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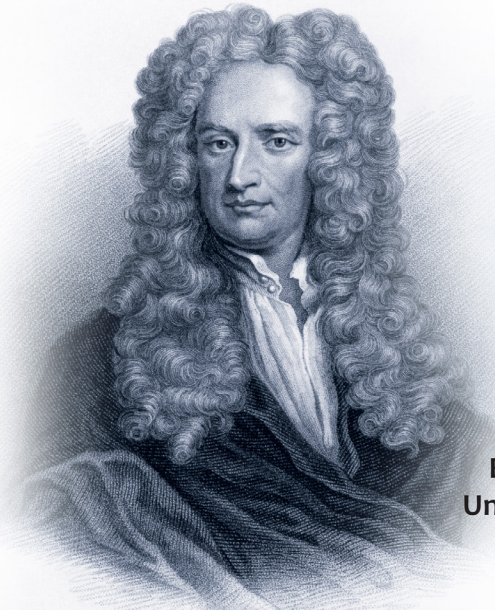

Birmingham
United Kingdom

International Conference "Process Management and Scientific Developments"

Birmingham, United Kingdom
(Novotel Birmingham Centre, November 14, 2019)

Materials of the International Conference
"Process Management and Scientific Developments"
(Birmingham, United Kingdom, November 14, 2019)

M67

ISBN 978-5-905695-67-4

These Conference Proceedings combine materials of the conference – research papers and thesis reports of scientific workers. They examines tecnical and sociological issues of research issues. Some articles deal with theoretical and methodological approaches and principles of research questions of personality professionalization.

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UDC 330

ISBN 978-5-905695-67-4

CONTENTS

HOW TO REDUCE THE PROBABILITY OF ERRORS WHEN SELECTING THE PRIORITY DIRECTIONS OF THE SOCIAL AND ECONOMIC DEVELOPMENT OF THE COUNTRY

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Abstract. An original technique is proposed to reduce the likelihood of errors when choosing priority areas of the country's social and economic development. Examples of the methodology implementation using the created methods and computer programs are given.

Keywords: methodology, probability of error, priority areas, development of the country, simulation models, automated synthesis, computer programs

Formulation of the problem. As is known, in the world more than two hundred countries are guided by a market (or quasi-market) economy, and the results of the socio-economic development of these countries are somehow different. And the rate of occurrence of positive changes in the economies of the countries of the world is also different (see data from the UN and the World Bank for the PRC, India and a number of other countries). Moreover, as it turned out, neither the climate, nor the area of the territory, nor the geographical latitude for some reason have a significant impact on the most important economic indicators and results.

It seems to us that many of the problems in the economic field are caused by *mistakes* made by *someone*, *perhaps many years ago* when choosing *priority* areas for investing from the state budget in promising sectors that accelerate the country's social and economic development.

It can be assumed that the greater the spread in the level of professionalism and ability of a team of decision makers (DM), the more noticeable will be the difference in the standard of living of people who are run by such DM.

Based on previous studies, the article proposes and substantiates a ***way*** for a team of experts to *prepare* ***recommendations*** (to help decision makers) on *choosing* the composition of the *priority* areas of social and economic development of the country. The proposed method provides the *minimum probability of error* when allocating a *limited subset* of directions of investment in the development budget, ranking and quantifying the applied effectiveness of the selected areas.

Preliminary remarks. 1. Why do people make mistakes. People, as is known, are very significantly different in their key competencies and creative, "nature gifted" abilities.

1.1. Mistakes for objective reasons. **** People are very different in the abilities that nature has endowed them.*** We will show how great the difference in the creative abilities of individuals is with real life examples. So, out of hundreds of millions of chess players, only 3-5 people can play 20 games “blindly” and only one person in the world (A.A. Alekhin) played “blindly” 32 games. Moreover, depending on the individual’s natural abilities, the time spent on mastering new material and *acquiring knowledge* will also be different. And in the experiments (see [1, 2]), the very significant influence of *individual abilities* on the ***speed*** of *awareness of the possibilities of* ***practical application*** of the acquired knowledge and the *real realization of these capabilities* was once again confirmed. It turned out that *under the same external conditions and the same initial level of knowledge of theoretical principles*, the time sufficient for the practical development of new educational material has a significant scatter, a significant amount of right-side asymmetry and, often, can be *approximated by alpha distribution.* It was later confirmed that with the same level of initial preparation and experimental conditions, with increasing complexity of the work, the *value of the right-side asymmetry* of the distribution of time spent on the work also increases.

**** People are very different in terms of training.*** With the development of scientific and technological progress, *even a very responsible and capable* member of the decision-making team can master a smaller part of relevant information. So, in modern conditions, due to the continuous acceleration of scientific and technical progress, a decrease in the *doubling period of knowledge*, an avalanche-like increase in the number of publications in most areas of science and technology, few manage to hold the leading positions for a long time even in one narrow field of knowledge.

1.2. Mistakes for subjective reasons. **** People are very different in target priorities, in resistance to temptations, in character traits:*** *sanguine, choleric*, ..., *altruists, selfish, courageous and fearful*, ... "People are subjective. If the judge is hungry, the sentence will be more severe,

and if he is full and satisfied, the sentence will be lenient. Doctors prescribe antibiotics more often during the day than in the morning. Because in the morning the doctor is still fresh and full of energy, and tired during the day and prescribes a tougher medicine. ”(Daniel Kahneman. From a report in Moscow on October 7, 2019).

**** People are very different in their personal interests, i**ncluding different resistance to corruption, different reactions to external pressure, etc.*

2. Damage to the population of the country from the mistakes of decision makers. Mistakes of the decision-maker team are one of the main causes of threats to the country's economy.

2.1.Explicit, real damage. A good example of the negative consequences for such socio-economic development of such a country can be caused by the computing and information technology industry. So, about 50 years ago, *someone for some reason* decided that the country could completely do without investing a sufficient amount of budget funds in the development of this industry. And as a result, it was necessary to develop programs, *unlike* the United States, in computer codes on machines Minsk-1 and Minsk-2, respectively, with OP 1 kb and 2 kb, to calculate *correlation matrices, correlation functions, regression models*, spending a lot of “labor”, time and intellectual effort [3-5]). And at present, it has turned out that *countries whose sectors of the economy are based on the widespread introduction and use of information and communication technologies, including critical information infrastructure facilities, and large data analysis technologies, have a competitive advantage on the world market*.

2.2. Implicit, alleged damage. Is it not surprising that in two hundred countries with a market economy (*and even in different administrative-territorial formations of one country*) ***per capita incomes*** and *the average value of GDP growth per capita for* 5-10 years ***differ*** *by several times*, l***ife expectancy*** - more than 1.5 times, *and the proportion of people with higher education, the level of education, the relative number of serious crimes and their detection,* ***the resource consumption*** *of designing, manufacturing and using the same goods*, ***overall productivity tweens***, etc. – ***by dozen times*** (!).

Apparently, *the main reason* for the social and economic success of individual countries and peoples lies precisely in the *knowledge and abilities of the decision-making team* (or their *assistants*), in the ability to make the right choice of a limited subset of directions of investment in the development budget from the *set of possible options* (*in order to accelerate economic growth*).

3. Why is it difficult to identify individuals with extraordinary professional competencies and creative abilities.

3.1. On professional competence. ***Let it be required to identify professionals in a particular field of knowledge.***

Of the many citizens of *any* country in the world, including limited subsets of decision-makers at all levels, it is not at all easy to *single out* not only professionals in any subject area (unfortunately, there are not so many of them), but also professionals with creative abilities - these people are even fewer. And altruists in the midst of this very small community will turn out to be a negligible amount.

Indeed, there are many reasons for such assumptions. For example, in Figure 1, which is borrowed from [6], the volumes of knowledge that ***A-E*** individuals *communicating with each* other are presented in the form of Venn diagrams. It is easy to see that individual ***A*** hardly doubts that individual ***C***, with whom ***A*** has much in common, is more competent, smarter than individual **B**. In turn, ***B***. for the same reasons will consider ***D*** more competent than ***A***. However, all of them they will be convinced that ***E*** is a very limited personality, although in reality the latter has a much larger amount of knowledge than ***A, B, C*** and ***D*** combined.

Under such conditions, it is impossible for individual **E** to prove to individuals ***A*** or ***B*** the greater efficiency (productivity, usefulness) of his proposal if for proof he will use the knowledge that has no intersection with the knowledge of ***A*** and ***B***. True, in contrast to the case related with innate abilities, here a misunderstanding of the position of ***E*** is due to differences in the volume of knowledge in individual individuals.

Suppose now that the organizers of the examinations, *forming a team of experts* using the procedure of "***mutual recommendations***", turned to ***A*** with a request to indicate the most qualified specialist from those who know ***A***. Obviously, ***A, B, C*** or ***D*** are unlikely to be recommended in the composition team of experts of the individual E.

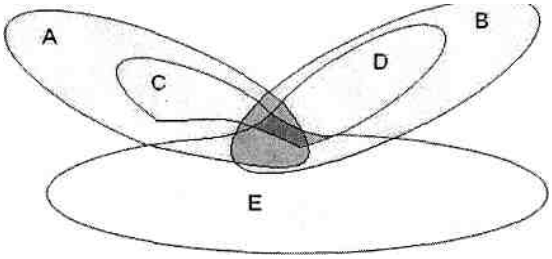

Fig. 1 - The volumes of knowledge possessed by individuals A-E.

3.2. On creative abilities. It is no less difficult to distinguish those who have creative abilities: associative thinking, the ability to mentally "calculate" the ***consequences*** of the decision for many moves (years) ahead. Indeed, it is obvious that one who is able to mentally imagine the 4 steps of the algorithm for solving the problem *cannot convince of the correctness, validity of his decision* someone who is able to see only 2 steps (or moves) forward (*if it is,* for example, ***about choosing ways of developing the economy***; when playing chess everything is much simpler: it's easy to prove the truth by a real game, and an error in the calculations will not negatively affect the lives of other people).

CONCLUSIONS from the contents of the Preliminary Comments: 1) In modern conditions (*with the continuous acceleration of the process of doubling knowledge, an almost exponential increase in the number of publications based on the results of scientific research, an increase in the number of inventions, patents and discoveries*), no one can avoid mistakes in choosing priority areas of the country's socio-economic development and, accordingly, in shaping it development budget. **2)** The amount of damage with the wrong (erroneous) choice of directions for spending budget funds to accelerate the growth of the country's economy can be huge and, as a result, this error will negatively affect the living standards of the population of the whole country**. 3)** Currently, there are no (not described in the open press) methods (techniques, algorithms) to reduce the likelihood of error in choosing priority areas for the development of *any* country in the world.

It seems to us that in modern conditions there is the only feasible way to *reduce the likelihood* of errors when choosing *priority* areas of the country's social and economic development and, accordingly, increase the likelihood of *accelerating* economic *growth*, li*ving standards* [7], *human development* [8] - for this it is necessary to form a *team* of highly educated *expert professionals* (from different subject areas) for the *regular* preparation of ***recommendations*** (*to help* decision-makers at the upper levels of management) *on the choice* of priority areas of economic growth.

1. Formation of a team of experts to prepare recommendations on the composition of priority areas for investing in the development budget (*in order to accelerate the growth of the country's economy*). A team of experts is formed in 3 stages. At the *first* stage, on the basis of commonly used quantitative indicators of the scientific competence of a university employee and research institute, an initial set of candidates for experts is formed. In total, more than 4 dozen indicators. Candidates for experts are those of employees of a university or research institute for

which the values of individual indicators of professional competence used in this institution are higher than the average for specialists in a given subject field at this university or research institute.

At the second stage, to assess the real competence of candidates for an expert group in a specific subject area (*genetic engineering, computer science, medicine, biology, mathematics, chemistry, education, crop production, in the field of design or procurement of technologies ...*) and to *identify* the creative abilities of the members formed in the first at the stage of the candidate population, the decision-maker classification algorithm is *used* according to the level of professional knowledge and creative abilities [9, 10]. For this purpose, it is first necessary to *identify* among candidates for experts *professionals* in the subject areas under consideration and develop lists of test problems for each of the subject areas. As a result, tables are created for all subject areas, including candidates for experts and lists of tasks they have solved (for example, the type of table in [11])

[Explanation 1. In the section "Preliminary remarks p. 3", we noted that in ordinary communication it is difficult, or rather, impossible to identify the most competent professional even in one subject area and, moreover, to find a professional with creative abilities. True, many years ago, we *accidentally* managed to find in the search for a subset of the determining factors in the construction of *regression* models [12] that all members of *one of the many* groups of survey participants (using the step-by-step refinement of the ranking of objects) not only practically predicted the composition of the determining factors, but even correctly anticipated ranks of ***b***–coefficients, characterized by the ratio $\boldsymbol{b}_i/\boldsymbol{\sigma}_{bi}$,. Moreover, the members of this group * did not communicate with each other, * lived in different cities and * did not know that they jointly participated in the polls. Thus, it turned out that some kind of ***spontaneously formed group of specialists*** has more competence than other groups. But it was possible, unfortunately, to discover and identify such a group ***only after a retrospective analysis of an already solved problem***. Further, in numerous experiments with the participation of students and attendants of the IPC of leading workers and specialists [13, 14], we were convinced that with a large number of participants it is possible to obtain a *similar unexpected result* with a fairly high probability. At the same time, testing consisted of solving the same set of tasks of different difficulty levels from one subject area and from different subject areas, that is, *only testing* by solving subjects of problems of different difficulty levels from different subject areas makes it possible to detect the most knowledgeable specialists in a certain subject area and persons with creative abilities.]

As a result of processing the table, *graphs of the relationship between* the candidates for experts in the *composition and complexity of the tasks solved* are constructed and the candidates for the experts are ordered by the level of professional competence in the selected specific subject area.

[Remark 1. To process a table containing 100 thousand experts and 1000 tasks, using a computer program created by students of I.A. Ermolov, A.R. Zagirov and D.A. Poliev, and a laptop with 8 GB of RAM, took less than 80 minutes]

At the *third* stage of forming a team of experts, an assessment is made of the presence of creative abilities of candidates. For this purpose, a table is constructed that includes all candidates for experts (working in the subject areas under consideration) and test tasks prepared for these subject areas. As a result of testing, those candidates who were able to solve or were close to solving problems prepared for solving by specialists from other subject areas are identified. Then, processing of the test results is carried out with an assessment of the relationship between the candidates for experts in the groups of solved problems and the ordering (ranking) of candidates in the team of experts in creative abilities (based on the number and complexity of the solved problems from different subject areas that are not directly related to the candidate's daily activities).

