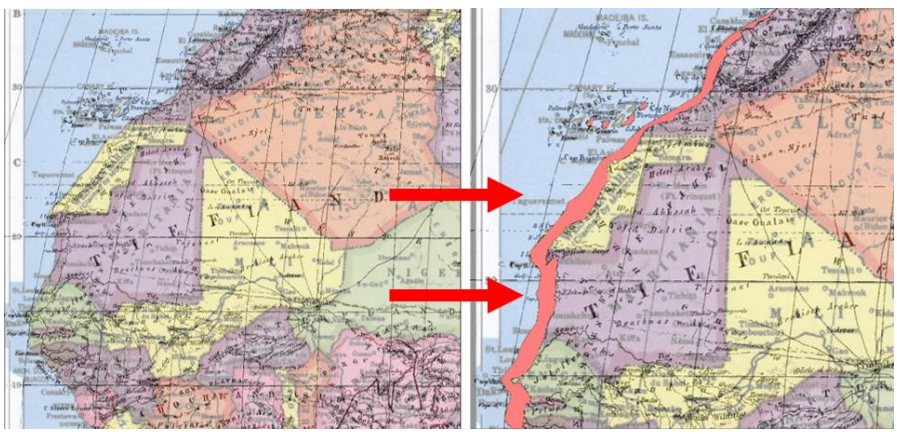

Fig 2. Inaccuracy of the north-west coast of africa (неточность северо-западного побережья африки)

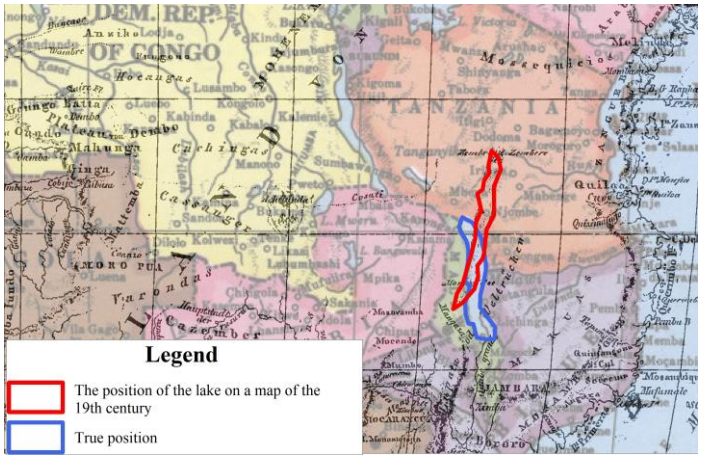

Fig 3. Location of lake nyasa on old and modern maps

A significant part of the map is quite accurate. The author of the map described in detail a large part of the coast of africa. The coast of the southern end of the continent, the areas adjacent to the coasts of the gulf of aden and the red sea, are made with a very high level of detail (figure 4). As for the display of river networks on the continent, they are depicted quite accurately. For example, the author almost reliably showed the course of the nile river.

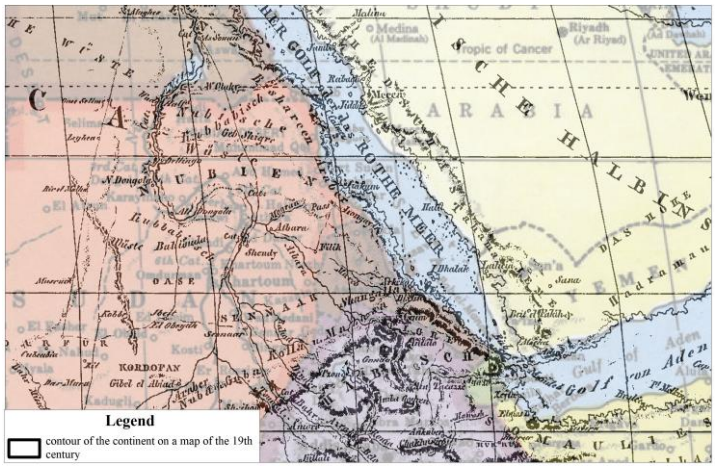

Fig 4. Map accuracy in the gulf of aden and the red sea

3.2 Comparative Analysis Of The Atlas Map Of Southern Africa

This map of south africa is made in secant conic projection. We can use the orthophotomap for comparison with old maps because it is quite appropriate and allows us to determine the map's accuracy.when superimposed on the base map section, some inaccuracies are revealed. First of all, there is a mismatch with the western and eastern coastlines. However, at the same time, the author of the map was able to display in some detail the extreme southern part of the mainland (figure 5). When enlarging the scale of the orthomosaic, one can evaluate the accuracy of the image of the coast.

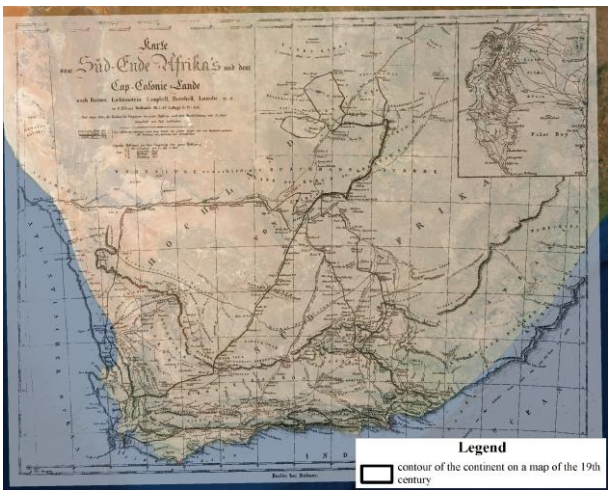

Fig 5. An atlas map overlay on a satellite image from arcgis basemap

When comparing the cartographic material of the 19th century with a modern physical map. Then there is an additional comparison of the xix century's map with the modern physical one. We would like to note the uniformity of the overlay of the coastline, however, the image errors of the western and eastern coasts are again confirmed. As for the display of relief elements, there are coincidences (figure 6). The author of the map of the xix century was very able to show the terrain using the hatching method.

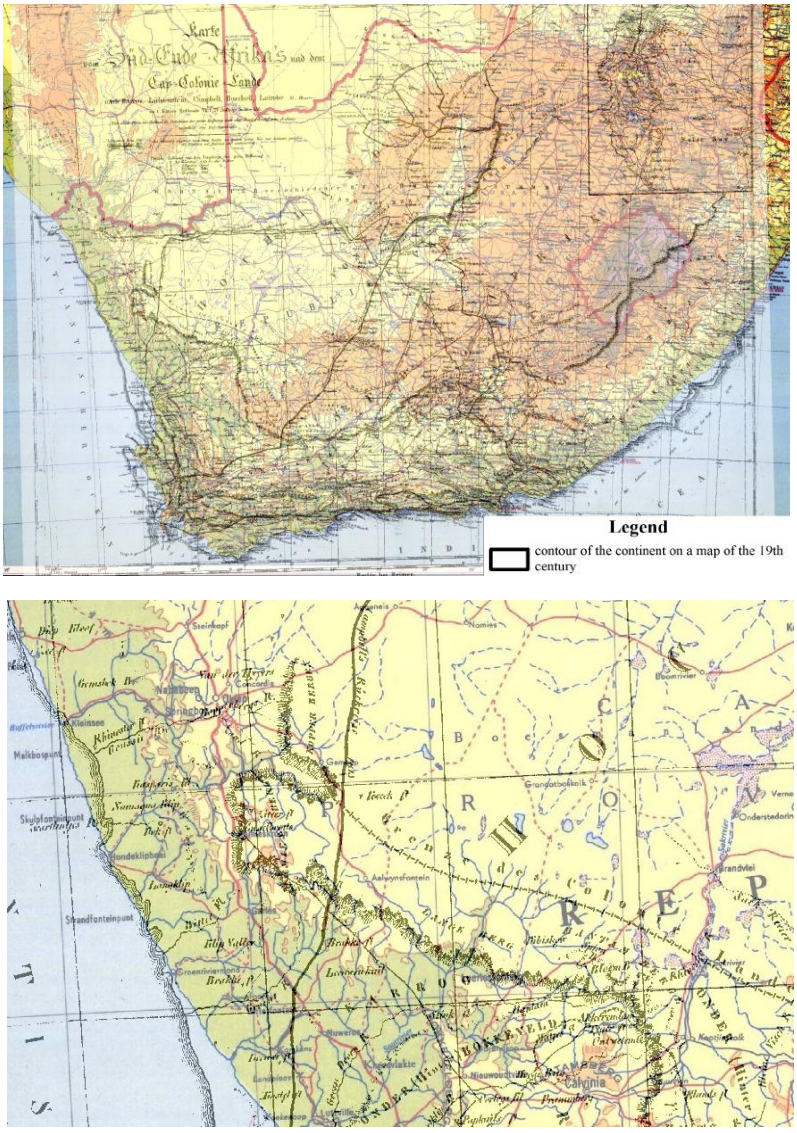

Fig 6. An atlas map overlay on a modern physical map

4 Results

A comparative-analytical method for studying old maps using geographic information systems and remote sensing data gives the most obvious result, helps to identify which objects have the greatest distortions and which vice versa are depicted with high accuracy [Miraglia, m. 2019]. Usage of such satellite images of the surface, namely the similar orthophotomaps provided by arcgis servers, can significantly facilitate and make faster work on searching and downloading necessary data for remote sensing of the earth.

Many inaccuracies in the location of objects within the continent can be explained by their change over time, as well as the inaccessibility and difficult conditions for conducting field work. In general, coastal territories and islands have the greatest distortions on the maps (table 2).

Table 2. Simplified representation of object distortions on maps of the 19th-century atlas of africa

	Distortion		
Objects	High	Medium	Low
Coastline			
Islands			
Terrain elements			
River systems			

5 Conclusions

This investigation allowed us to study and evaluate the degree of reliability of 19th century maps. Using two maps as an example, a comparative analysis was carried out using geographic information systems and remote sensing data. Once again, it should be noted that this method, in the absence of more accurate ones, can provide visual information and identify the features of mapping, identify inaccuracies. It is concluded that maps under study have a fairly high description accuracy, but at the same time have a number of inaccuracies and distortions. The analysis of geographical objects, including in tabular form, on their degree of distortion in comparison with modern maps is conducted.

In general, the combination of comparing modern maps and remote sensing data with old maps is extremely effective. Their application for the needs of old cartography studies is able to provide visual changes in territories and cartography itself over time.