Now, based on the requirements of the top-level system, they carry out (*on the basis of an orderly set of candidates* proportionally to the number and complexity of the tasks solved) the most competent professionals who will be *responsible to society* and the country's population for the *quality of their recommendations* on *a limited composition* of priority directions of socio-economic development of the country.

2. Information support and an algorithm for implementing an intuitively agreed collective choice of priority areas of the country's socio-economic development.

As a result of processing the tables, a team of experts was formed to prepare recommendations for the decision-making team on the composition of priority areas for economic development. However, to ensure the productive work of the team of experts, it is necessary to create a database containing information on new scientific research results and new technologies. For example, create a database of "Science and Technology News." The use of such a database will *reduce labor costs* for the allocation of a subset of priority areas for budgetary investments. And since the *input data for decision-making* includes databases of high power maintained in the current state: * a database of highly educated professional experts and

a database containing information about many achievements in the field of science and technology, based on these databases and algorithms [6, 11, 15], it is easy to assess the relationship of experts in the selected priority areas, determine which of the priority areas has the greatest information weight (rank) and perform a ranking of the list of priority issues directions using the step-by-step refinement method for ranking objects.

CONCLUSIONS. 1. Using the considered algorithm and software products developed on its basis, it is possible to ***quickly*** conduct a comparative analysis of an *almost unlimited number of expert opinions*, correctly and with minimal *labor costs*, classify (group) experts. **2.** The proposed option for *choosing* priority areas of socio-economic development of the country is *universal and has several advantages*: Firstly, the probability of the correct choice of priority areas for investing budget funds, respectively, the *likelihood of accelerating the growth of the country's economy,* significantly increases. Secondly, *for the first time* there is an opportunity to *form an expert rating* based on the results of participation in specific examinations. Thirdly, the fact that the entire organization of examinations is performed in an *automated mode* allows one to practically eliminate the *influence on the result* of personal qualities and possible interest of participants and organizers of examinations.

3. Assessment of the value of resource costs for the implementation of the selected priority areas for budgetary investments *(and the effect - social and economic, and the time lag - the time from the moment of investment to the return).*

To assess the values of these indicators, the Method of *step-by-step refinement of the cost of resources with the assessment of distribution characteristics* (SRC-ADC) is used [16]. The difference between the method consists, firstly, in the *use* of a multi-step procedure, at each step of which a ***mimic simulation*** is carried out, and, secondly, in the *integration* of the Delphi method with *expertise aimed at obtaining a generalized opinion of a group of experts* ***on a possible range of values for the desired indicator.*** And the automated synthesis of simulation models during the implementation of the algorithm can significantly reduce the cost of labor for obtaining the desired values of indicators [17].

[The SRC-ADC method can be used in assessing *the demand for a particular product, damage from the implementation of threats to the security of the enterprise, time to complete a specific operation of the business process, losses from possible unfriendly sanctions of competitors, time spent hacking an information system, predicted time to solve a problem,* etc. (see, for example, [18, 19]).]

FINDINGS. 1. The ability to * determine the *range* of possible values of the desired indicator, * perform rankings (ordering) of the selected areas by their degree of usefulness, economic efficiency, * evaluate the cost of budget funds for the implementation of each of the selected areas and * the possible range of time lag. **2.** The values of the sought indicator are proposed to be *determined* using a *software system for the automated synthesis of a simulation model* for *step-by-step* obtaining of a *generalized group* expert assessment. It is shown that mimic simulation provides an opportunity to assess the *confidence limits* of the values of the desired indicator and to determine *the likelihood of time and various resources falling into a given range of values.*

CONCLUSIONS. 1. It is shown that in modern conditions (*with a continuous acceleration of the process of doubling knowledge*) it is *impossible* to avoid mistakes when choosing priority areas of the country's socio-economic development and, accordingly, when forming its development budget. At the same time, the amount of damage with an *erroneous choice* of directions for spending budget funds to accelerate the growth of the country's economy can be huge and, as a result, this error will negatively affect the *living standards* of the population of the whole country.

2. *A universal technique has been proposed to reduce the likelihood of error in choosing priority areas of the country's social and economic development*, including *methods and tools* for forming a team of highly educated *professional experts* (from different subject areas) for the *regular* preparation of ***recommendations*** (to *help* decision makers at the upper levels of management) by *choice* priority areas of economic growth, including methods * for selecting and testing candidates for experts, * for assessing the values: and the cost of resources for the implementation of each direction, and the possible value of the time lag, and the effect (social, economic), * for assessing the *confidence limits* of the values of the desired indicator and determining the probability of *falling values indicators in a given range.*

This article was prepared based on the results of studies carried out with the support of the Russian Foundation for Basic Research (RFBR) - project ***18-010-00806/18 « The standard of living of the population of administrative-territorial formations: identification, research, analysis and assessment of the significance of determining factors (for subsequent optimization in conditions of limited resources)»***

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ANALYSIS OF A CHANGE IN THE VALUATION OF A SMALL- AND MEDIUM-SIZED ENTERPRIZE COMPANY AS A RESULT OF THE IMPLEMENTATION OF SUPPLY CHAIN MANAGEMENT TOOLS

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Abstract. Analyzed is a change in the valuation of a company representing a small- and medium-sized enterprize, as a result of the implementation of supply chain management tools, on an example of an automobile spare parts distributor. To this end, the data on the effectiveness of each of the tools obtained with the help of the expert assessment method are incorporated into a model developed specifically for these purposes, and a change in the parameters studied is then analyzed.

Key words: supply chain management, financial model, company valuation, the Delphi method, scenario analysis

The aim of this work is to analyze a change in the value of small- and medium-sized enterprize companies as a result of the introduction of supply chain management tools.

The Delphi method was chosen to analyze the effectiveness of the supply management tools, as it is convenient to use and did not require additional financial and human resources, except for the experts who agreed to provide assistance voluntarily and at no cost. The method makes it possible to take account of the opinion of the specialists who are directly involved in the supply chain management and who have accumulated an extensive experience in this field. In addition, the Delphi method makes it possible to develop an independent thinking and ensure objective investigation of the task set from various angles [6].

Two groups of people took part in the process of the undertaken study: the experts in the sphere of the supply chain management who expressed their own view on the task set, and the analysts who processed the expert assessment results.

A pool of 14 practical experts was gathered in the preliminary phase. The experts are recognized professionals in the sphere of supply chain manage-

ment and general management, are adequately educated, trained and experienced. The experts occupy leading positions in the appropriate companies, are aware of the situations in their companies and have the overall understanding of the current status of affairs in the industry. Moreover, the first task in the preliminary phase consisted in the determination of the supply chain tools which, if implemented appropriately, provide a significant contribution to the value creation. It was decided to take the IT framework of the supply chains [4] as a basis and then go down to the application software level.

The following list for the distribution industry was formulated as a result of the application of the Delphi method:

- WMS systems (Warehouse Management Systems);
- SCP systems (Supply Chain Planning);
- TMS systems (Transportation Management Systems);
- SRM systems (Supplier Relationship Management);
- CRM systems (Customer Relationship Management).

Thus, in the framework of the task set to assess the effectiveness of using various supply chain management tools the first round of the study was conducted, during which the experts were offered to answer questions to which they provided replies without reasoning. The data received from the experts was processed in order to identify the mean value and the extreme values in the assessments. The experts were then notified of the results of the processing of the experts' replies based on the first round of the survey by specifying the positioning of the assessments of each expert. Where an expert's assessment was significantly different from the median value, they were to explain their position or change the assessment.

A problem was set in the framework of the main phase: to assess the effectiveness of the application of the selected supply chain management systems on the basis of one's own experience and expertise. The experts were provided with a questionnaire that contained variants of a possible economic effect from the application of the supply chain management software-based solutions, such as the productivity of the warehousing staff, the procurement department managers, the logistics and the foreign economic activity department, sales managers; the storage density of goods; order assembly accuracy, percentage of errors in issuing orders; inventory turnover rate; transportation productivity and decrease of transportation costs; turnover rate of payables and receivables.

It should be noted that the requirement that the experts should give reasons or adjust their assessments did not lead to a demand to achieve a complete consistency of the expert opinions. Based on the results of studying the supply chain management tools, several indicators were identified which

are most influenced by a given IT system. The said result of the study turned out to be quite useful, as it enabled to pinpoint different viewpoints and to analyze IT-based solutions in various supply chain management spheres.

The experts provided their personal opinions regarding the proposed variants of the economic efficiency of using the IT systems. 14 answers were received regarding each variant of supply chain IT systems in the light of the examined indicators of the economic efficiency. There were hardly any opinions that were significantly different from the majority opinion. After several iterations, the experts came to a common conclusion regarding the key performance indicators of the supply chain management tools. The analysts processed the experts' answers and summed up the outcome of the study. The findings were analyzed, the expert opinions were agreed upon and final recommendations were developed.

The iterative survey procedure with the communication of the processing results after each round makes it possible to thoroughly align the expert opinions, inasmuch as the specialists, who had been too categorical in comparison with the others, subsequently were to critically revise their judgments and provide the extensive reasoning therefor. Thus, an approximate effect exerted by the enlisted IT-systems upon the company effectiveness was identified, namely, the influence upon the items of the balance sheet and profit and loss statement.

There were received the following results of a study of the supply chain management effectiveness undertaken with the help of the IT-systems applied in the modern context:

It was identified that the WMS systems in the supply chain systems:

- Boost the productivity of the warehousing staff by 20 to 60 percent.
- Enhance the storage density of the goods by 10 to 20%, which leads to decreased rental expenses in relative terms.
- Increases order assembly accuracy and drives down the error percentage from 3% to 0.1%.

The effectiveness of applying SCP systems in the supply chain management means that they:

- Boost the inventory turnover ratio by 20 to 40%.
- Enhance the performance of the procurement department managers by 30 to 80%.

In the capacity of a supply chain management tool, TMS systems:

- Enhance the transportation productivity by 30 to 50 %, which leads to decreased transportation expenses in relative terms.

The application of the SRM systems leads to the following effect upon the supply chain management:

- Lessens the turnover rate of the payables by 1 to 30%.
- Enhances the performance of the logistics and foreign economic activities department specialists by 20 to 40%.

Due to the CRM systems, the following results in the chain supply management are ensured:

- Performance of the sales managers is increased by 15 to 40%.
- The receivables are rendered much more manageable, which makes it possible, if there is a wish to do so, to quickly drive down its days outstanding to 6-7 days or to effectively include the cost of the customer's credit into the product price.

As the practical experience showed that the panel of independent industry experts was able to more effectively and quickly estimate and forecast the result, than if there had been used formalized methods requiring a lengthy period for collecting data on the costs of the implementation of each system and on the economic effect over a specific period of its application.

Independent experts who work anonymously are neither susceptible to a clash of different positions, nor to a collective influence due to joint work. Based on the Delphi method as a multi-round questionnaire procedure with the processing and communication of the results of each round to experts on an anonymous basis, an analysis was undertaken of the effectiveness of various information systems for the distribution industry. The results showed a dependence of the company's financial results from the application of given systems.

Based on the study undertaken and on the earlier provided data of financial and management reports from several companies a financial model of a distribution company was developed. The financial model included a forecast statement of profit and loss and a balance for 5 years of the forecast period (pro-forma's) [1,2,3]. After that, a business valuation model according to the DCF method was developed on the basis of the created financial model [2,3,5]. After that, a capacity was added to the model to take account of the effect from introducing supply chain management tools, both individually and collectively. Moreover, a capacity was added to use the available cash to invest into revenue generating assets [2]. In our case the stock-in-trade was regarded as such an asset.

With the help of the model created the influence was studied that was caused by the introduction of the supply chain management tools upon the value of a company's equity by the end of the last year of the forecast period and upon the business valuation amount determined by the DCF method.

When using the model, estimations were made under three scenarios: conservative, moderate and optimistic.

Prior to the model building an estimation of a model was made according to the scenario when no supply chain management tools were used, in order to determine the basic level of the values under study that would serve as the baseline for the subsequent comparisons.

The study undertaken on the basis of the models built showed the following.

In introducing each individual tool, the increase of the company's equity equalled 4% to 372% within the studied scope of the scenarios. But the largest increase of the value of a business and the amount of the equity capital by the last year of the forecast period was achieved during the simultaneous implementation of the SCM systems. The model building results are shown in Tables 1 and 2.

Table 1.

The amount of equity by the end of the 5th year (as a % to the basic value) in the case of a joint introduction of the SCM systems

Scenario	Conservative	Moderate	Optimistic
Equity	480%	1172%	172331%

Table 2.

The amount of a business company valuation (as a % to the basic value) in the case of a joint introduction of the SCM systems

Scenario	Conservative	Moderate	Optimistic
Value	506%	1254%	181579%

In building models it becomes clear that the effect from the joint introduction of the SCM systems is many times greater than the aggregate effect from introducing the systems one at a time. If an excess over one hundred per cent resulting from introducing moderate scenarios on a standalone basis is summed up, 250% for the equity capital in the fifth year of the forecast period and 264% for the company value determined based on the DCF method will be derived, against 1072% and 1154%, accordingly.

The results derived after the run of a model according to an optimistic scenario serve rather as a warning and a reminder that we are dealing with a model prepared on the basis of the experts' opinion and that it, as any other model, reflects the reality only in part and has its own application range.

It is also worth noting that a low transparency of small and medium businesses, along with the absence of a sufficient amount of reliable information and of financial and management accounts data did not allow to build, in the framework of this study, more precise models which would enable to assess the effect from their introduction more precisely or without engaging the experts.

By comparing the value of companies before and after the introduction of the elements of supply chain management, one may say with certainty that the appropriate introduction of any of the tools considered results in an increased value of a company in the medium-term and long-term perspectives.

In order to address the tasks posed, the application of the Delphi method for building a model is a quite efficient way to obtain reliable information on Russian companies. However, and this is clear from the model building results, the supply chain management professionals possess a certain degree of optimism and have an excessive faith in the “magic power” of the supply chain management tools. This can be seen in the results of the model-building according to an optimistic scenario.