Acknowledgements

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Primary Paper Section: D

Secondary Paper Section: DE

F MEDICAL SCIENCES

FA	CARDIOVASCULAR DISEASES INCLUDING CARDIO-SURGERY
FB	ENDOCRINOLOGY, DIABETOLOGY, METABOLISM, NUTRITION
FC	PNEUMOLOGY
FD	ONCOLOGY AND HAEMATOLOGY
FE	OTHER FIELDS OF INTERNAL MEDICINE
FF	ENT (IE. EAR, NOSE, THROAT), OPHTHALMOLOGY, DENTISTRY
FG	PAEDIATRICS
FH	NEUROLOGY, NEURO-SURGERY, NUERO-SCIENCES
FI	TRAUMATOLOGY AND ORTHOPAEDICS
FJ	SURGERY INCLUDING TRANSPLANTOLOGY
FK	GYNAECOLOGY AND OBSTETRICS
FL	PSYCHIATRY, SEXOLOGY
FM	HYGIENE
FN	EPIDEMIOLOGY, INFECTION DISEASES AND CLINICAL IMMUNOLOGY
FO	DERMATOLOGY AND VENEREOLOGY
FP	OTHER MEDICAL FIELDS
FQ	PUBLIC HEALTH SYSTEM, SOCIAL MEDICINE
FR	PHARMACOLOGY AND APOTHECARY CHEMISTRY
FS	MEDICAL FACILITIES, APPARATUS AND EQUIPMENT

HIV INFECTION IN THE REPUBLIC OF TATARSTAN AND IN THE RUSSIAN FEDERATION: EPIDEMIOLOGY AND PREVENTION

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Abstract: Over the past few decades, HIV infection has been a relevant strategic area of public health work. In addition to the risk groups, the epidemic process of HIV infection has involved the general population in recent years. The authors carried out an epidemiological analysis of the situation, dedicated to HIV infection in the Russian Federation, using the state reports of the Regional Office of the Federal Service for Supervision over Consumer Rights Protection and Human Welfare in the Republic of Tatarstan "On the State of Sanitary and Epidemiological Welfare of Population in the Republic of Tatarstan" and the Russian Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing "On the State of Sanitary and Epidemiological Welfare of Population in the Russian Federation".

Key words: HIV infection, epidemiology, infectious diseases, epidemic process, prevention.

1 Introduction

Infection, caused by HIV, (HIV infection) has been a relevant area of various researches (clinical, epidemiological, sociological, genetic, etc.) in medicine for many years [Novikova M.O. 2017, Epidemiological Characteristics of HIV Infection in the Republic of Mari EL / I.V. Petrov, M.O. Novikova, G.R. Khasanova et al. // 2017].

Special attention of doctors and scientists is given to a stigma in relation to patients with HIV-positive status, AIDS-marker diseases (opportunistic pathologies) and risk groups [Comparative Characteristic of Cases of Mycobacteriosis and Tuberculosis among HIV-Infected Patients / I.V.Petrov, M.O. Novikova, A.A. Almukhametov et al. // 2017; Mycobacteriosis among Immunocompromised Patients (the Case of HIV Infection) / I.V. Petrov, T.Kh. Amirova, L.V. Petrova, E.V. Sevastyanova, F.S. Petrova, S.I. Rasskazova // 2019; The Problems of Epidemiology and Diagnosis of Mycobacteriosis among Immunocompromised Patients (the Case of HIV Infection) / I.V. Petrov, T.Kh. Amirova, L.V. Petrova, F.S. Petrova // 2016].

The medical and social portrait of a patient with HIV-positive status is changing. Thus, HIV infection shows a tendency to involve the general population in the epidemic process [Medical and social portrait of HIV infection in the Republic of Mari El / I.V. Petrov, M.O. Novikova, A.A. Almukhametov, F.S. Petrova // 2017; Thiago Torres, Leonardo Bastos, Luciana Pereira Kamel, Daniel R.B. Bezerra and authors. 2020].

According to the official sources of the World Health Organization (WHO), there were about 37.9 million people with HIV infection in the world at the end of 2018 [HIV/AIDS. Key facts. World Health Organization. Available at (February, 26 2020):https://www.who.int/news-room/fact-sheets/detail/hiv-aids]. Currently, the principle of "treatment = prevention" is actively used in the fight against HIV infection and its prevention. This allows to reduce the epidemiological risks of HIV infection spread among the population. So, as of June 2019, 24.5 million people in the world were receiving antiretroviral therapy (ART). There is evidence that the risk of virus transmission to an uninfected sexual partner is reduced by 96%, if a person with HIV-positive status adheres to an effective ART regimen [Catalani C., Philbrick W., Fraser H., Mechael P. and Israelski DM. 2013; Peter Weis, George Schmidt and Kevin De Cock. 2008; Study highlights the need to strengthen sexual health services for PrEP Users. World Health Organization. Available at (February, 26 2020): https://www.who.int/news-room/detail/11-12-2019-study-highlights-the-need-to-strengthen-sexual-health-services-for-prep-users].

Over the past decade, WHO's recommendation on the use of pre-exposure prophylaxis (PrEP) for people with HIV-negative status, who are at a high risk of HIV infection, has become widely spread, as a part of an integrated approach to prevention. WHO has also extended these recommendations to HIV-negative women during pregnancy or lactation. More than 10 randomized controlled surveys are known, which have proven the effectiveness of PrEP in the reduction of HIV transmission among different groups of population, including discordant heterosexual couples (couples in which one partner is HIV-positive and the other is HIV-negative), men having sex with men (MSM), transgender women, high-risk heterosexual couples and injecting drug users (IDUs) [Patel P, Borkowf CB, Brooks JT, Lasry A, Lansky A, Mermin J. 2014].

A number of researchers indicate that in some countries, HIV infection has a large impact on medical, demographic and economic indicators. For example, in sub-Saharan Africa, at least 1 of every 20 adults has HIV-positive status, and they account for almost 71% of people living with HIV worldwide [Sarah Fidler, Timothy E.A. Peto, Philip Goulder and Christopher P. 2020].

The collection of these facts determined the relevance of given study and set the goal - to characterize the epidemiological process of HIV infection in the Republic of Tatarstan (RT) and the Russian Federation (RF), taking into account the correctness of preventive measures.

2 Methods

The authors used and analyzed the official data of state reports of the Regional Office of the Federal Service for Supervision over Consumer Rights Protection and Human Welfare in the Republic of Tatarstan (Tatarstan) (Regional Office of Rospotrebnadzor in the Republic of Tatarstan (Tatarstan)) "On the State of Sanitary and Epidemiological Welfare of Population in the Republic of Tatarstan" and the Russian Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing "On the State of Sanitary and Epidemiological Welfare of Population in the Russian Federation". The medical and social characteristics of the epidemic process of HIV infection in the Republic of Tatarstan (RT) were determined taking into account the form of federal state statistical observation No. 61 "Data on HIV Infection". The study included materials for the period 2014-2018. When processing the results, epidemiological methods and generally accepted variation statistics were used, taking into account the degree of results reliability and the compliance of epidemiological studies with the evidence-based medicine criteria.

3 Results

The epidemiological analysis of the situation, related to HIV infection in the Republic of Tatarstan and the Russian Federation for 2014-2018, allowed us to establish that the long-time average annual incidence rate in the Russian Federation is 1.9 times higher than in the Republic of Tatarstan (61.2 and 32.7 per 100 thousand population, respectively). The highest incidence rate in the Republic of Tatarstan for the studied period was in 2015 (35.5 per 100 thousand population), the lowest - in 2017 (31.01 per 100 thousand population). In the Russian Federation, the highest incidence rate for 2014-2018 was also established in 2015 (65.2 per 100 thousand population), the lowest - in 2014 (58.4 per 100 thousand population) (Table 1).

Table 1. The incidence rate of HIV infection in the Russian Federation and in the Republic of Tatarstan for 2014-2018, per 100 thousand population

Region/ country	2014	2015	2016	2017	2018	average multi-year level	increase/ decrease, times
The Russian Federation	58.4	65.2	60.9	61.6	59.7	61.16	1.02
The Republic of Tatarstan	32.5	35.5	33.17	31.01	31.47	32.73	0.96

The incidence rate of HIV infection in the Russian Federation and in the Republic of Tatarstan does not demonstrate a visible increase. Also, in both compared territories, there was no significant trend towards an increase in the incidence rate of this infection (in the Russian Federation $y = -0.1x + 61.46$; $R^2 = 0.0038$; in the Republic of Tatarstan $y = -0.655x + 34.695$; $R^2 = 0.3442$). However, this should not reduce the alertness for HIV infection (Figure 1).

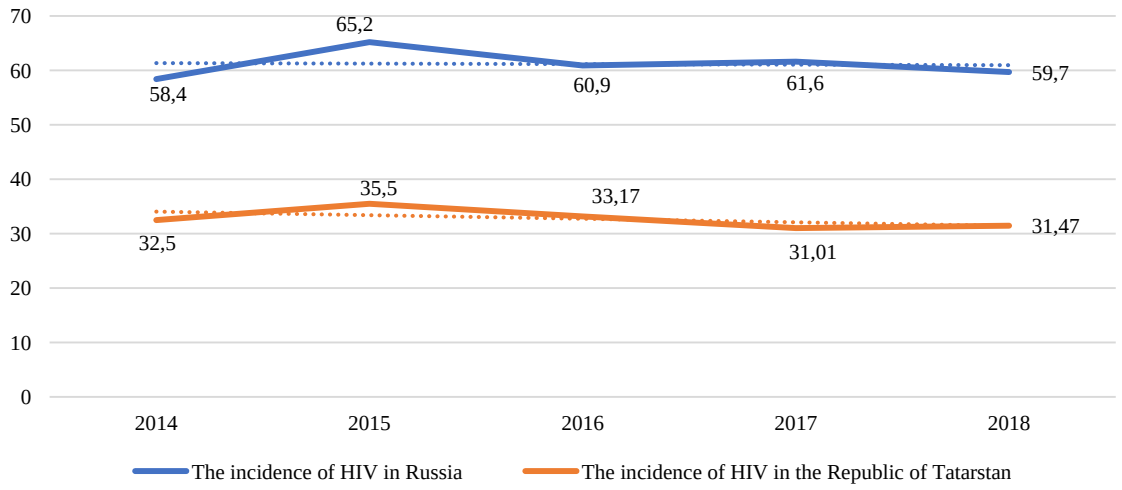

Fig.1. The trend of HIV infection incidence in the Russian Federation and in the Republic of Tatarstan for 2014-2018

During 2014-2018, there were no cases of HIV infection of patients when providing medical care in the Republic of Tatarstan.

It is worth noting, that for the studied period, there is a high coverage of dispensary observation of patients with HIV infection in the Republic of Tatarstan. This indicates the coordinated work of medical organizations, which are responsible for regular medical checkup of patients in the field of HIV/AIDS prevention and control in the Republic of Tatarstan (Table 2).

Table 2. Coverage of dispensary observation of patients with HIV infection in the Republic of Tatarstan for 2014-2018, %

Year/ indicator	2014	2015	2016	2017	2018	Trend, %
The coverage of medical observation	89.2	89.6	90.1	90.15	90.7	+1.7%

HIV screening was conducted among the foreign citizens, residing in the Republic of Tatarstan. For the period 2014-2018, there was a decrease by 56.7% in the incidence of this infection among the examined people. So, according to the results of medical examinations, 22 foreign citizens, living with HIV, were registered in 2018 (58.1 per 100 thousand people surveyed). In 2017, 24 migrants with HIV-positive status were detected (60.6 per 100 thousand population), in 2016 - 34 people (90.9 per 100 thousand population), in 2015 - 37 migrants (95.0 per 100 thousand population), in 2014 - 20 people (134.7 per 100 thousand population). (Figure 2).

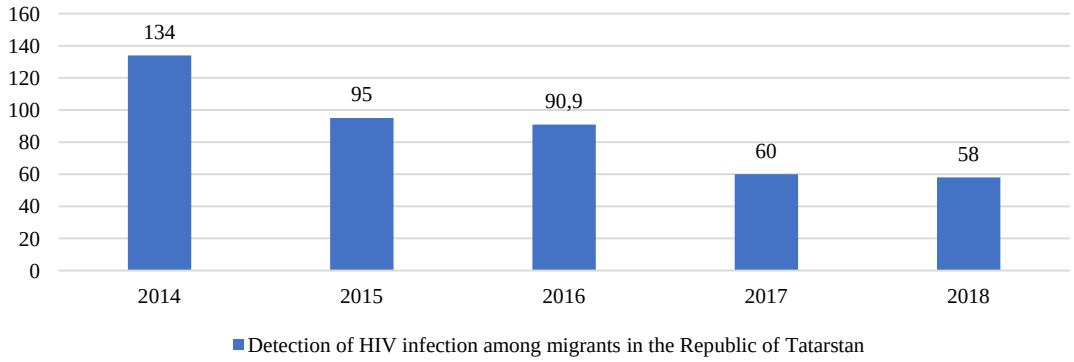

Fig. 2. Detection of HIV infection among foreign citizens, living in the Republic of Tatarstan, for the period 2014-2018, per 100 thousand population

According to the results of preventive work, related to the perinatal transmission of HIV infection in the Republic of Tatarstan, this indicator decreased by 30.8% (from 1.36% in 2014 to 0.94% in 2018). The result indicates the correct preventive measures (including timely prescription of ART to pregnant women and newborns, as well as the adherence to ART in this cohort, provision of breast milk substitutes for children born to HIV-positive mothers), applied by the team of specialists of medical organizations, providing medical care to women with HIV infection and children born to HIV-positive mothers (Figure 3).

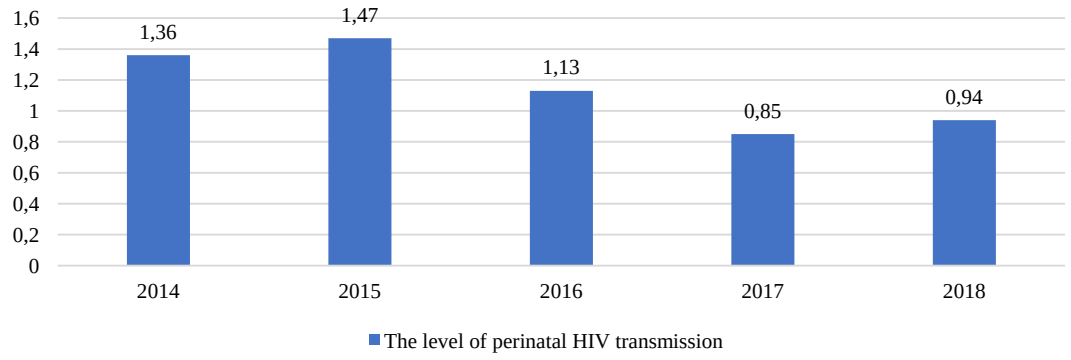

Fig.3 The level of perinatal HIV transmission in the Republic of Tatarstan for 2014-2018, %

The incidence in the Russian Federation does not demonstrate a significant increase over the study period. However, the prevalence of HIV infection increased by 38.7% (2014 - 494.6; 2018 - 686.2 per 100 thousand population) (Table 3).

Table 3. Prevalence of HIV infection in the Russian Federation for 2014-2018, per 100 thousand population

Year/ indicator	2014	2015	2016	2017	2018	trend, %
Prevalence	494.6	543.3	594.3	643	686.2	38.7%

The epidemic process of HIV infection in the Russian Federation has gone beyond the boundaries of the most vulnerable groups of population. Currently, it is actively spreading among the general population. In 2014-2018, the rate of patients infected by injection (injection drug users - IDU) decreased by 31.9% (2014 - 57.3%; 2018 - 39%). The number of patients, infected via homosexual route, increased by 50% (2014 -1.2%; 2018 - 1.8%). The rate of patients, infected via heterosexual route, increased by 42.7% (2014 - 40.3%; 2018 - 57.5%) (Figure 4).

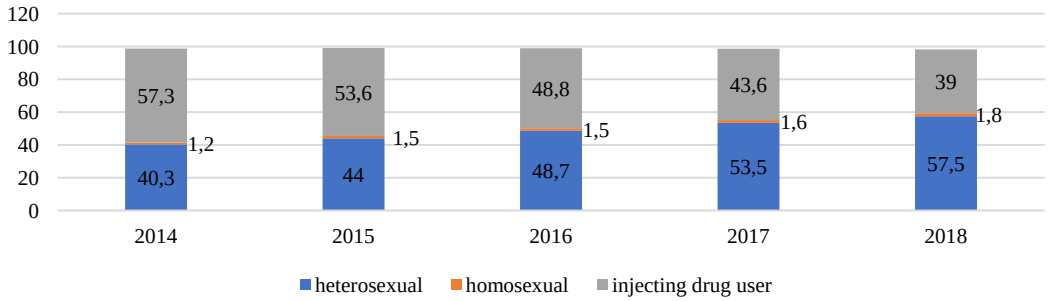

Fig. 4. The structure of patients with HIV infection, depending on the route of infection in the Russian Federation for 2014-2018, %

The epidemiological analysis of the structure of HIV patients by age cohorts in the Russian Federation led to the conclusion that in recent years HIV infection has been diagnosed in older age groups. For example, in 2001, 87% of HIV patients were in the age group of 15–29, and in 2018, 82% of patients were over 30 years old. It was defined, that in 2018, HIV infection was diagnosed in 30-50-year-old patients (about 70% of patients with HIV-positive status).

4 Conclusion

The study of the characteristics of HIV infection epidemiology in the Russian Federation and in the Republic of Tatarstan allowed us to draw the following conclusions:

1. The long-time average annual incidence in the Russian Federation is 1.9 times higher than in the Republic of Tatarstan (61.2 and 32.7 per 100 thousand population, respectively);
2. The increase in the number of patients with this nosology and significant trend in the increase of HIV infection incidence in the Russian Federation and in the Republic of Tatarstan were not revealed;
3. During 2014-2018, there were no cases of HIV infection associated with the provision of medical care in the Republic of Tatarstan;
4. For the studied period, the level of coverage of dispensary observation of patients with HIV infection in the Republic of Tatarstan remained high (about 90%). This allows to influence the epidemiological situation, related to HIV infection in the region;
5. Over the period 2014-2018, the level of perinatal transmission of HIV infection in the Republic of Tatarstan decreased by 30.8%;
6. The increase in the prevalence rate of HIV infection by 38.7% was detected in the territory of the Russian Federation;
7. The analysis of the routes of HIV infection in the Russian Federation led to the conclusion, that the epidemic process had involved the general population, in addition to three main risk groups (CSW, MSM, IDUs). This should be taken into account when planning preventive measures (programs, strategies, social marketing, etc.);
8. HIV infection in the Russian Federation for the analyzed period has been diagnosed in older age groups (30 years and above), that should also be taken into account when developing preventive measures.

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Primary Paper Section: F

Secondary Paper Section: FN

EPIDEMIOLOGY OF OCCUPATIONAL DISEASES IN THE REPUBLIC OF TATARSTAN: CHARACTERISTICS, CAUSES AND RISKS

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The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

Abstract: The study is aimed at carrying out an epidemiological analysis of occupational diseases among the population of the Republic of Tatarstan. In this work, the authors analyzed the incidence of occupational pathologies, including work experience with a harmful factor, the age and sex structure of diseases, etiological factors, etc. As a result, it was found that the cases of occupational diseases prevail among men over the studied period (2014 - 72.5%, 2018 - 77%). Imperfections in technological processes are the main circumstance and condition for the occurrence of chronic occupational pathologies (more than 60%) in 2014-2018. It has been established that work experience of 31-40 years in contact with harmful production factors contributes to the development of occupational diseases.

Key words: occupational pathologies (diseases), development risks, risk factors, epidemiology of occupational diseases

1 Introduction

The epidemiology of occupational pathologies is a medical science staying at the intersection of clinical and preventive disciplines (occupational health, occupational diseases, epidemiology of infectious and non-infectious diseases, internal diseases, etc.). This subject can be defined as a multidisciplinary field of medicine, which presents some difficulties, especially when studying the underlying mechanisms of multifactorial health conditions. The application of correct methodology in the field of epidemiology of occupational diseases is of paramount importance from the standpoint of the proper use of statistical and epidemiological methods, such as, for example, stratification and testing of interactions [Mohammad Salehi-Marzijarani. 2019: Stayner LT, Collins J, Guo Y, et al. 2017: Uetani M, Sakata K, Oishi M, et al. 2011].

There are various programs for the prevention of occupational diseases. Thus, the project “Dig Data in Environmental and Professional Epidemiology” was implemented in Italy from 2017 to 2019. This project included national, regional, and municipal levels of studying public health risks [S. Fasola, S. Maio, S. Baldacci, C.Gariazzo, P. Michelozzi, F. Forastiere, C. Silibello, M. Stafoggia, G. Viegi].

For example, biomechanical effects at the workplace and exposure to the influence of various factors related to the professional environment can lead to negative effects on health of a working person, which determines the relevance of epidemiological studies of occupational diseases [Svend Erik Mathiassen, Alex Burdorf , Andreas Holtermann and authors. 2015].

Various methods are used in the epidemiological studies of occupational pathologies. Thus, to interpret the results related to physical activity and work involving a sitting position, we can use accelerometry, which, however, is a difficult task. Studies in the field of occupational health show that analysis of exposure variation can be a significant tool in assessing the values obtained [Leon Straker, Amity Campbell, Svend Erik Mathiassen and authors. 2012].

Different jobs, depending on the nature of work, carry a variety of health risks. Thus, some epidemiological studies indicate the fact that the time mode during labor activities involving a sitting position is one of the important determining risk factors for the development of a number of diseases, for example, cardiovascular system diseases and diabetes [Allan Toomingas, Mikael Forsman, Svend Erik Mathiassen and authors. 2012 ;Allan Toomingas, Désirée Gavhed. 2008;Jannique G Z van Uffelen, Jason Wong, Josephine Y Chau and authors. 2010].

The Republic of Tatarstan is a developed region of the Russian Federation, which presents various activity areas - from the petrochemical industry to office workers, which determined the relevance of this study.The facts described above determined the purpose of this study - an epidemiological analysis of occupational diseases among the population of the Republic of Tatarstan.

2 Methods

The authors of this work analyzed the official data of state reports of the Office of the Federal Service for Supervision of Consumer Rights and Human Well-Being Protection in the Republic of Tatarstan (Office of Rospotrebnadzor in the Republic of Tatarstan) “On the State of Sanitary and Epidemiological Well-Being of the Population of the Republic of Tatarstan” from 2014 to 2018. When processing the results obtained in the course of this study, we used epidemiological methods and generally accepted variation statistics taking into account the reliability degree of results and the compliance of epidemiological studies with the evidence-based medicine criteria.