The results of the optimistic scenario modelling are not worth considering due to their excessive optimism. As far as the first two scenarios are concerned, the examples of such growth existed in the real business in this sector in the period of 2010 – 2018, at least, in the North-Western and Central regions of Russia.

It is clear from the modelling results that the application of the supply chain management tool increases, when properly implemented, the value of the companies in virtually all cases.

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CONDITIONS FOR INTENSIFYING FOREIGN ECONOMIC ACTIVITY OF CHEMICAL ENTERPRISES

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Abstract. the article shows the example of chemical industry of the Republic of Tatarstan that important conditions for activization of foreign trade activities of the enterprises are export potential of the industry, business activity, investment projects, capacity expansion, and development of new products in the most attractive market niches; equally important state policy of export promotion and business support in removing barriers of access to the target

Keywords: non-primary exports, chemical complex, measures of state support of the industry

Export is one of the main drivers of the economic growth of the chemical industry (along with state support and innovation). The markets for chemical products are characterized by strong competition, and as the stages of redistribution deepen, the level of competition multiplies.

The Republic of Tatarstan is one of the leading regions in the Russian Federation in terms of dynamics and production volumes of chemical and polymer products. Meanwhile, even in this developed Russian region, there are very few enterprises exporting these products (not more than 3.8% of their total number). From the point of view of the author, this is one of the major constraints on the development of the industry and the economy of the region.

The hypothesis is put forward in the article: joint, mutually agreed actions by government bodies and the business community can create conditions for a significant growth of non-resource exports in the industry and in the region. As object of the study is chemical industry of the Republic of Tatarstan (hereinafter RT), the subject of research was the foreign economic activity of enterprises of chemical complex of the RT in the markets of the European Union (hereinafter EU).

The European chemical market is one of the most developed in the world, both in production and innovation segments. Therefore, companies that can stably supply products to the European market and at the same time expand their share of presence are a kind of "benchmark" of competitiveness. In addition, the EU is a strategic partner of Russia, which accounts for a significant share of export-import operations with our country.

To test the hypothesis, the analysis of the export potential of enterprises of the chemical complex of the RT in the markets of the EU was carried out. The RT supplies chemical and polymer products to 27 of the 28 EU countries. The main importing countries of chemical products from the RT are Hungary, Poland, Belgium, Germany, Finland, Romania. The most diversified supplies are to Bulgaria, Poland, Estonia, Lithuania, Latvia, Romania, Germany, the Czech Republic and Finland. That is, these are either EU countries bordering Russia or Eastern European countries characterized by a lower level of economic development than their Western neighbors on the continent, but at the same time closer to Russia in terms of cultural and ethnic identity (Slavic States). A separate state in this list is Germany, which is connected with Russia by many historical, political and economic relationships.

Analysis of customs statistics for 2014-2017 showed that from the Republic of Tatarstan for export to Europe, mainly products of the first processing (up to 1 thousand US dollars) are shipped - 72%. The share of products of medium processing (1-4 thousand US dollars) accounts for 28%, with high added value (more than 4 thousand US dollars) - only 0.1%. Changes in the exchange rate caused a significant change in the structure of exports of chemical enterprises of Tatarstan. Dynamics of exports of chemical products of RT replicates national trends of growth in shipments of low-margin products, as well as reducing the total amount of foreign exchange earnings per unit of products sold due to the need to reduce prices in foreign markets for many products.

ABC-and XYZ-analysis of chemical products exported from the RT to the EU markets showed that the most active and largest customers are consumer chemical products of the RT, in the period 2015-2017, they were Poland and Hungary. At the same time, Bulgaria, Austria and the Netherlands were strategically important for the chemical industry and the economy of the RT as partners with the most stable volumes of purchases during the analyzed period: these countries have a coefficient of variation (an indicator that reflects the spread of values relative to the average) below 10.

The segmentation of consumers of chemical products in the republic revealed the absence of countries that are large and medium-sized consumers and at the same time have a high value in terms of stability of export supplies. Therefore, targeted efforts are needed to maintain the stability of export supplies to EU countries such as Poland, Germany, Hungary, Lithuania, Romania, the Czech Republic and Slovakia. Additional investments in supply chain support are also recommended for these seven countries. Sales promotion activities are recommended for countries in the "CX" category (Bulgaria, Netherlands, Austria) and " CY" (France).

Then, based on the data of the Russian Export Center, the sectors of growing imports of chemical products from 20 EU countries were analyzed (Table 1).

Table 1. Prospects for non-oil exports from Russia to EU countries

EU country	Russia's share in non-oil imports	Rating of the Russian export center on the prospects of non-oil exports from Russia	Sectors of growing chemical imports
Poland	1,5%	1st place	plastics, complex organic compounds, pharmaceuticals, fertilizers
Germany	0,6%	2nd place	inorganic chemistry, carboxylic acids, rubber products, household chemicals
Lithuania	3,2%	17th place	fertilizers, pharmaceuticals, chemical fibers, tires, paints and varnishes, plastics
United Kingdom	0,25%	21th place	inorganic chemistry, tires, plastic products
Romania	0,6%	21th place	plastics, cable products, fertilizers, household chemicals, chemical fibers and fabrics thereof, pharmaceuticals, pesticides
France	0,3%	25th place	hydrocarbons (monomers), plastics, perfumes and cosmetics
Spain	0,4%	27th place	pharmaceuticals, plastics, complex organic compounds, perfumes and cosmetics, basic petrochemicals

EU country	Russia's share in non-oil imports	Rating of the Russian export center on the prospects of non-oil exports from Russia	Sectors of growing chemical imports
Serbia	2,8%	34th place	inorganic chemistry, polymers, rubber
Bulgaria	1,7%	43th place	chemical fibers, paint, tires, plastics, fertilizers, plastic products, household chemicals
Denmark	0,7%	43th place	perfumes and cosmetics, plastics, fertilizers, inorganic chemistry, detergents, tires, plastic products, paints
Czech Republic	0,8%	38th place	plastics, pharmaceuticals, cable products, household chemicals, fertilizers
Sweden	0,7%	48th place	basic petrochemicals, tires, plastic products
Slovakia	0,6%	49th place	tires, plastic, pharmaceuticals, inorganic chemistry
Hungary	0,7%	55th place	rubber products, tires, perfumes, cosmetics, basic petrochemicals, nitrogen compounds, detergents, paints, pesticides, plastics, pharmaceuticals
Finland	2,8%	57th place	tires, fertilizers, basic petrochemicals, pharmaceuticals
Norway	0,9%	61th place	plastic products, tires
Belgium	0,8%	68th place	perfumes and cosmetics, polymers, hydrocarbons (monomers)
Switzerland	1%	72th place	plastic products
Austria	0,25%	100th place	complex organic compounds, pharmaceuticals, perfumes
Italy	there is no data	there is no data	pharmaceuticals, nitrogen heterocyclic compounds, polyethylene

Compiled by the author on the basis of data [1].

The author revealed that most of the product groups of chemical products imported by the EU countries are produced by enterprises of the RT. Considering that the products of RT producers are competitive in the Russian market, this creates a set of competitive opportunities for the export of these product groups to the EU countries. This requires a multiple increase in the capacity of these products in the region, taking into account the growing domestic and external demand. Correlation of volumes and assortment of imports of chemical products of the EU countries with the existing production facilities of the RT made it possible to determine a group of the most promising areas of expanding exports from the RT: packaged medicines, nitrogen fertilizers, base plastics (polyethylene and polypropylene), multilayer sheets and films, plastic packaging products.

Thus, as a result of the analysis, it was concluded that there is a significant potential for expanding the export activities of the Tatarstan chemical complex to the EU markets.

The study of the state policy of the leading countries-producers of chemical products [2] showed that the countries that actively trade in chemical and petrochemical products have well-defined industry development strategies, developed measures of state support for export-oriented products with high added value, and also carry out focused efforts to preserve and create new key success factors for their manufacturers to ensure global competitiveness.

On the basis of cheap hydrocarbon raw materials, the countries of the Middle East are increasing their export potential. This determines the high price competitiveness of their products. Saudi Arabia relies on the monetization of its own oil and gas resources, increasing the added value of hydrocarbons, and diversifying the economy. The country carries out state regulation of the main processes for the production of chemical products. Among the measures for the development of the industry in the country, it is possible to highlight the fixing of prices for ethane, as well as a 30% discount on liquefied hydrocarbons in comparison with world prices. Also, up to 50% of investments in new petrochemical industries from the Industrial Development Fund are compensated in the country, tax holidays are given for 10 years, development of industrial parks for the processing of manufactured plastics into finished products is supported.

China makes large-scale investments in R&D and in the development of production capacities of the chemical industry. Most chemical complexes are integrated with oil refineries in one technological chain. These structures, together with enterprises producing final products, form clusters and special industrial zones, the development of which is supported by the state. For example, subsidies for the purchase of new equipment and technologies, a reduced electricity tariff, and loans at a reduced rate. For exported goods with high added value, tax benefits are provided in the form of VAT refund (5-13%).

Singapore's strategy is focused on the processing of imported raw materials into products of industrial exports, attracting foreign investment. Thus, the state has invested $ 8 billion in the creation of infrastructure for the petrochemical cluster on Jurong island. For every dollar invested, $ 4.5 of private funds were raised.

The USA takes advantage of the "shale revolution" and developed infrastructure to further develop the industry. Shale gas has become a source of cheap raw materials, which has increased the economic efficiency of projects for the production of polymers and other petrochemical industries. To stimulate investment in capital – intensive industries, the law on a special tax instrument - master limited partnership (MLP), which are exempt from income tax, was adopted. In the country, property tax incentives from municipalities, tax breaks and credits from States and the Federal government are provided to support new industrial enterprises.

An analysis of world customs statistics data also revealed a high export orientation of such sectors of the chemical complex as the production of polymers and the manufacture of plastic products, and in most countries the export of plastic products prevails in the export of chemical and petrochemical products (Fig. 1). The exception is the United States, where at the end of 2018, the export of polymers outstripped in value terms the export of polymer products, due to the active development of the polymer industry as a result of the "shale revolution". The Russian Federation is out of the picture, where exports for both groups are negligible, as well as production indicators by type of activity.

The priority task of the Russian Government in the field of non-oil exports is the output in the amount of $ 200 billion by 2025. At the same time, the ineffective current state policy in regarding the development of deep redistribution sectors leads to a damping of the development of export directions. This is evidenced, in particular, by such an indicator as the export capacity of products by activities of the petrochemical complex: if in the production of crude oil and natural gas it is 82%, in the production of chemicals and products 38%, in the production of rubber and plastic products – less than 1%. Taking into account the absolute competitive advantage of Russia in the international markets in the form of its own hydrocarbon resources, which form the basis of chemistry and petrochemistry, the author proposed to establish an export growth indicator for this product category in absolute terms, and also in relative terms not less than 250%, to determine the measures of priority state support for this industry due to the competitive advantage in international markets.

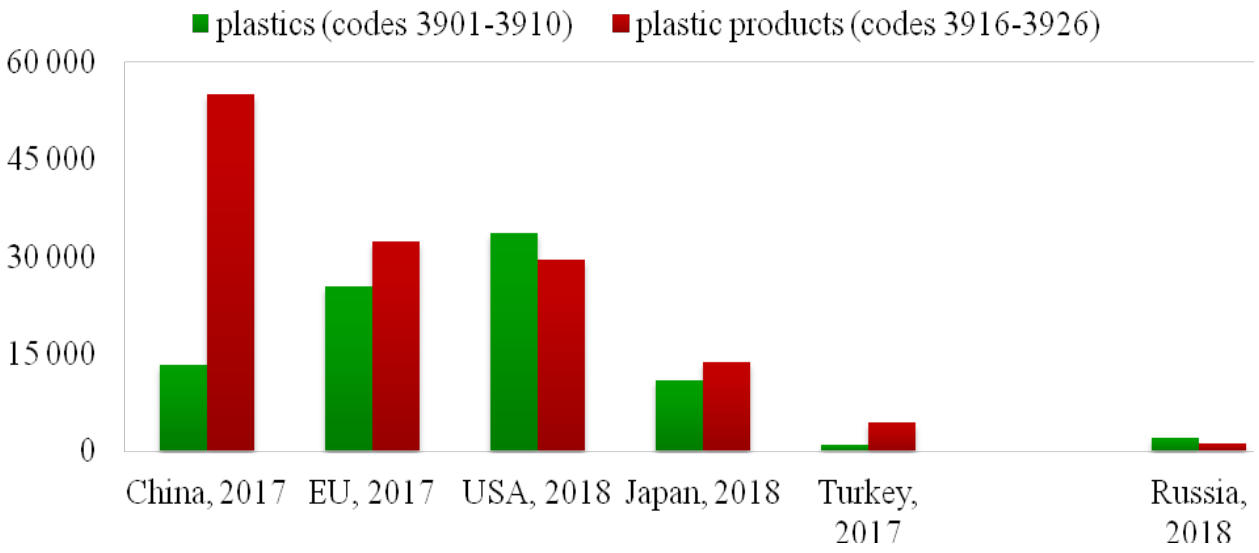

Figure 1. Export of polymers and plastic products, mln. USD
Compiled by the author on the basis of data [3].

The analysis of a number of strategic documents on the development of the chemical complex in Russia revealed that the proposed government regulation measures are focused on supporting projects for the processing of liquefied gases and ethane into chemical products. At the same time, the country has a sufficient number of projects based on the use of oil raw materials (primarily in areas where there is no own gas resource base, but industry and infrastructure for the use of oil resources are developed – the Republic of Tatarstan, the Republic of Bashkortostan, Perm Territory, Samara Region, etc.). Therefore, it is proposed to provide balanced support for projects on both gas and oil raw materials. It is also proposed to expand the action Plan for the development of the petrochemical complex, including polymer processing industries.

In Russia, business has initiated a large number of investment projects focused on the production of chemical products that are competitive in foreign and domestic markets. However, their implementation is constrained by existing barriers. The most significant of them are: high capital intensity of the industry, difficulties with the acquisition of scarce raw materials, the latest generations of equipment and technologies, a large transport arm, mandatory product certification and other [4].

To remove barriers in Russia, there are many tools to support exporters, including subsidizing transport costs, patenting costs abroad, credit guarantee and insurance support for export operations, etc. However the sociological survey of exporters of chemical products of the RT [5] revealed some problems of existing measures of the state support of export activity. Among them: low coverage of participation of organizations in export activities provided by subsidies; inefficient use of tariff policy measures (import, antidumping, countervailing duties) in the industry; lack of monitoring of prices for petrochemical products, the demand for which is not fully satisfied due to its production in the Russian Federation and others.

Thus, the hypothesis that joint mutually agreed actions of government and the business community can create conditions for a significant increase in non-resource exports in the region has been confirmed in the export policy of the leading countries producing chemical products, in modern strategic documents of state regulation of the industry in the Russian Federation and in the analysis of the reasons for the weak export orientation of republican companies and barriers to entry into export markets.

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BEHAVIORAL ECONOMICS AND FINANCIAL GLOBALIZATION: ESSENCE AND BASIC CONCEPTS

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Abstract. Behavioral Economics is an interdisciplinary science that includes elements of psychology and Economics, sociology, ethics, philosophy and other Sciences. Behavioral Economics proves the irrationality of human behavior in making economic decisions and shows the importance of taking into account the factors of economic and psychological nature, as well as the situation in which these decisions are made, to predict human behavior as a subject of economic relations.

Keywords: individualism, rationality, limited rationality, behavioral Economics, rational behavior, economic man.

Introduction

Traditionally, in Economics, human behavior as a subject of economic activity was viewed through the prism of satisfaction of needs and the achievement of wealth. Individual economic schools examined needs in their connection with foresight and economic activity, investigated the normative elements and mental factors of economic behavior, studied the desire of people for comfort and the relationship of goals and limited means [Schumpeter J. A., 2001, pp. 34 – 111]. Political economy considered human behavior in the sphere of economic relations with the help of the rational maximizer model, neoclassical theory-with the help of the theory of marginal utility, consumer demand and choice.

In recent decades, economists ' research has increasingly taken into account differences in human behavior, which are explained by different goals and limited resources (including money, time, etc.), and also draws attention to the irrationality of human behavior. These trends have led to the emergence and development of behavioral Economics, which is essentially an interdisciplinary science and appeared at the intersection of Economics, psychology, sociology, ethics, philosophy and other Sciences in the conditions of modern globalization processes.

But the concept of behavioral Economics is not exclusively a modern phenomenon. Still in the work of J. M. Keynes "General theory of employment, interest and money", which considered the patterns of income use and motivation factors for consumption, saving and investing took into account psychological factors in the economic behavior of people [Schumpeter J.A., 2001].

Classics of Economics, such as J.M. Keynes, R. Lucas, A. Pigou, R. Solow, J. Soros A. Smith, G. Tard, G. Schmoller, J. Schumpeter and others in their concepts in one way or another related to the basic psychological characteristics of people (preferences, fears, desires) [Schumpeter, J. A.A., 2001, pp. 23-25].

The problems of behavioral Economics at different times covered by J. G. Akerlof, M. Alle, D. Arieli, G. Becker, A. V. Belyanin, R. Zelten, D. Kahneman, J. Katona, D. McFadden, G. Markowitz, I. A. Pavlov, M. Rabin, G. Simon, M. Spence, R. Thaler, A. Tversky, J. Tyrol, Y. Fama, E. Fehr, J. Heckman, R. Schiller, et al.

The purpose of this work is to analyze the history of formation, study the methodological foundations and basic concepts of behavioral Economics as a separate direction of economic theory in the conditions of financial globalisation.

Work objectives:

1 to Give a brief historical overview of the formation of behavioral Economics as a separate scientific direction in the conditions of modern financial globalization.

2 Consider the methodology of behavioral Economics.

3 Analyze the basic concepts of behavioral Economics.

Object of research: behavioral Economics as a separate branch of scientific knowledge in the conditions of financial globalisation.

Subject of research: concepts and methods of behavioral Economics.

Research methodology: methods of analysis of scientific literature, historical, system, comparative methods were used.

1 BEHAVIORAL ECONOMICS AS A SEPARATE SCIENTIFIC DIRECTION: THE HISTORY OF FORMATION AND BASIC CONCEPTS

Behavioral Economics is a branch of economic theory that takes into account the psychological characteristics of human perception and judgment. Taking these features into account makes it possible to improve the explanatory power of economic theory by introducing additional assumptions about the behavior of agents that more accurately describe human behavior in a particular situation.

S. Mullainathan and R. Thaler give a definition of behavioral Economics: merging psychology and economic theory, which examines what happens in the economic system markets, under the condition of limited cognitive ability and difficulty in decision-making of individual economic agents [Mullainathan S., Thaler R., 2000, p. 1].

G. A. Antipov notes that behavioral Economics studies the influence of social, cultural and emotional factors on decision - making by economic agents, as well as the consequences of this influence on market relations: prices, profits, resource allocation [Antipov G. A., 2019, p. 76-85].

Experts note that the tendency of interpenetration and interrelation of economic science with other Sciences is manifested, on the one hand in the influence of social Sciences on the development of economic science and the application of the achievements of Economics in the social Sciences. This trend reflects the continuing development of interdisciplinary relations, the expansion of the boundaries of the object and subject of a particular branch of science [Zlotnikov A. G., 2018, p. 44-49].

For example, the 1986 Nobel laureate in Economics James Buchanan believes that "the methods of analysis of market behavior can be applied to the study of any field of activity where a person makes a choice" [Buchanan J. J.]., 1994, p. 104-113]. J. Buchanan proposed a theory of public choice based on the extension of economic phenomena to political processes and three methodological approaches: individualism, the concept of "economic man" and the approach to politics as an exchange. Exchange in the economy and in politics is not aimed at achieving profit, only in politics are the votes of the voters.

Another winner of the Nobel prize in Economics in 1992, Gary Becker, also proposes to apply an economic approach to the study of social processes. So, according to G. Becker, a person in making important decisions in social relationships is guided by economic considerations, doing it both consciously and not. For example, decisions on marriage and divorce "are made by weighing all the pros and cons associated with alternative strategies of behavior "[Becker G. S., 2003], that is, subject to the laws of supply and demand, competition, etc. The same laws are subject to such psychological phenomena as, for example, satisfaction, envy, altruism, egoism, etc.

Thus, the following definition can be given: behavioral Economics is an interdisciplinary science that includes elements of Economics, psychology, sociology, ethics, philosophy and other Sciences, proving the irrationality of human behavior in economic relationships and taking into account the factors of economic and psychological nature, as well as the situation in which a person is when building forecasts of human behavior in economic relationships.

2 BASIC CONCEPTS OF BEHAVIORAL ECONOMICS

Still D. M. Keynes in the book "the General theory of employment, interest and money", paid attention to factors of psychology of behavior of people which influence features of expenditure of incomes, motivation to consumption, saving and investment. But the founder of behavioral Economics is Daniel Kahneman (Daniel Kahneman). In 2002, D. Kahneman received the 2002 Nobel prize for " the inclusion of psychological research data in economic science, especially those relating to human judgment and decision - making in a situation of uncertainty." Research Of D. Kahneman, a psychologist by training, has received great recognition in modern economic theory.

D. Kahneman and his colleagues laid the fundamental ideas of behavioral Economics. The article by D. Kahneman and A. Tversky "perspective Theory: analysis of decision-making in risk conditions "[Kahneman D., Tversky A., 1979, p. 263 – 291] turned economists ' idea of rationality of human behavior. D. Kahneman proved that often people's actions go against the predictions of economic theory.

D. Kahneman and A. Tversky after a number of experimental studies concluded that people are unable to rationally assess the benefits and losses from their decisions. The authors made, in particular, the following conclusions:

- people show different reactions in the situation of loss or gain. For example, the joy of getting a win equal to 100 rubles for a person is less than the bitterness of losing the same 100 rubles;

- egardless of the availability of mathematical knowledge, people are not able to objectively assess the probabilities of certain events, taking into account common stereotypes and misconceptions, as well as their own feelings.

The Prospect Theory of D. Kahneman and A. Tversky contains four main components that call into question a number of classical economic postulates [Kahneman D., Tversky A., 1979, p. 263-291]:

- Starting point. As an argument of the utility function of agents D. Kahneman and A. Tversky derive not the final state of wealth, but its dynamics relative to a certain point of reference. Noting such a point, the agent encodes all the consequences of possible alternatives in the form of positive (advantages) and negative (losses) deviations from it.

- Avoidance of losses. The same absolute change in wealth relative to the selected point of reference leads to greater absolute changes in utility, in the case of loss than in the case of benefit.

- Diminishing sensitivity to gains and losses. The marginal utility of gains and losses decreases as they increase.

- Distorted perception of probabilities. When making decisions under risk, agents tend to overestimate probabilities close to zero and underestimate probabilities close to one.

The research Of D. Kahneman and A. Tversky was continued in the works of other economists, in particular, Matthew Rabin, Herbert Simon, Maurice alley and Dan Ariely, etc.

In the 1950s, G. Simon (winner of the 1978 Nobel prize in Economics) proposed the idea of bounded rationality as opposed to the rational model of man, which is considered in the neoclassical concept. To the questions: do people behave so rationally? Are human cognitive abilities so well developed that all the prerequisites of the neoclassical model are fulfilled? Do psychological and moral factors and external circumstances influence a person's choice? G. Simon gives negative answers [Sheresheva M. Yu., Kostanyan A. A.]. G. Simon considering economic behavior of the person considers his limited rationality and imperfect cognitive abilities [Simon G., 1993].

Kenneth arrow, winner of the Nobel prize in Economics in 1972, also doubted the rationality (optimization) of man. In his opinion, optimization is not a necessary or sufficient condition for the formulation of economic theory [Zlotnikov A. G., 2018, p. 44-49].

J. Akerlof, M. Spence, and J. Stiglitz put forward the concept of incompleteness, asymmetry of information (in relation to the theory of markets) (Nobel prize 2001), according to which people are not well-informed subjects of economic market relations, they act in conditions of incompleteness of information [Zlotnikov A. G., 2018, p. 44-49].

R. Thaler speaks about the limitations of the model of "rational man" and the inability of this model to explain the decisions and actions of people. Whereas irrationality, in his opinion, is systematic and predictable [Thaler R., 2017]. R. Thaler calls Homo economicus (rational man) fictitious, people often behave incorrectly, in connection with which economic models give erroneous forecasts, the consequences of which can be very serious. But the development of economic theory leads to the fact that its subject is a real person, decision-making, which is influenced by a whole complex of factors, both rational and irrational.

Richard Thaler identifies three factors of human psychology that influence the process of making economic and financial decisions: limited rationality, perception of justice (social preferences) and the problem of self-control [Thaler R. H., p. 258].

In General, the possibilities of influence of behavioral Economics as an interdisciplinary science are much greater than the possibilities of, for example, economic theory, psychology, Finance, marketing and other traditional Sciences to explain and predict the behavior of subjects of economic and financial relationships. In our opinion, it is the integration and differentiation of knowledge that is the future of modern science and the fact that research in the field of behavioral Economics influence has been repeatedly noted by the Nobel Committee is a clear confirmation of this.

3 FINANCIAL GLOBALIZATION AND BEHAVIORAL COMPONENT

One of the elements of globalization is financial globalization. M. Golovin defines financial globalization as a sequential process of uniting national and regional financial markets into a common international financial market, which is accompanied by an increase in mutual dependence between the markets of individual financial instruments [Golovin M., 2014] and the law of behavior of objects of economic and financial relations. According to A. V. Ishkhanov, T. S. Malakhova, S. A. Shirinyana the most important manifestation of financial globalization is the elimination of barriers between domestic and international financial markets, and the development of inter-country relations between them [Ishkhanov A.V., Malakhova T. S., Shirinyan S. A., 2011], and as a consequence the formation of a single consumer market with common rules and features based on consumer behavior.

A number of factors contributed to the development of financial globalization at the initial stage, including:

- Global presence of international financial institutions.
- International financial integration.
- Rapid development of financial innovation.
- Financial globalization is developing primarily in the following areas:
- internationalization of financial services of banks, credit institutions and other financial institutions;
- the increase of international investment flows;
- increase the flow of international debt;
- changes in the way financial services are provided due to the development of modern technologies and behavioral characteristics of buyers;
- changes in the structure of financial services markets: new types of financial and non-financial enterprises are emerging, based on the behavioral characteristics of consumers and market participants. In particular, aggregators, telecommunications companies, etc

CONCLUSION

Behavioral Economics is a fairly new concept. Nevertheless, even the theory of supply and demand is based on the description of the behavior of people interacting in the market [Mankyu Ng, 1999, p. 88].

Active development of this scientific direction received after the publication of the works of D. Kahneman and A. Tversky, who proved that people demonstrate deviations from the classical idea of rationality. Later R. Thaler showed the importance of these deviations for decision-making in the field of economic relations. D. Kahneman's perspective theory shows the importance of "framing" (framing), i.e. context, in the process of human decision-making as a subject of economic relations.

Classical economic theory proceeds from the assumption that all economic entities have free access to information, as well as the ability to process this information, i.e. from the idea of the rational nature of man. This approach is convenient for building General economic theories, but the reality, unlike the theory, is not so ideal, the presence of deviations can lead to incorrect conclusions and irreversible errors in forecasting.

Behavioral Economics proves the irrationality of human behavior in making economic decisions and shows the importance of taking into account the factors of economic and psychological nature, as well as the situation in which these decisions are made, to predict human behavior as a subject of economic relations.

Globalization is a complex phenomenon that covers all sectors of human life and the state, and consists of separate elements of political, social, economic, financial.

Behavioral Economics has a significant impact on financial globalization and as a consequence is one of the elements of globalization. In turn, financial globalization is an essential component of globalization as a whole. It is accompanied by significant transformations in global Finance, the introduction of innovative methods of organization and management of financial resources on a global scale.

This is an objective historical process that allows the world economy to develop rapidly.

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«GREEN» ECONOMY – THE ENGINE OF WORLD DEVELOPMENT

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Abstract. The article deals with the issues related to the introduction of environmentally friendly economic systems. The authors conducted a comprehensive analysis of the impact of global warming, air pollution products of life, etc., pointed to the social responsibility of business, affecting the quality of life of the population and future generations.