3 Results

When analyzing occupational diseases in the Republic of Tatarstan for 2014-2018, it was found that men prevail in the structure of these nosologies by gender (more than 70%). Thus, men accounted for 72.5% of all cases of occupational pathologies in 2014, and in 2018 this indicator amounted to 77% (Figure 1).

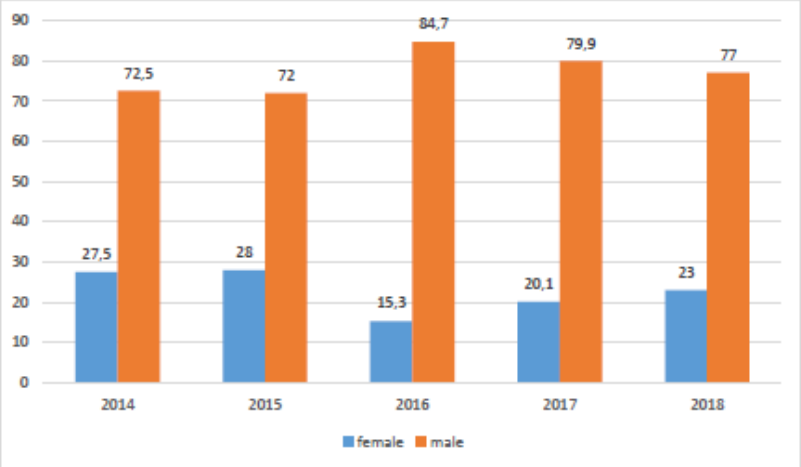

Fig. 1. Gender structure of occupational diseases in the Republic of Tatarstan for 2014-2018, %

During the studied period, the physical factor leads (air temperature, surface temperature, relative air humidity, air velocity, intensity of thermal radiation [Decree of the Chief State Sanitary Doctor of the Russian Federation No. 81 dd. 21.06.2016]) leads the etiological factors of occupational diseases and amount to more than 49%. For 2014-2018, the occupational diseases related to physical exertion and overwork decreased by 1.2 times and made up 14.9% in 2018 in the general structure of etiological factors. In contrast, the effects of industrial aerosols increased by 1.24 times and amounted to 18.1% in 2018.

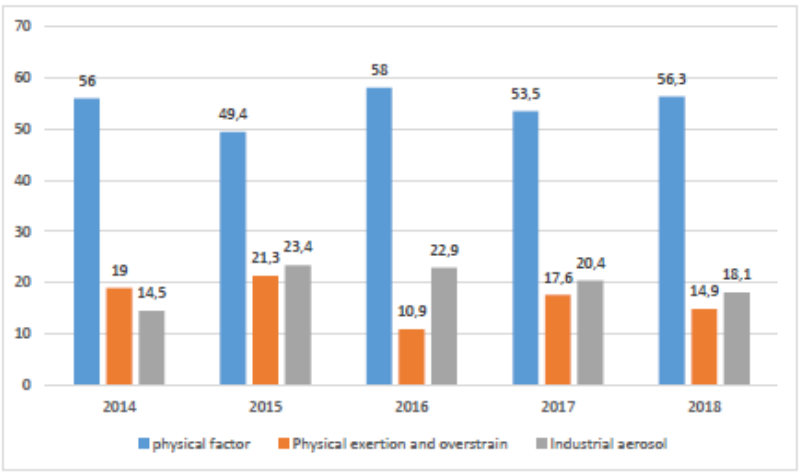

Fig.2. Structure of chronic occupational diseases by etiology in the Republic of Tatarstan for the period 2014-2018, %

Sensorineural hearing loss is the leading pathology in the structure of nosological forms of occupational diseases for 2014-2018 in the Republic of Tatarstan. Thus, the share of this disease in the overall structure of occupational pathologies was 34.8% in 2014, 35.3% - in 2018. Occupational respiratory diseases (2014 - 22.7%, 2018 - 25.6%) are in the second place for the studied period. The share of vibrational diseases remains at approximately the same level in 2014-2018. The share of musculoskeletal system diseases and peripheral nervous system decreased from 19.4% in 2014 to 14.9% in 2018. The share of other pathologies was 3.3% in 2018 (Figure 3).

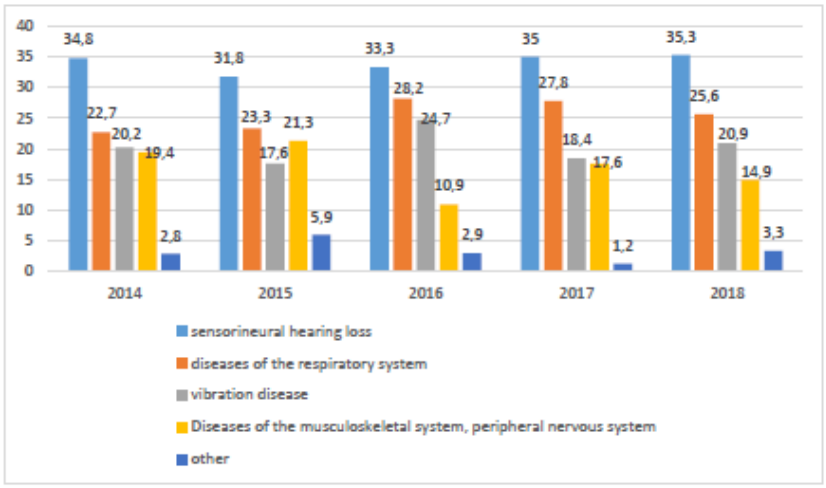

Fig.3. Structure of nosological forms of occupational diseases in the Republic of Tatarstan for 2014-2018, %

The circumstances and conditions of the occurrence of chronic occupational pathologies, the imperfections of technological processes are leading in the studied period. Thus, this indicator increased from 69.8% in 2014 to 81% in 2018. Over the same period, there has been a decrease in the share of structural shortage of machines and technological equipment as the reason of increase in these nosologies from 17.4% in 2014 to 6% in 2018. However, the structural share of job imperfection increased and amounted to 10% in 2018 against 6.12% in 2014. Imperfection and misuse of personal protective equipment as the circumstances and conditions for the occurrence of chronic occupational diseases amounted to 3% in 2018 (Figure 4).

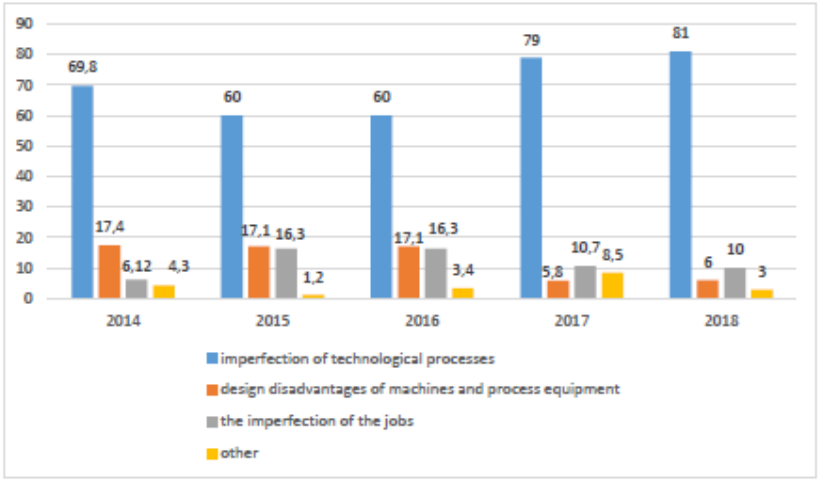

Fig.4. Circumstances and conditions of occurrence of chronic occupational diseases in the Republic of Tatarstan for 2014-2018, %

Analysis of the age structure of cases of occupational pathologies in the Republic of Tatarstan for 2014-2018 revealed that mainly diagnoses prevail in two age cohorts: 21-30 and 31-40 years old. An analysis of the established prevailing age groups determined an increase in the cohort of 31-40 years old from 38.5% in 2014 to 49% in 2018. In the cohort of 21-30 years old, a decrease in cases of occupational diseases decreased from 37.4% in 2014 to 26% in 2018 (Figure 5).

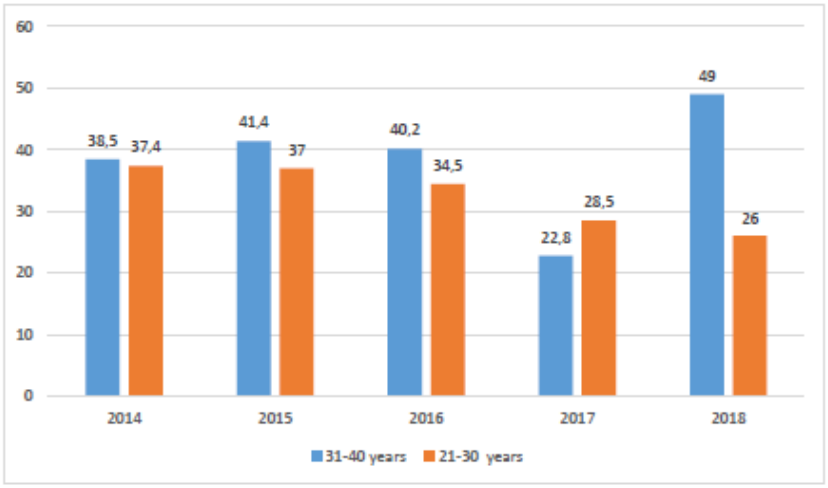

Fig.5. Structure of the leading age groups among cases of occupational diseases in the Republic of Tatarstan for 2014-2018, %

When analyzing the structure of occupational diseases depending on the length of service in contact with a harmful production factor for 2014-2018, the authors found that the greatest length of service falls on the cohort of 31-40 years old, except for 2017, where the length of service was 11-20 years (Figure 6). This fact indicates the need to implement recommendations on preventive measures based on the results of special assessment of working conditions.

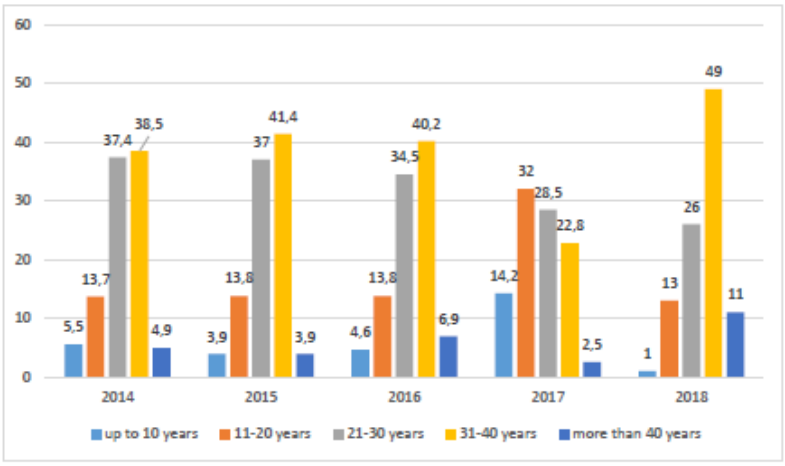

Fig. 6. Structure of occupational diseases depending on work experience in contact with harmful industrial factors in the Republic of Tatarstan for 2014-2018, %

When assessing the incidence of professional pathologies for the studied period, it was found that this indicator decreases in the Republic of Tatarstan, as in the Russian Federation [On the state of sanitary and epidemiological well-being of the population of the Russian Federation in 2018: State report. – M.: 2019] (Figure 7). It should be noted that this trend is significant in the Russian Federation ($y = -0.148x + 1.912$; $R2 = 0.9917$).