Key words: «green» economy, ecosystem, biological diversity, natural environment, global warming, environmental pollution.

"Green" economy can be considered as an area of economic science. In its turn, economy is a dependent component of the natural environment, which is its essential part. Also, this area aims at maintaining the welfare of the society, which can be achieved via the efficient use of natural resources. As an example, "green" economy may include eco-transport, energy control systems, waste and emission management, etc. Such an economy has a goal of sustainable development, which includes improving the standard of living of those citizens who live in the conditions of environmental deprivation. Moreover, the fact has its right to exist, that the sustainability of economic development depends on "greening" the economy [1]. In order to do this, such measures as a replacement of outdated equipment, development of waste recycling and disposal plans, emission allowances trade and much more, are taken. The significant potential of "green" economy is in the fact that it may help to reduce unemployment, it may support the creation and implementation of high "green" technologies and it may improve the competitiveness of the economy.

These days, the situation is that the most responsibility for the preservation of the natural diversity lies on the economically advanced countries. It is they, to hold various forums and to organise programs and projects, which set their aim to improve the environment. Thus, the notion of "green" economy is gaining popularity worldwide.

Today, the concept of “green” economy is becoming a worldwide trend and a new global economic model of sustainable development. This concept assumes a harmonization of economic, social and ecological components. In modern conditions, the issues of sustainable socio-economic development, as well as the issues of eco-economic security of the country, are solved from the perspective of rational use of natural resources.

Thus, the primary importance for “green” economy is ecological and economic integration, which puts opportunities for new sources of economic growth to the fore; at the same time, avoiding the pressure on the environment, which may lead to unstable consequences for the quality and quantity of natural resources. Everything abovementioned makes it necessary to implement a wide range of economic instruments.

The efficient use of natural resources is a key element in creating “green” economy in different countries. Natural eco-systems are often considered as a form of capital. Well-maintained natural capital provides the population with highly valuable natural resources. Therefore, to achieve and optimize the use of natural resources, scientists and specialists have suggested several schemes for the development of sustainable economy and improvement: a circular economy, a regenerative plan and etc. [2]. The key instrument for the resource efficiency is the assessment of various aspects of the use of resources (for instance, raw material usage), then the defining of “hot areas”, in which the amount of used resources is high, and how this amount can be reduced.

It should be mentioned, that almost all resources used by man, at a certain point and with certain transformation turn into waste, one part of which is disposed with sewage, and the other enters the atmosphere of our planet in the form of dust, vapors or gases. However, the most part of processed products is solid waste. Experts claim, that since the beginning of the 20th century 80 tons of solid waste only has accumulated in Russia. For the efficient usage of this waste it is incinerated, which can be quite advisable if, when incinerated, the generated heat will be re-consumed by the population.

In addition, an urgent issue of our time is switching of internal combustion engines to the alternative fuel. Apart from environmental preservation motives, this task has economic reasons. The sooner the state begins the transition to such fuel, the more opportunities it has to shape their future regardless of unpredictable world markets of traditional energy sources, which are oil and gas.

It is also important to take into account the polluting effect of the carbon dioxide emissions, which are produced by the population of the planet. Therefore, the reduction of the emissions requires a qualified management of the behavior of people, who are associated with these emissions, as well as the development of infrastructure, which would contribute to the reduction of such emissions. In addition, to intensify this process, it is necessary to establish a managing organization, which would control the level of the emissions. Emission reductions may also depend upon tax policy, pricing and financing.

Thus, it is appropriate to say that the main goal of "green" economy is to preserve the natural environment, as well as, to meet the needs of people, who interact with the outside world. Also, the main priority of such an economy is the welfare and high standard of living for future generations.

Taking into consideration everything abovementioned, it is important to emphasize, that the concept of "green" economy is based on such rules as: investing in the technologies, which are intended to preserve resources and reduce pollutant emissions; reduction of the countries' dependence on resource import; establishing a link between structural and dynamic characteristics of the world economy. These rules are to lead to the well-being not only of the humanity, but also of the environment with its eco-wealth. And what exactly such an economy should be is determined by its principles. They are introduced as a result of global world discussions [3]. They require to be considered in more detail.

1. The principle of sustainability. "Green" economy is a means of providing sustainability. Therefore, this principle reveals the way to ensure sustainable development. Such an economy itself depends on a healthy environment and does everything possible to create high quality of life for the mankind. It covers such goals of sustainable development as social, economic and ecological, as well as forms the strategies, which will contribute to the achievement of the best possible results in each of the presented areas.

2. The principle of justice. "Green" economy supports justice and provides equal rules for all countries. But it concerns not only the countries, but also the generations of residents, who inhabit our planet. After all, "green" economy encourages respect for human rights, contributes to cultural diversity, and gender equality, and also, with special attention, it treats the skills, knowledge and experience, that each person contribute into "green" economy development.

3. The principle of dignity. “Green” economy is a creator of the well-being and prosperity for everybody, and also it reduced the level of poverty. It is aimed at increasing the level of human development in all the countries. What is more, it ensures food security and provides universal access to health care services, education, culture and etc.

4. The principle of a healthy planet. “Green” economy stimulates the revitalization of lost biodiversity through various kinds of investments. As, first of all, it depends on the productivity of ecosystem and biodiversity. It does not violate ecological boundaries and does not go beyond them. Even more, “green” economy obliges everyone to respect these boundaries. This includes the reduction of various kinds of natural pollution, ecosystems preservation, the integrity of natural resources. As a result, efficient and wise use of natural resources is ensured, avoiding the threat to the prospects of future generations. In addition, such an economy assesses the environmental impact of economic policy and aims to find the most beneficial solutions for the environment as well as for people.

5. The principle of participation. The uniqueness of this principle lies in its transparency, as “green” economy is based on scientific research and the participation of all interested people.

6. The principle of appropriate governance and accountability. “Green” economy creates the limits for rational market and industrial control, the results of which can be measured not only at the micro, but also at the macro-level. It facilitates inter-state co-operation and distributes the international responsibility, and also encourages everyone to comply with international human rights standards and environmental agreements.

7. The principle of flexibility. “Green” economy promotes the development of social and environmental protection system, and also shows its willingness to prevent extreme situations and natural disasters, including adaptation to them.

8. The principle of equal distribution of wealth. “Green” economy aims to promote the equitable distribution of wealth within the countries and among them, and also to suppress inequality between rich and poor. Also, it seeks social and economic justice within a sustainable share of world resources without compromising the wildlife.

9. The principle of generations. “Green” economy invests in the present and the future. That is why, it strives to ensure justice between generations, while promoting the conservation of natural resources and the quality of life. Also, it influences the financial sector encouraging investments into green technologies and support of a stable monetary system.

10. The principle of economic justice. Through shared responsibility, “green” economy is aimed to create economic partnerships, to assist less developed countries in financial and technological areas, in order to maintain ecological sustainability of not only developed, but also developing countries. Thus, it makes an effort to narrow the gap between these countries.

11. The principle of internationalization of external effects. The main objective of the policy should be aimed at creating real social and environmental policy. Due to this purpose, market prices should reflect real social and ecological benefits and costs. Regulatory framework and tax regimes should be applied to make “good” things cheap and “bad” things expensive. Thus, the economy becomes clear for ordinary citizens.

12. The principle of sustainable consumption and production. This principle is characterized by the need of introduction of sustainable production and consumption with rational and equitable use of resources. It is also essential to reduce and eliminate unprofitable models of production and consumption. It means to use recycling, in order to preserve natural resources and also to take measures aimed at obtaining benefits for people without causing any harm to nature.

Rational use of natural resources is becoming increasingly relevant around the world. For the first time, eco-friendly economic models were talked about in the 70-s of the 20th century. In 1973 after the world`s oil crisis, the cost of energy resources rose significantly. This is what made the world think about high technology, renewable energy sources and environmentally friendly innovative processes. While the national incomes are increasing, the world is suffering from declining in the the level of environmental sustainability. Therefore, the “green” economy is aimed to preserve natural capital, ecosystems and biodiversity, while ensuring rise in income and employment [5].

South Korea was the first country to support the idea of “green” economy as a national strategy. In less that 50 years it appeared among the strongest economics of the world. However, at the beginning of the 21st century it became clear, that high growth rates and urbanization resulted in tense pollution of biosphere. Therefore, in 2008 the president Lee Myung-bak introduced the strategy of “low carbon green growth”, which lead to the fact that 2 per cent of the country’s GDP (gross domestic product) was allocated among projects, aimed at developing “green” technologies. These include “green” means of transport, recycling technologies, energy and ecological research. Since 2011 a unique system of “green” payment cards has been applied in Korea. While buying food or simply abandoning

cash, Koreans gain points, which can be spent on utility bills or charity. According to the UN, by December 2016, 15 million of such cards were issued. This system is a part of the South Korean plan to reduce green house gasses by 30 per cent by 2020.

The main “green” innovation of France is building of “active houses” or “zero energy consumption houses”. The main feature of such houses is that they consume as much energy as they produce. The very first such house was “Luukku”, which was designed by the students of the architecture department at Aalto University. In severe climate conditions, the outer cover of the building prevents the heat loss. Such a result was possible to obtain owing to an airtight material, as well as heat insulating elements, which do not release the heat.

Australia is also famous for its bright and memorable eco-projects. Here, the largest solar power plant Wandoan Solar Project with a capacity of 1 gigawatt, will be built. Also, Solar City company was successful to win a tender for creation a lithium-ion battery system. The peculiarity of this system is that it will be used as a storage and a back-up source of energy. About 30 thousand of houses will be able to take advantage of this project.

“Green” technology has right to exist in Kazakhstan as well. Here, back in 2015, the “Green” technology center was constructed. Thirty five innovative projects in such areas as organic farming and resource supply are being developed here. About 168 houses already use drip irrigation. Here, a year-round green house works, where different kinds of heating are used. The first “green” business center Talan Towers is built in Kazakhstan, as well. It uses energy efficient elevators, special energy saving glazing and solar panels. The reuse of rain water, charging station for electric vehicles, locker rooms and shower cabins for cyclists, these all are also introduced here. It is the first building, the roof of which stores the heat inside the building, during the cold season, and in the warm season it maintains cool temperature. One more innovation is solar power plants, which convert solar energy into electricity. Such plants reduce green house gas emission into the atmosphere and save fossil fuel. In addition to such plants, Kazakhstan also has wind farms. They are intended to solve the problem of energy deficit and import.

In Copenhagen about 98 per cent of residents receive electricity from thermal power plants, which are operated on household waste and biomass. At the same time, 4 per cent of the electricity consumed by the city is generated by a wind farm. In addition, Copenhagen intends to produce half of the required electricity through the wind energy. In the long term, it is planned to produce 1 per cent of electricity using solar panels [6].

In Russia the employees from Irkutsk invented a wind-turbine of closed type. It represents an aerodynamic construction, which can efficiently use the airflow. Such an installation can be placed in residential areas, as it is noiseless and not dangerous for birds. Expert from Saint Petersburg developed the innovate technology AquaAgrosorb, which helps local villagers save water. This system not only easily tolerate heat, but it also helps to reduce the frequency of watering by at least two times; what is more, plants grow better and ripens faster.

In Tokyo the company KoKuyo is trying to increase the productivity of its employees and reduce the carbon dioxide emissions into the atmosphere by moving workers outside. The company has arranged a garden with trees and a pond on the roof of its office building. There it also placed movable solar panels, which are intended to protect employees from sunlight and, at the same time, generate electricity. The floor of the building around the entrance was equipped with special panels, which save energy from people walking. The office space was designed is such a way, so that some areas could be not illuminated when the light is not used. All these projects should help to reduce carbon dioxide emission by 5 tons per year [7].

Among the largest economies in the world in 2019, the United States of America occupies the first place, with the GDP of 22090 billion dollars. The second place is occupied by China with 14839 billion dollars GDP. Russia takes the last place with only 2498 billion dollars GDP. The percentage of the global GDP is distributed the same way and shows 21,79% in the USA, 14,64% in China and 2,46% in Russia. Making the comparison between 2000, 2013 and 2019 it should be mentioned, that GDP has increased every year in all countries. This analysis shows that the United State and China are the most developed countries in terms of implementation and use of “green” innovations. Due to the facts, that their GDP is the highest, these countries can afford more innovative technologies.

After examining these “green” innovations in different countries of the world, it is possible to conclude, that each country tries to increase the level of well-being of the population and, at the same time, preserve the natural resources, causing minimal damage to them. As, the more the country cares about the population, the more foreign investments it attracts. These investments are crucial for the majority of innovative technologies and developments, including “green” innovations. It is a fact, that if a country has a sufficient amount of money, it can provide financial support to any area of economy. This is the case with the “green” economy, since it is particularly important for all spheres of human life.

According to everything mentioned above, the quality of life of the population and its well-being mostly depend on “healthy” environment and eco-friendly products. It is one of the most essential components of human longevity, as every living thing needs fresh air and healthy food. “Green” technologies are the means to provide those.

The localization of “green” economy issues is one of the main elements of sustainable economic development of any country. However, due to the fact that not all the activities of economic entities are carried out under the state control and are legal, there are losses, which cause harm not only to economic, but also to social and ecological spheres. It should be noted here, that environmental losses appear to a primary factor, which hampers economic processes, that are directly related to the environment. Tight connection binds environmental losses with social ones, which cause a decrease in working capacity of population, the loss of workforce and etc. It should not be forgotten, that all economic losses together can undermine economy of various countries.

In addition to the abovementioned losses, there are global issues, that cause even greater damage not only to nature, but also to people’s lives. That is why, it is worth considering them in detail.

Natural resources depletion is a serious economic issue, which occurred due to the fact that the rate of consumption of natural resources is higher than the rate of their restoration. The main reasons for that are the overpopulation of the planet, the pollution of water, air and soil. The depletion of natural resources leads to the disruption of the circular flow of things in nature. This, in its turn, leads to the changes in the biosphere. The destruction of whole ecosystems, soil degradation, the destruction of living organisms, the lack of food and water – these consequences occur as a result of the resource depletion. Therefore, people tend to use renewable energy sources, such as solar, wind and others. In addition, the use of such sources is less expensive.

The next important issue is waste disposal. So far, the most common method of disposal is landfilling. But this method only makes the situation worse, as the landfills are the sources of infections. Waste disintegration leads to the formation of toxic leachates which fill the soil and also enter the atmosphere and water. Burning garbage releases different kinds od toxic substances. It is obvious, that implementation of the efficient system of collecting and transporting garbage and also its recycling, requires serious financing. It appears likewise obvious, that it will be impossible to get rid of waste completely. But it is possible to significantly reduce the amount of waste and to obtain certain benefits from its recycling. Today, there are two

most appropriate methods of disposal. They are landfill sites and recycling of particular types of waste. While being kept at the landfill sites, the waste transforms into compost, which is further used as a mineral fertilizer. Owing to the recycling of particular types of waste, it is possible to reuse some of it.

Global warming is a process of gradual increase in the average annual temperature of the surface layer of the atmosphere. The causes of this problem may lay in the change of solar and volcanic activity, in the increase of greenhouse gas emissions into the atmosphere and much more. Therefore, the countries are actively struggling with this problem. Implementation of the projects which are aimed against global warming has the highest percentage in North America. Oceania implements these projects by 8 per cent only. Only South and West Asia are catching up with North America, with the project implementation percentage of 20%. These projects are mainly devoted to the energy efficiency of buildings (35%) and the collection and disposal of waste (21%) [8].

One more important environmental issue is the pollution of water, which is essential for the existence of each living organism. But pollution makes it impossible to use water, and existing methods of water purification are not always effective. The main factors of pollution are sewage, industrial waste, farms, oil spills, atmospheric pollution and much more. The shortage of clean water is already evident in the world, and its pollution only exacerbates the situation. That is why, this problem is an already existing threat for the humanity, in particular, the number of deaths because of the lack of water is increasing. However, there are many ways to solve this problem: learn to be more careful with natural resources, create more efficient methods of water purification, implement drainless industrial technologies, reuse purified wastewater and much more. Thus, there will be one less threat for the humanity.

Rapid expansion of urban areas remains a significant problem. This problem is directly related to the “urban ecology”, the objects of study of which are urbanized territories, including detached buildings, neighbourhoods, cities, regions and even countries. The highest percentage of urban population is in the economically advanced countries of Europe and North America, which is more than 70 per cent. In this regard, unqualified management of urban development leads to an increase in negative impact on the environment. This negative impact includes pollution, the depletion of natural capital, the change or destruction of natural landscapes. To avoid such negative impact, the following solutions are introduced: ecological balance between urban and natural environments, energy and resource saving, waste reduction, and much more.

Thus, it is possible to conclude, that ecological situation is one of the most important issues in the world today. It is necessary not only to think about the consequences of human activity, but also to take actions to preserve ecology and the natural capital. Since without fertile soils, fresh air and pure water, vegetation and animals, a human simply will not exist. Therefore, natural resources should be used more efficiently, thereby obtaining the greatest benefit. If the issue of growth is placed first, the solution to the environmental problem is that only a reduction in production and consumption can stabilize the ecosystem. That is why, the decisive factor is not the quantity, but the quality of production processes. After all, in order to consume more, it is necessary to produce more. In this regard, it is crucial to find a balance between production and consumption without causing any harm to the natural capital.

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UDC 336.77(470)

GROWTH OF CONSUMER LOANS IN RUSSIA AS THE MAIN REASON FOR THE BANK CRISIS

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Abstract. In Russia, in recent years there has been a significant increase in consumer loans by commercial banks. It is noteworthy that this increase occurs against the background of a decrease in real incomes of the population over the past five years. This situation is very fraught with the emergence of problems with the timely repayment of received consumer loans and, as a result, an increase in the volume of arrears from Russian commercial banks. The situation that has arisen inevitably leads to a decrease in the reliability of banks and a crisis in the banking system as a whole.

Keywords: commercial bank, consumer loans, arrears, banking crisis.

Today, Russian experts are increasingly concerned about the growing problems of consumer loans in Russia. After conducting statistical studies, it was found that every fourth citizen of our country has a loan or a bank credit card, which he uses [7].

Figure 1 shows the dynamics of changes in credit and overdue debts of individuals to Russian commercial banks in 2015-2019. This figure shows that the rapid growth of consumer lending began at the end of 2017. The average amount of overdue debt in 2018 amounted to 13.3 thousand rubles (a year earlier - 14.4 thousand rubles). Overdue debt amounted to 748.6 billion rubles. or 4.6% of all debt. Overdue debt for the year decreased by 7.7% compared to the same indicator as of July 1, 2018 [8]. Overdue debt continues to decline. Nevertheless, this cannot but cause certain doubts about its objectivity and reliability. In our opinion, this simply cannot be against the backdrop of a five-year decline in real incomes in our country.

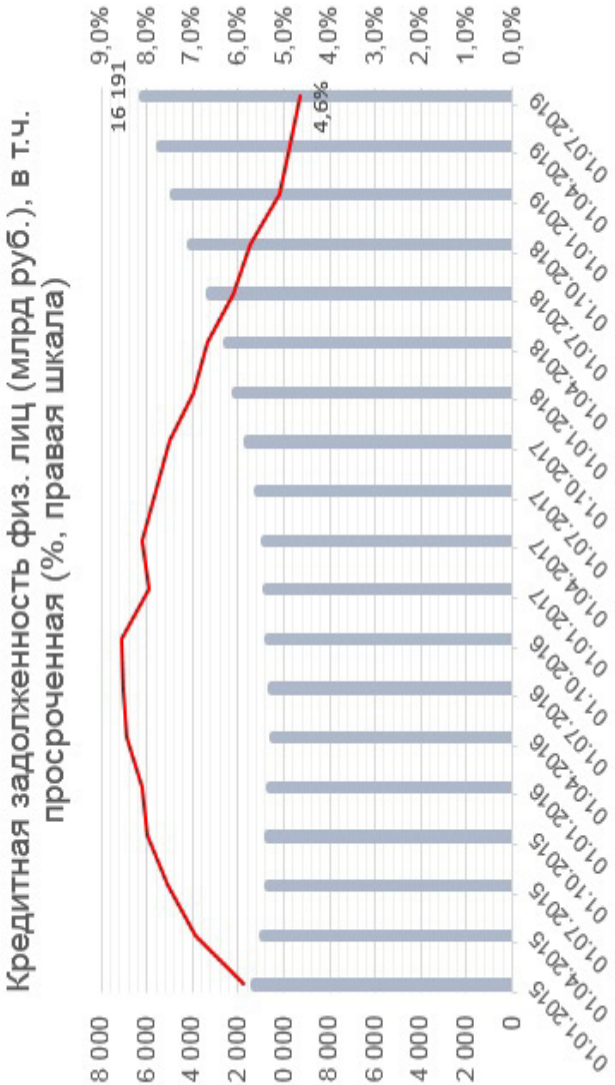

Figure 1. Dynamics of changes in credit (left) and overdue debts (right) of individuals to Russian commercial banks

The debt burden of the population, which began to grow at the end of 2017, was mainly due to consumer rather than mortgage loans. As of October 1, 2019, 39.5 million Russians have loans - 54% of the working population. More than half of them had no loans until 2015, 45% - until 2017 [9]. This indicates that a significant part of the population in the face of falling real incomes of the population took loans, primarily for current needs, in order to make ends meet.

It is possible that the decrease in the percentage of overdue debts of Russian commercial banks since the end of 2016 is due to the following reasons:

- a decrease in the share of overdue debts against the background of an increase in the total volume of the loan portfolio, when the portfolio is growing, and overdue debts have not yet been formed for new loans;
- the ongoing process of revoking banking licenses by the Central Bank of the Russian Federation, as a result of which banks with arrears go out of the market and cease to affect the overall indicator of the arrears of the entire banking system;
- falsification of financial statements by commercial banks trying to hide their real amount of overdue debt;
- the prevailing practice of Russian borrowers to pay off old loans, borrowing new loans [4].

The biggest problem, in our opinion, is that the rapid growth in consumer lending can lead to a banking crisis in our country.

In order to make it clear why the likelihood of such a development of events arises, let us consider in Figure 2 a scheme for increasing consumer lending, reflecting the possibility of a banking crisis.

This pattern of growth in consumer lending can be commented on as follows. People begin to take bank loans due to the fact that they do not have enough funds for any current needs. However, over the past five years, real incomes of the population have been constantly decreasing (table 1). This means that the risks of delinquency in loans begin to increase. Due to the fact that the risks of overdue debts on consumer loans increase, that is, individuals are not able to give money to a bank taken on credit, banks begin to form reserves for overdue loans. This leads to the fact that the profit of banks begins to fall, and after that their capital decreases.

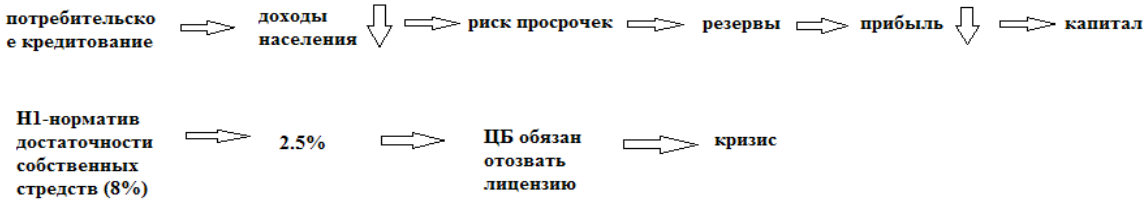

Figure 2 - The scheme of consumer lending, reflecting the possibility of a banking crisis in Russia

Table 1.
The dynamics of changes in the level of real incomes of the population in the Russian Federation in 2008-2018 as a percentage [3]

Years	The rate of change in real income, in%
2008	2.4
2009	3
2010	5.9
2011	0.5
2012	4.6
2013	4
2014	-0.7
2015	-3,2
2016	-5.6
2017	-1.3
2018	-0.2

And if the capital adequacy ratio N1 becomes less than 2.5% (the rate set by the Bank of Russia is 8%), then the Central Bank of the Russian Federation is obliged to withdraw the license from such a bank. If the Central Bank of the Russian Federation revokes licenses from commercial banks, then, on the one hand. there are fewer of them, which in itself seems to be good, but, on the other hand, the number of enterprises, organizations and citizens who have lost their money in such banks is increasing, and all this ultimately leads to a crisis.

The most striking example of the implementation of such a scenario, in our opinion, was the revocation by the Bank of Russia of a banking license from JSC “GreenCombank”, whose head office until recently was located in the city of Usolye-Sibirsky, Irkutsk Oblast [1, p. 12]. The thing is that Usolye-Sibirsky is a monotown typical of Russia, the whole economy of which was based on one enterprise - Usolyekhimprom. The closure of this enterprise led to unemployment in this city. The bulk of the population survived due to random earnings and, oddly enough, due to loans of JSC “GreenCombank”. This could not but lead to an increase in the volume of overdue loans. The constant need to create reserves for overdue loans has led to a decrease in bank capital below acceptable standards. As a result, the Bank of Russia was simply forced to revoke the license from JSC “GreenCombank”.

At the moment, in our opinion, several problems of consumer lending in Russia can be distinguished.

Firstly, it is the low solvency of the population. According to the Central Bank of the Russian Federation, in the first half of 2019, the total debt exceeded 16 trillion rubles (table 1) [2, p.7].

More and more Russians borrow money from commercial banks not for large purchases, but for financing their current expenses. Table 1 shows how much the debt on loans has increased [6, p. 7].

Table 1
Dynamics of changes in the debt of the population of Russia on consumer loans in 2015-2019

Years	Total debt, trillion rub.
2015	10,5
2016	10,5
2017	11
2018	13
2019	16

Secondly, the high debt load of the population that has gradually developed in our country. If a borrower has problems with repayment of one debt, it is very rare when someone starts looking for additional work or selling their things to solve these problems. Most often, people take a new loan to repay the old one, which is fundamentally the wrong decision, which worsens the already not the best financial position of the borrower.

Against this background, Russian banks began to issue loans to pensioners more and more. This is due to the fact that pensioners have a stable income in the form of the pension they receive, on the one hand. And on the other hand, it is this category of borrowers of commercial banks, by virtue of education received in the Soviet era, that has a higher responsibility for fulfilling its obligations to the bank.

According to the data of the National Bureau of Credit Histories (NBCH), in 2019 the average size of consumer loans from borrowers aged 60-65 years old grew by more than 20%, and for those over 65 - by almost 20%, and among young people up to 39 years, the amount of loans increased by 10.5% (Figure 3) [5, p. 3]. The diagram in the figure indicates that the preferences of Russian bankers are leaning toward age-specific borrowers. And this fact only confirms the critical situation in the Russian economy, in which workers cannot have greater reliability in repaying loans than people of retirement age.

Figure 3. - Change in the average growth in consumer loans of Russian borrowers in 2019 depending on the age of the borrower, in%

Thirdly, the low financial literacy of the population, thanks to which it is easy to impose additional unnecessary services or to force to pay those contributions that have already been made. This is especially easy if there is a small debt on the credit account, even a few cents, about which the client was not informed in a timely manner. This debt then increases many times due to interest and fines.

Fourthly, prejudice against borrowers by Russian commercial banks – for many categories of citizens, for example, self-employed, housewives, mothers on maternity leave, students or retirees is simply impossible to take a loan from the bank, because they either do not pass by age or by amount of income.

The problem of consumer credit lies not only in the arrears of payments for consumer loans, but also in the fact that it is not always possible to recover arrears from the debtor from executive production lists. Only 11% of the total amount of enforcement proceedings receive a more positive end and debt collection [7].

In order to solve this problem, it is necessary not only to introduce at the legislative level a more thorough verification of the loan recipient. Along with this, in our opinion, it is necessary to introduce a regressive scale for those who are recipients of loans with a good credit history with lower interest rates, and sometimes introduce relief and cancellation of insurance fees from a reputable loan recipient.

Thus, the problems of consumer lending in Russian banks that we analyzed in this article can lead to a banking crisis in our country. Unwillingness to solve these problems can lead to the most negative consequences not only for the economy of our state, but also to exacerbation of social problems, since consumer lending covers a larger and larger population of our country every year.