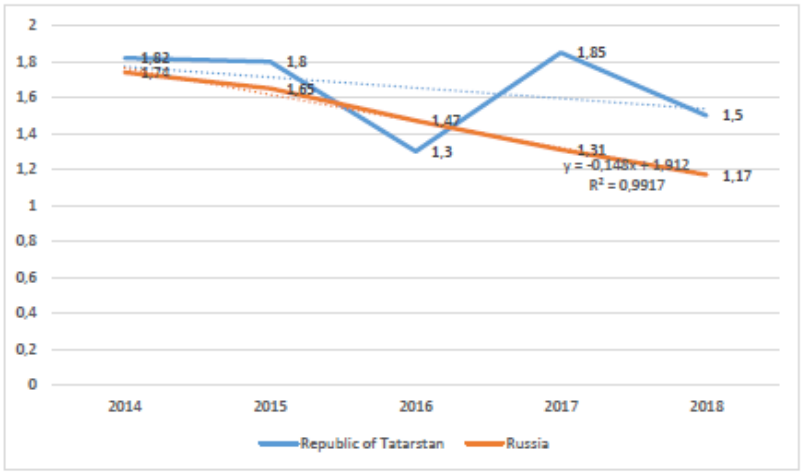

Fig.7. Incidence of occupational diseases in the Russian Federation and the Republic of Tatarstan for 2014-2018, per 100,000 population

4 Summary

According to our study, we can make the following conclusions:

1. Nen prevail in the structure of occupational diseases by gender (2014 - 72.5%, 2018 - 77%) in the Republic of Tatarstan for 2014-2018;
2. The physical factor leads in etiology in the region for the studied period (2014 - 56%, 2018 - 56.3%);
3. Sensorineural hearing loss prevails in the structure of professional pathologies (2014 - 34.8%; 2018 - 35.3%);
4. The imperfection of technological processes is the leading condition for the occurrence of chronic occupational diseases in the Republic of Tatarstan for the studied period (2014 - 69.8%, 2018 - 81%);
5. The largest indicator falls on the cohort of 31-40 years old (2014 - 38.5%; 2018 - 49%) in the structure of professional pathologies, depending on the length of service in contact with a harmful production factor;
6. The diagnoses of occupational diseases are established mainly in two age cohorts - 21-30 and 31-40 years old - in the Republic of Tatarstan for 2014-2018;
7. There is a decrease in the incidence of occupational pathologies in the Russian Federation and the Republic of Tatarstan (2014 - 1.74 and 2018 - 1.17; 2014 - 1.82 and 2018 - 1.5; per 100 thousand, respectively). This trend is significant (y = -0.148x + 1.912; R2 = 0.9917) in the Russian Federation.

Thus, the prevention of occupational diseases remains an urgent area of modern medicine and requires the improvement of preventive programs.

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Primary Paper Section: F

Secondary Paper Section: FN, FQ

EPIDEMIOLOGY OF HIV INFECTION IN THE REPUBLIC OF MARI EL AND THE RUSSIAN FEDERATION

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The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

Abstract: HIV infection continues to be a global public health problem, despite the progress made in the medical science development. This study was aimed at describing the epidemiological situation associated with HIV infection in the Republic of Mari El and the Russian Federation. In this work, the authors used state reports of the Office of the Federal Service for Supervision of Consumer Rights and Human Well-Being Protection in the Republic of Mari El "On the State of Sanitary and Epidemiological Well-Being of the Population of the Republic of Mari El", the Federal Service for Supervision of Consumer Rights and Human Well-Being Protection "On the State of Sanitary and Epidemiological Well-Being of the Population in the Russian Federation".

Key words: HIV infection, epidemiology, infectious diseases, epidemic process.

1 Introduction

Infection caused by the human immunodeficiency virus (HIV infection) remains a global health care problem despite the achievements in medicine development (antiretroviral therapy (ART), global HIV/AIDS prevention and control strategies, pre-exposure and post-exposure prevention, etc.) [Sheri R. Notaro. 2020 ;Brian A. Nuyen, Jennifer L. Glick, Vanessa Ferrel and W. 2020 ;Sylvie Naar, 2020].

Medicine has stepped much forward in the prevention of HIV infection. Thus, the achievements with the greatest importance (in addition to the above) for public health include: circumcision, ART to prevent mother-to-child infection transmission, ART in people with HIV to prevent transmission. Currently, it is known that there are researches in the field of other preventive measures, for example, vaccine and vaginal microbicides [Gary Maartens, 2014;I.V. Petrov, M.O. Novikova, G.R. Khasanova et al. 2017.].

Vulnerable HIV infections include injection drug users (IDUs), commercial sex workers (CSW), and men having sex with men (MSM). The high risk group for HIV infection is comprised of CSW clients, sexual partners of IDUs, prisoners, street children, people practicing a risky model of sexual behavior (having a large number of sexual partners), migrant segments of the population (truckers, seasonal workers, including foreign citizens, working on a rotational basis and others), people, who abuse alcohol and non-injection drugs. The latter is explained by the fact that this group of people is inclined to practice more unsafe sexual behavior under the influence of various psychoactive substances [Decree of the Chief State Sanitary Doctor of the Russian Federation No. 1 dated January 11, 2011].A proven fact is that screening, as well as early detection and ART initiation, is critical to preventing further transmission of HIV infection, reducing morbidity and mortality among HIV-positive people. HIV-positive people initially do not have specific clinical manifestations, which is one of the factors that delay the detection and ART initiation. Thus, the lack of timely diagnosis of HIV infection leads to the continuation of virus transmission Veeravan Lekskulchai. 2019;Pfaender S, von Hahn T, Steinmann J et al: 2016;Jefferies M, Rauff B, Rashid H et al: 2018;Ly KN, Xing J, Klevens RM et al: 2012; Maartens G, Celum C, Lewin SR: 2014 ;O'Kelly K, Byrne D, Naughten E et al: 2016]. Various works confirm the facts described above. Thus, a cross-sectional study conducted in the People's Republic of China among 978 clients (men aged 50 years and above) of commercial sex workers revealed that voluntary counseling and HIV testing can be considered as an effective intervention tool to prevent HIV infection. In addition, voluntary counseling and HIV testing contributes to behavioral changes among high-risk groups in the provision of medical care [Qi Zhang, Yuan-Sheng Fu, Xue-Mei Liu and authors. 2017]. The above described determined the relevance of this study and set the goal to describe the epidemiological characteristics of HIV infection in the Republic of Mari El (RME) and the Russian Federation (RF).

2 Methods

The authors analyzed the official data of state reports of the Office of the Federal Service for Supervision of Consumer Rights Protection and Human Well-Being in the Republic of Mari El (Office of the Rospotrebnadzor in the Republic of Mari El) "On the State of Sanitary and Epidemiological Well-Being of the Population of the Republic of Mari El", the Rospotrebnadzor "On the State of Sanitary and Epidemiological Well-Being of the Population in the Russian Federation" and the form of federal state statistical monitoring No. 61 "Information on HIV Infection". The study included materials from 2014 to 2018. When processing the results obtained in the course of this study, we used epidemiological methods and generally accepted variation statistics taking into account the reliability degree of results and the compliance of epidemiological studies with the evidence-based medicine criteria.

3 Results

The epidemiological analysis conducted for 2014 - 2018 revealed that the average long-term incidence rate is 61.2 per 100 thousand of population in the Russian Federation. The largest excess of this level was recorded at 6.5% in 2015 (65.2 per 100 thousand of population), the smallest - at -4.6% in 2014 (58.4 per 100 thousand of population). The incidence rate of HIV infection remains at a stable level over the study. The prevalence of HIV infection over the specified period increased by 1.4 times in the Russian Federation (2014 - 494.6; 2018 - 686.2 per 100 thousand of population, respectively). As of 2018, there were 131,593 more patients entered in the dispensary register for HIV infection than in 2015 (751,712; 620,119 people, respectively) in the Russian Federation.

In the RME, the indicator of the long-term average incidence (21.4 per 100 thousand of population) was 2.9 times lower for the studied period than in the Russian Federation. The largest excess of this indicator was established at 39.7% in 2018 (29.9 per 100 thousand of population), the smallest - at -32.7% in 2015 (14.4 per 100 thousand of population). The incidence of HIV

infection increased by 1.8 times for 2014-2018 in the RME (2018 - 29.9; 2014 - 16.8 per 100 thousand of population) (Figure 1).

It is worth noting that in the RME there is a significant tendency towards an increase in the incidence of HIV infection (y = 3.9x + 9.66; R2 = 0.8246).

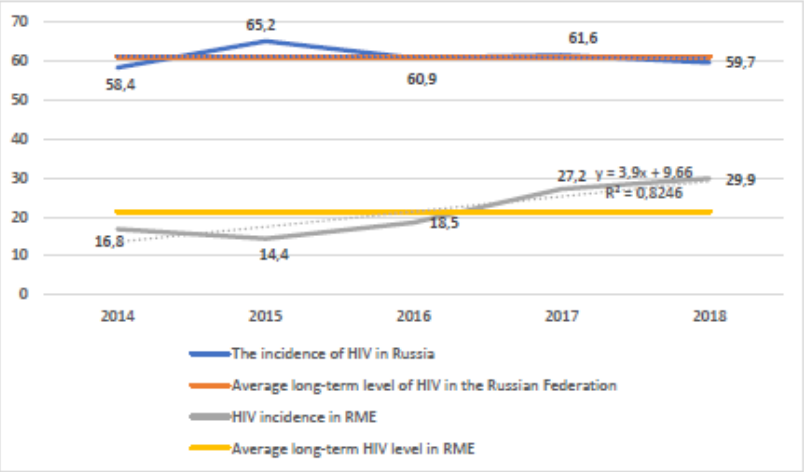

Fig.1. Incidence of HIV infection in the Republic of Mari El and the Russian Federation for 2014-2018, per 100 thousand population

When analyzing the features of the main risk factors for infection within the framework of the epidemic process of HIV infection in the Russian Federation, it was found that the share of heterosexual transmission was observed in the Russian Federation between 2014 and 2018 (2014 - 40.3%; 2018 - 57.5%). It was found that the proportion of HIV transmission by injection (IDU) decreased in the indicated period (2014 - 57.3%; 2018 - 39%). In 2016, the shares of heterosexual and injection transmission were at the same level (48.7% and 48.8%, respectively). The homosexual transmission of HIV infection slightly increased in 2014-2018 (2014 - 1.2%; 2018 - 1.8%), which requires strengthening focal prevention programs in this risk group (MSM) (Figure 2).