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EXTRADITION INSTITUTE IN CRIMINAL LAW OF AZERBAIJAN

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Abstract. In the modern world, the role and relevance of the problems of the institution of extradition, which is at the junction of international and domestic law, is growing. Despite the fact that extradition is one of the oldest institutions of law, the difficulties in its application lie in the fact that there is no uniform approach to the practice of implementing this institution. Numerous international treaties in the field of extradition quite clearly defined the parameters for the application of the extradition institution, but, unfortunately, they could not create uniform international standards for its regulation. At the domestic level, extradition provisions may be contained in constitutions, relevant sections of criminal, criminal procedure or special extradition laws, as well as in regulatory enactments adopted by executive authorities. The domestic regulation of the institution of extradition of criminals in the Republic of Azerbaijan was developed after our state acquired true sovereignty and became a full member of the international community.

Keywords: extradition, extradition of criminals, criminal law, international law, international treaties, the principle of double criminality.

Extradition is a form of international cooperation of states in the fight against crime. Therefore, the institution of extradition of persons who have committed a crime is a combination of regulatory requirements of both international law and national laws governing the transfer of a person who committed a crime from one state to another state in order to prosecute and serve a sentence. At the same time, the regulation of the extradition of persons who have committed a crime is not a simple process; the interests of different states clash in it, which makes it important to unify the criminal laws of states in this matter. Very often, political motives and geopolitical interests of states impede the progressive functioning of the institution of extradition of criminals.

Being one of the most ancient institutions of international law, the in-

stitution of extradition is quite fully studied in the science of international law. The rules governing the extradition of persons who have committed a crime are novels of the Criminal and Criminal Procedure Codes of the Azerbaijan Republic, which came into force on September 1, 2000. In the criminal laws of the Azerbaijan Republic of the Soviet period (1922, 1927 and 1960), this institution was not regulated.

The extradition of persons who have committed a crime is understood as the transfer of one state to another state of persons who are although located on its territory, but committed the crime on the territory of the state to which they are extradited or whose citizens they are.

The extradition institute, based on the principle of "aut dedre aut judi care" (either extradite or judge), is one of the oldest institutions of international law, which began to take shape between neighboring tribes in the pre-state period of development of human society, when in tribal relations the heads of the clan agreed to punish their members for committing acts against another kind or to give them to him. In case of failure to comply with this agreement, the clan was generally considered guilty, therefore, in those days, often those guilty of various illegal acts were simply expelled from their clan, not wanting to bear collective responsibility. It is widely known that historically the first written interstate agreement was an agreement between the Hittite king Hatushil Sh and the Egyptian pharaoh Ramses P, dated 1296. BC, which also contained the rules of extradition [11, 307]. The peculiarity of this agreement was that it was not only about criminals (during this period the extradition institution was often applied to runaway slaves). The ancient sources of the institution of extradition also include extradition treaties between the Greek policy states and between the Roman Empire and Ancient Greece; treaties of Ancient Russia with Byzantium on extradition and punishment; Amiens Treaty on Extradition of Criminals 1802 between England, France, Spain and Holland, etc.

The practice of extradition of political criminals in the Azerbaijani states in the Middle Ages and the peculiarities of extradition of criminals in Muslim law are of particular interest. Thus, the state of the Elkhanids concluded agreements with Egypt and Byzantium on the issue of the escaped subjects from the territory of their states. Extradition in these treaties mainly concerned political criminals. At the same time, Muslim countries did not extradite professors of Islam to states with a different religion, even if these persons were foreigners [8, 43–44].

With the registration of asylum law for political criminals in international law

(the French revolution of the 18th century), the institution of extradition, since the 19th century, has received general recognition in the fight against common crime. During this period, as relations between states developed, the institution of extradition improved. The number of contracts is growing, in which the circle of persons subject to extradition is specified; the criteria and grounds for extradition are specified. The principle according to which persons persecuted for political reasons and, in this regard, having left their homeland, is not subjected to the extradition. The process of becoming some of the rights granted.

The international legal regulation of the institution of extradition in modern criminal law quite clearly defined the parameters of the application of the institution of extradition, gave an answer to the questions that usually arise in this regard in relations between states. Currently, the institution of extradition is unambiguously applied only to persons who have already been convicted, or to alleged criminals, that is, those who are accused of committing a crime. As a rule, extradition is required by the state, the citizen of which is the alleged offender, the state in whose territory the crime was committed, as well as the state that has suffered from the crime.

Issues of extradition are regulated both by international treaties and by the domestic law of states.

Bilateral cooperation of states, being the most ancient form of cooperation, now also plays an important role, because it is at this level that the interests of states on each specific problem are most fully taken into account. The most widespread bilateral agreements on issues such as the provision of legal assistance in criminal matters, extradition of criminals, transfer of convicts to serve their sentences in the country of their citizenship. Sometimes such agreements are concluded by several states. For example, in 1984, the Extradition Agreement was signed by Ghana, Benin, Nigeria and Togo. Among the multilateral treaties in this area, the European (Paris) Convention on Extradition of Criminals of December 13, 1957, signed by the member states of the Council of Europe, deserves attention. More than 20 states participate in it, in 1975. and 1978 Additional Protocols to it were adopted (the Republic of Azerbaijan acceded to the convention and additional protocols on May 17, 2002); Extradition Treaty concluded by the states of the British Commonwealth in 1966; European Convention on Mutual Assistance in Criminal Matters of April 20, 1959; as well as the CIS Convention on Legal Assistance and Legal Relations in Civil, Family and Criminal Cases 1993, part 1 (extradition) of section IV (legal assistance in criminal matters) which deals with the issue of extradition of criminals. In 1990 a universal international act was also adopted in the area of international relations we are interested in - the UN Model Extradition Treaty.

In addition, in the modern period of the development of international

law, a number of multilateral conventions have been adopted aimed at combating certain types of international crimes and crimes of an international nature, which contain an obligation to extradite alleged criminals [9, 15-16]. For example, Convention about the Genocide Crime and its Punishment 1948; Convention about Struggle Against Trade in People and Exploitation of the Prostitution of Third Persons by 1949; 1979 Convention Against the Taking of Hostages; 1988 Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation etc. The Rome Statute of the International Criminal Court (hereinafter - the ICC) of 1998, articles 89-102 of which are devoted to the extradition of persons who have committed international crimes, is of great importance as a source of the institution of extradition in international law [7, 245].

The provisions of these extradition conventions, with few exceptions, are roughly the same. The parties undertake to extradite to each other persons located in their territory in order to prosecute or enforce the sentence. In addition, they more or less detail regulate the procedure that contracting parties intend to adhere to when solving practical issues related to extradition. If the request for extradition was received from several states, the requested state decides on whom to issue, at its discretion (according to the gravity of the act, by citizenship, in the end, by location). Here we must pay attention to the difference between "transfer" and "extradition". According to the Article 102 of the Rome Statute, transfer refers to the delivery of a person by the state to the ICC, and extradition refers to the delivery of a person from one state to another in accordance with an international treaty or national law. The legal meaning of these concepts varies the laws and treaties of extradition states are not directly related to the transfer of persons to the ICC.

As regards the regulation of issues of extradition by domestic law, it should simply be borne in mind that the institution of extradition is not regulated in different states. It is generally recognized that the extradition of criminals is governed mainly by the national legislation of the country to which the extradition requirement is addressed [6, 121].

There are two main types of this institution - Anglo-American (in common law countries, USA, UK, Canada) and European (Romano-German legal systems, including Latin America). The difference: the European institution of extradition is based on a number of clearly defined principles: double criminality, the principle of concreteness, non-extradition of its own citizens. The second (Anglo-American) type of extradition is based on the non-recognition of the immutability of these principles. The main thing is the inevitability of punishment. The European system ensures the legiti-

macy and rights of those issued, but sometimes gives the criminal the opportunity to avoid punishment. Anglo-American - reduces the role of the general principles of law and gives the court the right to decide each case, taking into account some specific circumstances. Extradition of own citizens is also allowed. So, the Anglo-American procedure for the extradition of criminals is based on the priority of the inevitability of punishment, allowing the extradition of their own citizens, and the Roman-German one is based on the priority of clearly defined principles, mostly aimed at respecting the rights of the issued.

International criminal law defines the general conditions for extradition and refusal of extradition. So, the general conditions for the extradition of criminals are: a committed act is subject to the Convention on Extradition; the act is punishable by both criminal laws for a period of more than one year in prison (the principle of double criminality); the extradited person shall be convicted only of a crime for the commission of which he has been extracted; if the death penalty is not provided for in the legislation of the issued state, then the death penalty cannot be applied to the extradition of the offender and his conviction. In certain cases, the requested person is not issued: own citizens (not in all states); in cases of political crimes; if the crime is committed in the requested state; if the person has received political asylum or has already suffered criminal punishment, or was acquitted in court; upon expiration of the limitation period for the commission of an act; if torture and other reasons can be applied to him. For example, under the 1984 Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment no State party should extradite a person to another state if there are serious reasons to believe that he might be at risk of torture there.

At the domestic level, extradition provisions may be contained in constitutions, relevant sections of criminal, criminal procedure or special extradition laws, as well as in regulatory enactments adopted by executive authorities.

The domestic regulation of the institution of extradition of criminals in the Republic of Azerbaijan was developed after our state gained true sovereignty and became a full member of the international community. It should be noted that in the Republic of Azerbaijan the regulation of the institution of extradition was carried out at all these levels.

The constitutional foundations of the extradition institute are contained in articles 53 and 70 of the 1995 Constitution of the Azerbaijan Republic. Extradition issues are also resolved in the framework of the criminal (Article 13 of the Criminal Code) and criminal procedure legislation (Articles

488-505 of the CCP) of the Republic of Azerbaijan. An important role in the legal regulation of the institution of extradition is played by the Law of the Republic of Azerbaijan "On the extradition of persons who committed crimes (extradition)" of May 15, 2001 [9, 432].

It should be noted that despite the fact that many modern states have adopted special laws on extradition at the turn of the 19th-20th centuries, the only state in the post-Soviet space in which such a law is adopted is the Republic of Azerbaijan.

The main purpose of this Act of 2001 is to create a mechanism for the extradition of criminals to countries with which there is no extradition treaty. Moreover, Article 1 states that the provisions of the law do not apply to extradition of a person to international judicial bodies. Establishment of a clear list of conditions of ex-tradition, an unclosed list of mandatory and optional grounds for its non-fulfillment, types of extradition, as well as the application of traditional extra-traditional principles (non-extradition of one's own citizens, political criminals, observance of the principles of double criminality, specificity, inevitability of punishment and the principle "either extradite or judge ", Observance, protection and guarantee of the fundamental rights of the requested person) is enshrined in the Law of the Republic of Azerbaijan on Extradition [5, 29].

A significant innovation in practice is the judicial procedure for considering extradition. Thus, the Court of the Grave Crimes of the Republic of Azerbaijan, on the basis of a request from a foreign state, considers the issue of extradition of a person and takes an appropriate informed decision on this (Article 8 of the Law). A court decision on extradition of a person may be appealed or challenged in the manner prescribed by the criminal procedure legislation of the Republic of Azerbaijan. As an analysis of this Extradition Act of 2001 shows, the general conditions for extradition, as well as refusal to extradite, correspond to the international legal standards.

The contractual practice of the Azerbaijan Republic also includes a number of bilateral treaties concluded in the framework of legal assistance. Thus, the conditions and procedure for the extradition of persons who have committed a crime are regulated in some detail in bilateral treaties of the Azerbaijan Republic on legal assistance in civil and criminal cases, where these issues are usually assigned a special section. Such agreements are concluded, for example, with Russia, Turkey, Georgia, Uzbekistan, Kazakhstan, the Republic of Lithuania and a number of other states. Azerbaijan's contractual practice also includes

bilateral treaties specifically dedicated to extradition issues. Similar bilateral international extradition treaties have been concluded by the Republic of Azerbaijan with Bulgaria, the Republic of Kyrgyzstan, the Islamic Republic of Iran, the People's Republic of China, the United Arab Emirates, Jordan, etc.

In the absence of bilateral legal assistance or extradition treaties, Azerbaijan, like many other states, considers extradition requests, depending on each specific case, taking into account the information received regarding the person to be extradited, the nature of relations with the requesting state, as well as other circumstances, including the severity of the crime for which the person is being prosecuted.

In conclusion of the paper, we should note that the international legal regulation of the institution of extradition in modern criminal law quite clearly defined the parameters of the application of the institution of extradition, gave an answer to the questions that usually arise in this regard in relations between states. The domestic regulation of the institution of extradition of criminals in the Republic of Azerbaijan was developed after our state gained true sovereignty and became a full member of the international community.

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ESSENTIAL CHARACTERISTICS OF THE LEARNING PROCESS IN THE ELECTRONIC INFORMATION AND EDUCATIONAL ENVIRONMENT OF THE UNIVERSITY

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Abstract. The article identifies the main structural components of the electronic informational and educational environment of a university: a higher education institution. A set of technical means (computers, software and information support, databases), local networks operating on the basis of the global Internet and providing remote access to information, as well as computer programs to support the educational process, the features of the educational process (goals, content, methods , forms and teaching technologies), the role of students' independent work in the information and educational environment is noted, the results of evaluating the effectiveness of student learning are presented through the use of computer tools.

Keywords: Informatization, electronic information and educational environment, e-learning, open online training courses, Internet technologies, goals, content, training technologies in the information and educational environment, assessment of the results of using the environment in training.

The increase in the socio-economic, scientific and technical flow of information, the use of information and computer technologies required the informatization of the educational process in both middle and high schools. Informatization has become a global, civilizational process, an integral resource for the life and work of modern humanity, which has entered into information civilization. It is due to the social order of society, which requires the training of specialists who are able to navigate in huge information flows.

The process of informatization in our country has reached such a level that under its influence conditions are created for the intensive targeted

use of information technologies in public life, in education. This led to the search for new teaching methods and techniques, the widespread involvement of computer technology in the university's educational process, from computer presentations on training courses to the use of digital technologies, and ultimately to e-learning for students [9]. The Concept of Informatization of the Education System of the Republic of Belarus for the period until 2020 states that "e-learning is a student-oriented approach to the use of multimedia technologies and the Internet to improve the quality of education by facilitating access to resources and services, as well as to remote information exchange and interaction" [3, p. four]. In English literature, the researcher R. B. Kozma notes the term computer learning (CAI), which indicates either the type of software for education or the type of educational process [4, p. 29].