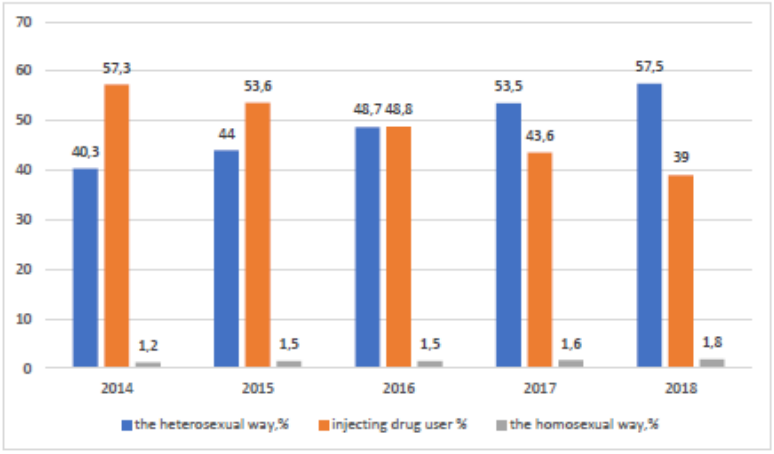

Fig 2. Structure of HIV transmission routes among the main risk groups in the Russian Federation for 2014-2018, %

In 2014 and 2015, the ratio of HIV-infected patients by gender was the same (50%, respectively) in the RME. Since 2016, there has been an increase in the share of men from 57.5% to 59.8% in 2018 (Figure 3).

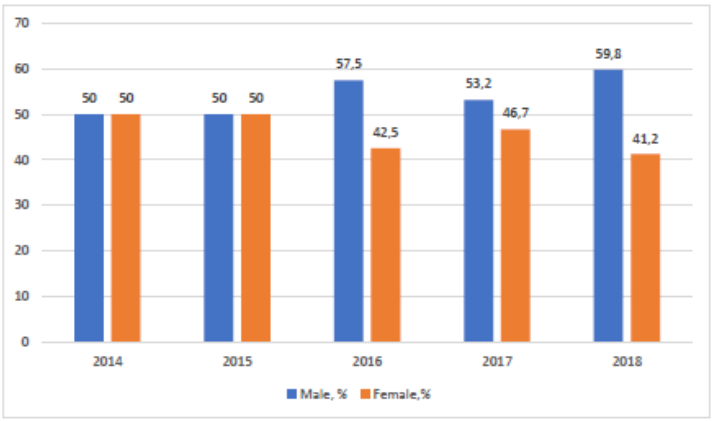

Fig. 3. Gender structure of HIV patients in the Republic of Mari El for 2014-2018, %

There is an increase in the HIV transmission share in the IDU risk group in the RME (2014 - 14.7%; 2018 - 27.5%) during the study period, which requires consideration of strengthening the interagency preventive work in this direction (Figure 4).

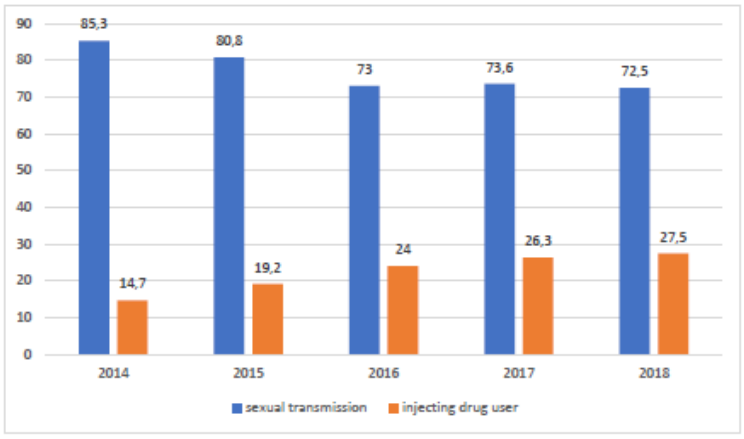

Fig. 4. Structure of HIV transmission routes in the Republic of Mari El for 2014-2018, %

Analysis of the age structure of HIV-positive patients in the Russian Federation revealed that the epidemic process actively involves the general population in addition to key risk groups.

There is an increase in the share of women with HIV infection diagnosed during pregnancy by 128.4% in the RME. So, this indicator was 15.5% in 201, and 35.4% - in 2018 (Table 1). The results obtained indicate the need for more detailed preventive work within the framework of the family institution.

Table 1. Proportion of women who had HIV infection during pregnancy in the Republic of Mari El for the period 2014-2018, %

year / indicator	2014	2015	2016	2017	2018	trend
pregnant woman	15.5	40.0	35.2	21.8	35.4	128.4

The ART coverage for patients undergoing medical examination decreased by 15.5% for 2014-2018 in the RME. If ART covered 97% of the number of subjects in 2014, then it was 82.1% in 2018 (Table 2). This situation requires increased work on patient adherence to therapy. An example of such a preventive measure is the “Patient School”, where the specialists involved in the provision of medical care to HIV-infected patients (infectious disease doctors, epidemiologists, clinical psychologists, social workers, etc.) can easily explain the need for ART.

Table 2. Coverage of antiretroviral therapy from the number of eligible patients in the Republic of Mari El for 2014-2018, %

year / indicator	2014	2015	2016	2017	2018	trend
Proportion of patients	97.0	94	90.8	95.1	82.1	15.5

4 Summary

Based on the epidemiological analysis of the situation associated with HIV infection in the Russian Federation and the RME, the following conclusions can be made: The average annual incidence is 2.9 times lower in the RME than in the Russian Federation for 2014-2018; There has been a 1.4-fold increase in the prevalence of HIV infection in the Russian Federation in the studied period; Different trends are observed when analyzing the incidence in two studied territories. Thus, the incidence rate of HIV infection for 2014-2018 remains at a stable level in the Russian Federation, while an increase of this indicator by 1.8 times is observed in the RME for the same period, demonstrating a reliable trend; Analysis of the transmission routes among the main risk groups The results indicate the need to expand coverage of preventive measures, taking into account the increasing risks associated with the fact that the epidemic process of HIV infection is increasingly involving the general population.

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Primary Paper Section: F

Secondary Paper Section: FN

G AGRICULTURE

GA	AGRICULTURAL ECONOMICS
GB	AGRICULTURAL MACHINES AND CONSTRUCTION
GC	PLANT GROWING, CROP ROTATION
GD	FERTILIZATION, IRRIGATION, SOIL TREATMENT
GE	PLANT CULTIVATION
GF	DISEASES, PESTS, WEEDS AND PLANT PROTECTION
GG	ZOOTECHNICS
GH	NUTRITION OF FARM ANIMALS
GI	FARM ANIMAL BREEDING AND FARM ANIMAL PEDIGREE
GJ	BDISEDAISES AND ANIMAL VERMIN, VETERINARY MEDICINE
GK	FORESTRY
GL	FISHERY
GM	FOOD INDUSTRY

FEATURES OF MODEL BUILDING FOR AN INTER-SECTORAL AGRO-INDUSTRIAL CLUSTER AS A QUASI-INTEGRATED STRUCTURE

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Abstract: In the context of the actual global economic crisis and the prolonged economic and technological sanctions of the EU countries, the USA, Canada, Australia, etc., one of the most important tasks of the Russian national economy is to ensure food security of the country. In the depressed North Caucasian agrarian-oriented republics, there are still quite significant economic risks that reduce the sustainability of the effective agriculture development and the ability to quickly solve problems to accelerate import substitution. At the same time, we were convinced of the need for further elaboration of theoretical principles and practical recommendations intended to building effective models for the economic development of clusters in the regional agro-industrial complex of depressed agrarian-oriented territories.

Keywords: world economic crisis, world medical crisis, economic and technological sanctions, globalization, agriculture, depressed republics, clustering, organizational and economic mechanism.

1 Introduction

One of the most significant founders of the methodology for constructing a cluster model for managing territorial industrial complexes is M. Porter.

In the future, his methodology was recognized and very actively developed by such world-class researchers as M. Enright, T. Andersson, K. Ketels, G. Lindqvist, O. Salwell, E. Feather, etc. It should also be noted that the complex of principles and fundamental provisions for the formation of cluster policy was further developed in the proceedings of the European Cluster Observatory, and the European Cluster Association.

Similar scientific and practical institutions have also been created in Russia, such as the scientific and methodological, analytical and consulting centre “Russian Cluster Observatory”, etc.

Globalization and the latest global economic crisis convincingly say that increasing in the competitiveness of the Russian national economy is possible only with the use of the innovative investment approach to its development and the active mobilization of the scientific and technological potential of high-tech industries.

World experience in the development of national economies suggests that the criteria for their sustainable economic growth are exclusively the volumes of high-tech sectors and the innovative potential of these countries. And this is natural, because it is the knowledge-intensive and high-tech industries that are the vanguard for the implementation of a significant part of breakthrough innovations and technologies that provide the country with sustainable and advanced socio-ecological and economic development. [Afanasyev M., Myasnikova L. 2005, Kuidius V. A. 2012, Misakov V. S. 2007]

In our work, we proceed from the fact that the problems of increasing the sustainability of the economic development of the domestic agro-industrial complex must be solved simultaneously with the tasks of ensuring the country's economic (food) security. This approach involves exclusively innovative development of the national agribusiness and the formation of competitive advantages of Russian farmers in the relevant world markets.

2 Research Methodology

The methodological foundations of this study were the basic principles of institutional theory, the development of leading foreign and Russian scientists in the field of developing a program-oriented approach to managing cluster formations in regional agribusiness, problems of constructing a model of an intersectoral agro-industrial cluster as a quasi-integrated system.

During the study, a systematic and multidisciplinary approach to the processes under study was used. Such general scientific methods as analysis and synthesis, deduction and induction, comparison, and generalization were also used.

3 Results and Their Discussion

Analysis of the current negative situation in the agro-industrial complex of the depressed Russian southern republics requires the prompt resolution of the problems concerning the formation and use of high-tech agro-industrial sectors in order to ensure accelerated import substitution and food security through the introduction of resource-saving technologies for agro-industrial production and deep processing of agricultural (crop and livestock) products.

The biotechnological industry can be considered as the most promising direction for the development of high-tech sectors in the agricultural economy of the North Caucasian agrarian-oriented republics, because their development involves the active use of renewable biomass sources (plants, forest resources, microorganisms, etc.). This approach also allows significantly reducing the harmful effects on the environment with all its derivatives.

The development of high-tech industries in the agricultural sector will create favourable conditions for development in the studied region of a group of highly productive agricultural formations, attract investment in the emerging regional agribusiness high-tech sector, to increase the innovative activity and attractiveness of agricultural organizations in the South of Russia, to form the North Caucasus regional market for high-tech products (innovations), significantly to reduce the transaction costs of innovation processes, and to reduce the possible risks of engaging breakthrough technologies in the agricultural sector.

Analysis of specialized literature allowed us to identify more than twenty models of innovative development of the Russian Federation regions, including such as the Tomsk model, Belgorod model, the model of the Stavropol Territory, etc. [Saussine L. L. 2015, Kuidius V. A. 2012]

Any of these models is focused on providing the corresponding region with a new influx of investment, a significant increase in business activity, etc., which positively affects the socio-economic development of the territory, the level and quality of life of the population.

In the republics of the North Caucasus, there are also germs of innovative activity in the form of separate science parks and technopolises, and even special economic zones. The region is clearly aware that the development of republics on the basis of

innovation is both extremely complex and also necessary and long-term process, involving the mandatory participation of federal and regional authorities and administrations. At the same time, state policy in this area should strictly determine the vector of development of high-tech sectors of the economy, stimulate the active participation of private capital in the development of the region under consideration and create conditions for its mobile investment; it clearly articulates the obligation of government agencies to participate in the processes of innovative development of regions reflected in the relevant regulatory legal documents.

It is clear that in modern realities the depressed republics are not able to do without a complex of supporting and stimulating factors initiated by federal structures.

The formation of a scientific, technological and industrial complex implies the mandatory presence of a critical mass of specialized production structures and scientific institutions, the use of which allows the large-scale creation of a demanded innovation chain and providing access to new markets for high-tech products.

It should be noted that almost all depressed republics have real competitive advantages: they have modern research potential, extremely advantageous natural and geographical location of territories, quite developed transport, communication and other infrastructure, many objects of historical and cultural heritage, ethnical traditions of certain types of activities, and high educational level of citizens of the republics.

The development of high-tech sectors of the agro-industrial complex depends on a complex of multidirectional factors, including political and legal conditions (geopolitical situation in the region), resource factors, organizational factors, information factors, etc.

When building a model of a high-performance cluster in the agricultural sector, we laid at the heart of our study the so-called "competitive advantage diamond" by M. Porter. He proposed to consider any cluster as a result of the synthesis of four groups of factors forming the aforementioned "diamond":

- Factor conditions;
- Related and supporting industries;
- Competition conditions and company strategies;
- Demand conditions. [Porter M.E. 1993]

Despite their simplicity, the presented elements of Porter diamond, nevertheless, allow us to understand quite accurately the reason why clusters are more competitive than individual even advanced companies.

Methodological approaches to the analysis of the Porter competitive advantages formation are very actively and successfully applied in many countries when clustering separate companies in agriculture, pharmaceuticals, biotechnology, industry, etc. [Erokhin M. A. 2011, Saussine L. L. 2015]

As an example, we note Israeli agricultural clusters, the wine cluster in Macedonia, and the textile cluster in South Africa, etc. [Achenbach Y. A. 2012, Ukrainian V. N. 2011]

At the same time, we consider it appropriate to quote O. Solwell's statements that the group of factors proposed by M. Porter should be considered at the regional level, when the need to create a cluster is determined by the environment and at other levels, including at the macro level, and at the level of economic relations between enterprises within the cluster. [Porter M.E. 1993] We believe that this amendment is fair, because it allows us to use a new and more expanded classification of factors.

In the course of our study devoted to the theory of new forms of production location and organization (taking into account geographical features), we got acquainted with representatives of American, British and Scandinavian scientific schools; we compared them with the basic principles of the founder of the Soviet school of economic regionalization and industrial geography I.N. Kolosovsky and found a lot in common when building clusters and territorial production complexes.

In accordance with the Concept of Long-Term Socio-Economic Development of the Russian Federation for the period until 2020, a cluster is understood as "a union of enterprises, suppliers of equipment, components, specialized production and other services, research and educational organizations connected by territorial proximity and functional dependence relations in the field of production and sale of goods and services." [The concept of long-term socio-economic development of the Russian Federation for the period up to 2020. 2008]

This approach allows us to highlight the following fundamental characteristics of the planned cluster, including geographic concentration, form of communication between cluster members, specialization, actors, competition and cooperation, critical mass, cluster life cycle duration, and innovativeness.

Modern theory distinguishes two main types of clusters:

- Clusters created according to the functional principle (we are talking about industry or diversified clusters);

- Clusters created according to the spatial principle (we are talking about territorial (regional) clusters). [Achenbach Y. A. 2012, Saussine L. L. 2015]

Agro-industrial clusters are included in the first form; they are diversified and focus on cooperation and competition in specific sectors of the agricultural sector (for example, crop production), as well as between separate branches of the agricultural sector.

A diversified cluster is directly formed of many participants attracted by a variety of resources and activities combined for the production and sale of high-tech products and services. Focusing a critical mass of participants in a cluster allows each of them to gain additional competitive advantages, extract more volume of economic benefits, etc. through the use of general market factors of production. [Misakov V. S. 1985, Semina L.A., Sandu I.S. 2013]

Our proposed North Caucasian diversified industrial cluster will not be spatially linked to any particular territory; on the contrary, it will have the property of expanding its borders, going beyond the limits of the region under consideration. It must be admitted that in the republics attempts were made to form territorial (regional) clusters in the form of a certain spatial agglomeration of economic activity. But contrary to expectations, they did not allow to form the proposed basis for the development of territories, did not contribute to the "overflow" of knowledge and breakthrough technologies, etc.

Exactly the same unsuccessful attempts were made to create the tourist-recreational cluster "Resorts of the North Caucasus"...

When forming a model of a highly productive North Caucasian agro-industrial cluster, we proceed from the fact that specialized industries are characterized by concentration in certain territories and the formation of clusters on the basis of enterprises that are interfaced and simultaneously cooperating and competing with each other, which, in general, allows increasing each other's competitive advantages. [Boush G. D20113, Ivanenko A. A. 2011, Misakov V.S., Bagaev I.Z., Gendugov S.Z. 2015]

Directly, the activities of the agro-industrial cluster occur through the interaction between many diverse enterprises and organizations included in this cluster (agricultural enterprises, scientific and educational institutions, financial institutions, mutual cooperation institutions, representatives of the public sector).

We consider all the components of the cluster formation separately in the form of an elementary unit of a cluster - a cluster unit that is technologically integrated into a cluster functionally connected with other participants in the agro

industrial cluster by the processes of development, production and sale of innovative products. Such an approach allows us to consider an interbranch agro-industrial cluster in the form of a quasi-integrated structure consisting of a group of cluster units connected with subordinate relationships that implement specific tasks that contribute to achieving the goals of sustainable cluster development.

The cluster units themselves act as the main (basic) structural elements of the agro industrial cluster, realizing production and supply, innovation and other functions. The structure of the agro industrial complex is formed by five levels: innovation, production, marketing, design and development and the level of technology transfer.

In the special literature, the given cluster levels are grouped into three blocks according to the principle “core-centre-periphery”:

- A core characterized by an innovative level;
- A centre represented by the production and sales level;
- Peripherals consisting of a design and development level and a technology transfer level.

Here, it immediately catches the eye that in the given structure of the formed diversified agro industrial cluster, the “core” block stands apart. It acts as a concentrated set of cluster units of innovative infrastructure, which determines the nature and vector of activity of the cluster under study as a whole. [Carlin T. V. 2011 . Musaev M. M., Musaeva H. M., Misakov V. S. 2018]

The considered principle of constructing a diversified agro-industrial cluster structure enables designers to predict the process of diffusion of the effect caused by the project activity of the cluster: the effect of the cluster components of the core unit, then the central one, and finally the cluster periphery is gradually and uniformly spreading.

During the distribution process, cluster units are combined and interact through project activities, using all five of the above levels, which, in turn, act as original conductors of information flows in the cluster.

It seems to us that the modified model of building a diversified agro-industrial cluster that we proposed is appropriate to implement in the depressed republics of the North Caucasus, provided that the cluster components of the project activity continuously carry out project activities at all stages of the life cycle of innovative products (technologies). The implementation of this model will not only reveal the strengths and weaknesses of the activity of the diversified agro-industrial cluster as a quasi-integrated system, but will also allow us to develop a vector of priority guides in the context of its levels and cluster units, and also to calculate objectively justified forecast indicators of cluster activity.

4 Conclusions And Proposals

1. An analysis of international and Russian experience in the development of the agricultural sector allows us to conclude that it is necessary and possible to use a cluster approach in the domestic agro-industrial complex based on the formation of high-tech sectors of the agro-industrial complex. We justifiably believe that such an approach will ensure accelerated import substitution and food security.
2. Modern theory distinguishes two main types of clusters arranged along the functional and spatial axes. We have justified that in the depressed republics of the North Caucasus it is advisable to create a diversified agro-industrial cluster that has an innovative focus.
3. In accordance with the purpose of our study, we have developed methodological approaches to constructing a model of a diversified agro-industrial cluster. Its basis is the inclusion principle, which allows developing the project activities of the cluster under study. The algorithm of the processes and stages of the cluster’s innovation activity, cluster units of blocks and levels are described. The efficiency of the biotechnological industry development in agrarian-oriented depressed republics of the Russian South is substantiated.
4. The development of a diversified agro-industrial cluster in the North Caucasus will provide an opportunity to effectively solve not only the sectoral tasks of the labour-surplus region, but will also contribute to the multipolar distribution of "growth points" in the territory of the depressed republics, which will undoubtedly allow the uniform and balanced development of the South of Russia.

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Primary Paper Section: G

Secondary Paper Section: GA

DETERMINING THE IRRIGATION TIMING OF AGRICULTURAL CROPS BY REMOTE SENSING OF IRRIGATED AREAS

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Abstract: The timing of maize irrigation based on the results of thermal remote sensing of the irrigated area coincides in critical period of water consumption by plants and provides additional production of 3.2 t/ha of green mass with a content of 0.16 feed units. The cost of purchasing a quadcopter with a Flir–Boson thermal imaging camera and “Irrigation Technology” mobile application in the amount of 600 thousand roubles is paid off during one growing season. The mobile app is easily compatible with iPhone and Android phone, and allows you to make a diagram of the irrigation timing and monitor the quality of irrigation with high performance (flight range up to 14 km, maximum recording time of 26 minutes).

Keywords: remote sensing, irrigation, timing of irrigation of agricultural crops

1 Introduction

The Republic of Tatarstan is one of the regions of the Russian Federation where the construction of reclamation objects is carried out purposefully and effectively/ For example, in recent years, new irrigation systems have been commissioned on an area of 35 thousand hectares, 250 dams have been repaired for a total of 10.8 billion roubles [M. S. Memon, Z. Jun, C. Sun, C. Jiang, W.м, Q. Hu et al. (2019).]. In the future, according to the target program "Land Reclamation of the Republic of Tatarstan for 2020-2025", it is planned to build new and restore 50 old ponds, purchase pumping stations and implement sprinkler machines of the Kazan irrigation equipment plant (KZOT) in the ratio of 50:50 (50% of budget funds and 50% of the costs of specific farms), and annually put into operation 5 thousand hectares of irrigated land in the amount of 600 million roubles (120 thousand roubles/ha).

Consequently, land reclamation was and remains a capital-intensive industry [M. S. Memon, Z. Jun, C. Sun, C. Jiang, W.м, Q. Hu et al. (2019).]. Therefore, in order to accelerate the recoupment of these expenses on reclaimed lands, it is necessary to introduce the latest achievements of science and technology [7, 8], including thermal sensing of irrigated areas, in order to determine the optimal irrigation timing of agricultural crops [Abdullaeva T.K. (2014) ;Salima, Y., Peira, J. F. M., Horra, G. R. D. L., & Ablanque, P. V. M. (2019).].

2 Methods and Conditions Of The Research

Studies to determine the timing and quality of irrigation using thermal imaging were conducted in the fields of LLC "Kyrlay" in Arsky municipal district of the Republic of Tatarstan. The target of research was corn for silage, cultivated using grain technology (with corn cobs in milk-wax ripeness) with the introduction of calculated norms of mineral fertilizers for the planned biomass yield of 50 t / ha. The technology of maize cultivation is generally accepted and consisted of disking after harvesting annual grasses, flat-cut processing with a deepening of the arable layer, moisture closing, pre-sowing cultivation, seeding at a soil temperature of +12 °C, harrowing before and after emergence of seedlings and inter-row processing with ammonium nitrate phosphate fertilizer (N16P16K16).

To solve this problem, the irrigated area with a total area of 250 ha was divided into 2 parts (125 ha each). The irrigation period of the first part was determined by the actual soil moisture using a moisture meter "Dniester-1", and for sounding the second part, a quadcopter " Di-phantom 4 Pro" equipped with a thermal imaging camera" Flir – Boson " was used (Fig. 1).

Fig. 1 Quadcopter "Phantom 4 Pro" with thermal imager “Flir-Boson”

In order to comply with the principle of "the only difference" on both sites, watering was carried out by "Kazanka" sprinkler machines.

Agrometeorological conditions in the years of research (2018-2019) were typical for the Republic of Tatarstan and were characterized by a lack of precipitation at the beginning of the growing season (May-June) and excessive moisture during the harvest (September).

3 Results and Discussion

Thermovision inspection is a type of thermal monitoring of an irrigated area using a special camera that takes pictures of crops and then uses the program to display the thermogram of the research object with an accuracy of ± 1 °C [Lanya, N. Subadiyasa, K. Sardiana, G. Ratna Adi (2019) ; R. Neswati, S. Baja, A. Ramlan, S. Arif (2019).].

There is a direct relationship between soil temperature and humidity: the lower the moisture content, the higher the soil temperature. According to this regularity, the diagram of scale for determining the irrigation timing in the range from + 25 to + 45 °C was calculated and transferred to the “Irrigation Technology” mobile app [Vozdushnyj kodeks Rossijskoj Federacii, st. 18.1 ;Zemel'nyj kodeks Rossijskoj Federacii. Federal'nyj zakon ot 25.10.2001 ;Abdullaeva T.K. (2014)] (Fig. 2).

Studies have shown that on the Fourth of July 2018 the average soil temperature was at +25 °C and according to the irrigation

timing scale, corn did not need additional moisture. Subsequent thermal remote sensing of the irrigated area was performed after 8 days and it was found that 30 % of the area is not sufficiently provided with moisture, and 15 days after the first survey, 8% of crops reached the critical level of moisture deficit (Fig. 3).

An important indicator of the mobile application developed by Farm at Hand Inc. is the uniformity of the interface style, focus on solving individual problems, differences in computer architectures, and accelerated start-up and response time of the device.

In addition, this mobile app can be easily combined with iPhone and Android phones. Its ATiImageon graphics processor allows you to work with 2D and 3D graphics. All these features give an opportunity to make a diagram and to control the quality of corn irrigation (Fig. 4, 5).

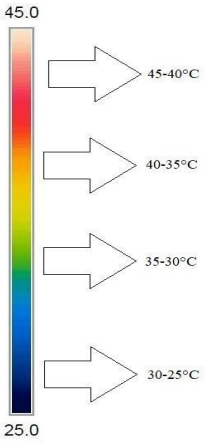

Fig. 2 The Scale of the temperature regime of the thermal imager

Analysis of the diagram (Fig. 5) based on thermovision measurements shows that. on 12 July 2018, humidity 35 % of area of the irrigated plot lowered to extremely low humidity (humidity of plants wilting).After watering on July 19, 2018, on the contrary, 15 % of the arable land was too wet, and 5% needed additional moisture, and only 80% of the crops had optimalhumidity (75% of the lowest moisture capacity).Uneven soil moisturization after irrigation is explained by the presence of smalldeepenings and elevations on corn crops areas, different infiltering capacity of thesoil cover.

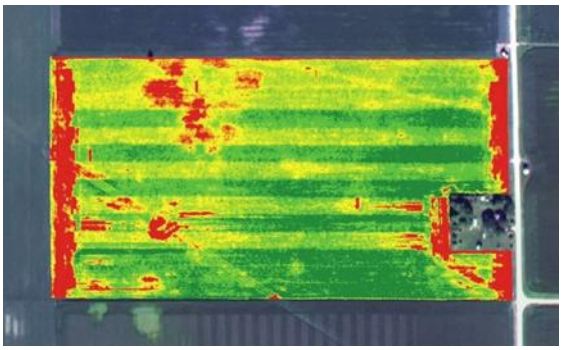

Fig. 3 Image of the heat chamber on July 19, 2018

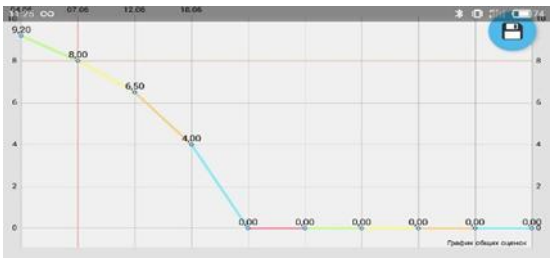

Fig. 4 Graph of the overall assessment of corn irrigation in the mobile app

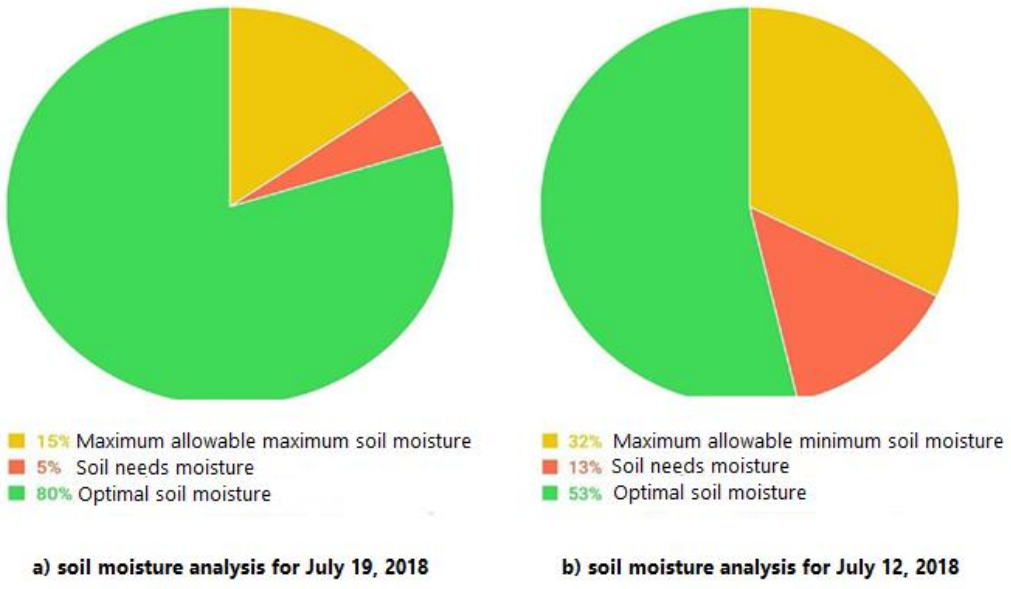

Fig. 5 Diagrams for estimating irrigation timing and quality of maize irrigation by the «Irrigation Technology» mobile application

In the same natural and climatic conditions, the measurement of soil moisture using the "Dniester-1" humidity meter showed the need to irrigate the research object in 20 days earlier than the results of thermovision inspection.

This contradiction is probably explained by the fact that the average daily air temperature reaches maximum values in our region in the second half of July and coincides with the critical period of moisture consumption of this crop (the period of the greatest moisture consumption due to intensive accumulation of biomass). In addition, with the traditional definition of irrigation timing, it was required to perform 5 irrigation operations against 3 as per soil temperature, and the irrigation rate (water consumption for irrigation during the growing season) decreased by 850 m3/ha.

As a result, both early periods and multiple watering caused a decrease in the active soil layer (the soil layer in which the bulk of the root system is located), since plants stop searching for additional moisture and nutrients from deep soil layers [F.N. Safiollin, M.M. Hismatullin Sistema meliorativnogo zemledeliya v Respublike Tatarstan (2015).].

For this reason, the yield of green maize mass was 3.2 t / ha higher when the timing of the studied crop was determined by thermal images (Table 1).

Table 1. The productivity of corn, depending on the methods for determining the irrigation timing

Indicators	Unit of measurement	Watering time	
		By actual soil moisture	By soil temperature
Planned yield	Tonne/Hectare	50	50
Actual yield	Tonne/Hectare	44.6	47.8
Percentage of planned yield	%	89.2	95.6
Feed units' content	Tonne/Hectare	0.14	0.16
Gross collection of feed units	Tonne/Hectare	6.2	76.5

Before starting to analyse the results of research, it should be noted that the actual corn yield does not correspond to the planned one. For example, irrigation based on actual soil moisture provides 89.2% of the planned yield, which is 6.4% lower compared to the irrigation timing based on thermovision surveys of the irrigated area.

Moreover, the standard indicator of productivity of 6.5 t / ha of feed units in the first variant was not reached (6.2 t / ha), while when watering as per soil temperature, this indicator was 7.65 t/ha. This is due to an increase in the growing season with frequent watering, which is why the corn on the cob does not reach a milky-waxy ripeness by harvest. The same results were obtained in the 2019 studies.

The recommended method for determining the optimal watering timing of the research object not only allows you to make decisions quickly, but also has a high economic potential (Table 2).

Table 2. Economic indicators for determining the timing of irrigation of corn with thermovision zoning of the irrigated area

Economic indicators	Unit of measurement	Final result
Survey area	Hectare	125
Cost of the additional gross production	Thousand roubles	384
Cost of a thermovision Flir – Boson camera	Thousand roubles	450
Cost of the Diphantom 4 Pro quadcopter	Thousand roubles	100
Cost of the "Irrigation Technology" mobile application	Thousand roubles	50
Total costs	Thousand roubles	600
Payback period	Years	0,6
Profitability	%	64

The cost of the additional gross production (CAGP) (384 thousand roubles) was calculated using the following formula:

$$CAGP = A \times YG \times CFU_{.} \times 6 \text{ thousand roubles}$$

where

A – area of irrigated field plot (125 hectares).

YG – yield gain (3,2 tonne/hectare).

CFU– content of feed units in the green mass of corn grown using grain technology (0,16).

6 thousand roubles – sale price of oat grain.

The total cost of acquiring the quadcopter with the thermovision device and a mobile application at the prices of 2018 amounted to 600 thousand roubles.

The profitability (64 %) of thermovision imaging of the irrigated area was determined by the formula:

$$P = TACD / SAGP$$

where

P - profitability

TACD – total acquisition costs of the devices (600 thousand roubles).

To calculate the payback period (0.6 years), the cost of additional products was divided by the total cost of expenses.

4 Conclusions

The use of thermovision remote sensing allows you to make an operational decision on irrigation timing of maize, which, unlike the traditional method for making decision on soil moisture, coincides with the critical period of water consumption of this crop and provides additional products in the amount of 384 thousand roubles with the 64 percent profitability on biomass production.

The cost of purchasing additional equipment and mobile application (600 thousand roubles) is repaid during one growing season (0,6 years).

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