The use of information technology increases the efficiency of the educational process, which is becoming more flexible, intensive, focused on self-knowledge and self-education. With full right it can be argued that there is a formation of cross-border information and telecommunication networks that provide mobility in education, unlimited opportunity to receive new information and translate it into new knowledge. It is becoming apparent that more traditional methods will be integrated with information technology. The m-learning system, the use of the Internet, gadgets, etc. are gaining great popularity.

In this regard, there is a need to create open online training courses, new electronic training materials, new technologies (consumer technologies; digital strategies; breakthrough technologies; Internet technologies; learning technologies; technologies of social networks, visualization technologies) [2, p.12].

When solving tasks of a problematic character in theoretical mechanics at the Faculty of Mechanics and Mathematics of Belarusian State University, students use the Mathematica computer system [6, p.139]. In addition, it is recommended for students to use alternative training courses of other universities represented on the couser platform. Of course, computer technology has become an integral part of the educational process. As noted by Belarusian scientists (V. A. Gaisenok, S. I. Maksimov, I. V. Brezgunova), "Internet information resources and servers are becoming more accessible and flexible, which has led to the emergence of new forms of provision and organization of training, such as massive open online courses (MOOC), virtual (wikis) departments, faculties, universities" [1, p.20]. The availability of alternative training courses is a valuable source of knowledge of the highest quality.

All this substantiatesthe creation of the electronic informational and educational environment of the university. The electronic information and educational environment of the university includes a combination of technical means (computers, software and information support, databases), local networks operating on the basis of the global Internet and providing remote access to information, as well as computer programs to support the educational process. The electronic information and educational environment helps to increase the effectiveness and quality of students' training in theoretical mechanics in a classical university by realizing the capabilities of computer tools, ensuring continuity, deepening interdisciplinary connections, creating a methodological system for teaching students [7, p.20], and also makes it possible to quickly receive , process, save, re-process, transmit and display information in texts, video documents, graphic images, animations. The effectiveness of its implementation is achieved by reducing the time spent searching and transmitting the necessary information.

In the electronic information and educational environment, the educational process is significantly different from the traditional. First of all, in the electronic information and educational environment, more clearly the educational goals of students are manifested. U.N. Slepko study, in which qualitative results of educational goals of students' activities are presented, revealed four groups of goals-outcomes - 1) related to training, 2) professional development, 3) personal development, 4) external to learning at a university and further profinalization [10, p.173].

Surveys of students of the Faculty of Mechanics and Mathematics of Belarusian State University (230 students) showed that throughout the entire period of study at the university, the most significant learning goals are: to study well and get excellent professional training (65.7%), to develop their creative abilities (48, 7%), to find a prestigious and well-paid job (39%), to be creatively realized in the profession (25%), the desire for personal development (30%), to seek self-education and self-improvement (25%), to facilitate communication in the group (18%).

The study showed that in the first place in importance among the students surveyed are the goal of professional training, and in the second - the goal of personal growth and the development of creative potential.

In the learning process, it is important to ensure that students understand their purpose and its concretization (for example, to set a goal to master a profession and get a “red” diploma, take an internship at a prestigious university in their specialty, in order to know the level of their professional training and their readiness to improve it.

Students' opinions on the motives for obtaining higher education at the Faculty of Mechanics and Mathematics were revealed: obtaining prestigious work (43%), mastering special knowledge to become a professional (31%), becoming a high-class programmer (28%), expanding your horizons in the field of computer technology (21%), become an erudite specialist (17%).

In terms of content, the electronic information and educational environment forces teachers to structure the content of the discipline, use new information resources, prepare presentations, electronic textbooks, use global computer networks and new educational information from around the world, and receive the necessary advice from leading experts in the required field of science.

The main organizational and structural changes in the content of education in the electronic information and educational environment consist in the transition to phased training of specialists, the implementation of substantive and normative changes related to the systematic updating of curricula and training programs; scientific and methodological support of the content, forms and methods of teaching students in the electronic information and educational environment.

Research of D.G. Medvedev showed that for the successful training of a future specialist in the electronic information and educational environment, it is important "to realize and understand not only the essence, the internal structure of the educational process, but also the underlying patterns on which it is built" [8, p.30]. The author revealed the features of the laws of the educational process in the electronic educational environment and showed the relationship between the laws and the principles of teaching available in didactics, substantiated a number of new principles inherent in the electronic information and educational environment. Among the latter, there are: the principle of selectivity and the appropriateness of using information technology in the training of specialist mechanics, the principle of visualization, the principle of personality-developing interaction, the principle of variability; principle of ternary; the principle of dynamism of management and self-management by the learning process [8, p.30].

The organization of education is undergoing significant changes: new forms and methods of teaching students, transmitting and receiving information are emerging. An ordinary classical lecture in the electronic educational information environment takes on new angles. So, Professor V.L. Lekhtsier notes the importance of lecturing the presentation of educational material based on the consideration of “new civilizational factors inherent in the digital age” and he further emphasizes that “at the stage of preparation for the lesson, and during lecture communication itself” [5, p. 63] these factors should be considered.

In the practice of teaching students, problem lectures, visualization lectures, lectures, practical and seminar classes with feedback are widely used. To do this, the student receives a card with questions on a well-developed topic and answers them. In the practice of working at the university, forms of blended and inverted learning are used, the essence of which is that students listen to lectures recorded on video or audio at home or at the university during extracurricular time, and in the classroom, they discuss problems posed in lectures or in networks.

It should be noted that in the electronic educational environment, along with traditional methods, interactive teaching methods are used: the problem statement method; training discussions; case study; group work; brainstorming method; Trivia mini studies; business games; role-playing games, etc.

At the Faculty of Mechanics and Mathematics of Belarusian State University, an electronic educational and methodological complex (EEMC) has been developed, which includes regulatory, theoretical, additional, auxiliary and control and diagnostic sections.

The mechanism for organizing the current control of knowledge, skills of students is an important component of the learning process. The control and diagnostic section contains, for each topic of the training course, tasks for self-control, as well as test questions, tasks in the academic discipline for control [6, p. 151].

An integral component of the modern educational process in a university is the independent work of students, which is assigned one of the important places in teaching students in electronic information educational environment. After all, the computer has now become one of the most important tools for organizing the independent work of students. At the same time, it is important to teach students to acquire knowledge independently through hard work , which in the future will turn into a real driving force.

Independent work in the electronic information and educational environment involves the student mastering the ability to self-organize his activities, ensuring his preparation for the transition from a passive consumer of knowledge to an active creator who knows how to formulate a problem, find ways to solve it, get the optimal result and prove its correctness. All this allows us to conclude that at the present time there is a transition from the paradigm of passive learning to the paradigm of focused self-learning and self-education.

Thus, the creation of the university's electronic educational information environment, which includes a combination of technical facilities, local networks, the global Internet, the ability to access information remotely enhances the effectiveness and quality of student learning at a classical university through the implementation of computer facilities, ensuring continuity, and deepening of interdisciplinary relations, the creation of a methodological system of student learning; increased the requirements for the training of future specialists, revealed the specifics of the goals, the content of methods and forms of organizing the educational process in the electronic information and educational environment of a classical university, determined the implementation of the didactic capabilities of information and computer technologies in teaching, changed the essence and content of students' independent work in the computer educational environment.

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THE EVOLUTION OF THE DEVELOPMENT OF RESEARCH ACTIVITIES OF STUDENTS IN HIGHER EDUCATIONAL INSTITUTIONS OF ENGLAND

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Annotation. The article analyzes various aspects of the system of higher pedagogical education in universities in the UK, examines the types of universities, the features of the pedagogical process in British universities, its content, structure and functions.

Keywords: higher pedagogical education, university, pedagogical college, teacher training, education reform, pedagogical conditions.

Education in Europe began with a desire to learn biblical truth, so reading and interpreting the Bible, church chants, and understanding the rite of worship were the only incentives for opening the first medieval educational institutions. The University in England, as well as throughout the world, emerged as an institution of European culture, as a product of the Christian West of the 12th century, as a unique phenomenon of the Middle Ages, which has no analogues in the time that preceded it. However, in England, the higher education system was not associated with the interests of public service, but was more subordinate to the Church of England. Royal power and church hierarchy played a very large role in the emergence and development of education in England. So, the first colleges are opening at Oxford University (Balliol College 1249, Merton College 1264). Despite the fact that the system of higher education has been constantly changing, Oxford and Cambridge still held a leading position in the academic hierarchy of England, since, "it is in them that the traditional English ideas of genuine universities, carefully cultivated by the ruling circles, are most deeply embodied" [1;6;7].

The first universities awarded academic degrees, the acquisition of which was evaluated in the spirit of apprenticeship and knightly education. Sometimes graduates, like knights, were crowned with loud titles, for example, "Count of Law". In the academic degree, the "master" is not difficult to guess the title that the apprentice's apprentice received. Professors and students were in the relationship of masters and apprentices.

English industrialization is sometimes called insane: production growth is fantastic, the situation in commerce is a trade explosion, and in demography, it is a big biological stress. During this time, most European educational institutions were no longer able to meet their educational needs; a new time required a change in the training system of a new generation of researchers. However, outdated teaching methods continued to dominate the universities, there was no connection between science and the needs of society, and in order to satisfy the needs of the New Age, it was necessary to radically change the education system as a whole. In order to interest young people in scientific knowledge in educational institutions, numerous societies began to be massively created: literary, discussion clubs, political reform societies, research societies. Students were increasingly interested in science. Applied sciences were completely excluded from the cycle of subjects, therefore, the idea of creating scientific societies in universities led to the active involvement of students in research activities.

So, in the first half of the 19th century, the University of London was created in England (1836), the largest university in the country, which incorporated dozens of schools, institutes, colleges, but each of them was actually an independent educational institution. In the process of merging several colleges, schools and institutes, federal universities appear - Wales (1893), Darham (1832), Lancaster. On the basis of university colleges, “red brick” universities appeared (Redbrick), the main contingent of which were graduates of local schools. It is interesting that from the moment of birth, each university had its own “Royal Charter”, which allowed it to develop and approve curricula, define a system of assessing students' knowledge, and award academic degrees. The most famous among them are universities created at the end of the 19th century: Nottingham (1879), Lida, Sheffield, Liverpool (1879), Birmingham (1890), Manchester (1891.). During this period, the first full-time pedagogical colleges were created in England, the first pedagogical departments of universities were opened.

During this period, almost all European universities experienced a period of relative "stagnation", their curriculum still offered academic subjects of the "classical" cycle and met the needs of politicians, lawyers and priests. The industrial revolution, which engulfed England in the 19th century, put the country before the need to train experienced managers and administrators. To this end, in 1836, the University of London was established - the largest university in the country, which incorporated dozens of schools, institutes, colleges. In the process of merging several colleges, schools and institutes, federal universities appear - Wales (1893), Darham (1832), Lancaster. The situation changes radically at the end of the 19th century. Higher education was predominantly

represented by institutes of mechanics and evening schools of a higher level, which no longer corresponded to the constantly growing needs of industry for highly qualified personnel. The British Parliament adopts the "Law on Technical Education" (1889), according to which new educational institutions appear in the country, and all existing technical schools were to be subordinate to the counties. In these regional higher educational institutions (City University (1891), Surrey (1891), Batsky (1894), Aston (1895), Salford (1896), Startlide (1796) and Geriot -Uotsky (1821), the main place in the content of training was given to subjects of the scientific and technical cycle. During this period, the first full-time pedagogical colleges were created in England, the first pedagogical departments of universities were opened. In 1864, the Northampton Institute was founded, which in 1900 became the College of Engineering. At the end of the XIX century, Nottingham (1879), Lida, Sheffield, Liverpool (1879), Birmingham (1890), and Manchester (in 1891) universities were created. In the middle of the 19th century, a model of the intellectual university (J. Newman) was born, the activity of which has recently become widespread. In the UK, a complex infrastructure of higher education institutions has developed, focused on the scientific activities of creative youth.

Of course, the 19th century is sometimes called the "Age of Great Britain" when the position of a country with a highly developed economy dictated certain requirements for the organization of education and its implementation, including in the following areas: training highly qualified specialists for various industries; administrative training; implementation and training of the scientific elite. However, the main goal of British universities remained the reproduction of professors and universities did not seek to conduct research as it was in German universities. Later, the universities of Great Britain nevertheless adopted the German model of research activity.

The 20th century is an era of intensive development of the traditions of English, German and French universities associated with scientific, industrial and socio-democratic trends. Changes began to occur in the education system, in the practice of university education, the right of students to engage in research activities, the choice of elective courses, and teachers to conduct copyright courses began to be realized. Similar changes are reflected in regulatory enactments: 1953 European Convention on the Equivalence of Diplomas. The 1954 European Cultural Convention, in which the priority was to develop European culture, conduct joint actions in the field of scientific research, and increase the volume of state financing of higher education. However, according to representatives of the idea of a classical university, these innovations posed a threat to the quality of education and the conduct of basic scientific research [2].

A significant place in the development of the system of training highly qualified specialists in Europe in the 20th century is occupied by the modernization of higher education, the rapid increase in specialized institutes and professional schools. A characteristic feature of this period was the reform of the higher education system of European countries in the context of the Bologna process, the main European and world trends. However, the educational reforms of European countries were aimed more at eliminating national and social problems than at integration in the education system. Universities were still lagging behind in quantitative terms, there was a shortage of faculty, and research activities needed to be systematized.

In this context, the main goals of higher education were formed:

to prepare not only a specialist, but also a person of a scientific culture, that is, in addition to obtaining a higher education, it is necessary to form a broad outlook, attract capable students to research activities; strike a balance between research and training. Scientific research is an important function of higher education and the learning process will be more effective if its participants possess scientific methods of cognition; It is important not only to increase the number of educational places in higher educational institutions, but also to be the guides of new ideas, to create a special scientific, creative atmosphere in the region.

To achieve these goals, the main measures were taken to remove the higher school of Europe from a critical state: expand the higher education sector through the formation of new universities, scientific schools, research laboratories, centers; increase the period of study for obtaining the first academic degree to four years and its provision with research training of future specialists.

The beginning of the 60s of the XX century in Europe was marked by the rapid development of higher university education, an acute shortage of highly qualified personnel began to be felt. For example, in England, the proportion of people with higher education was only 6% of the total active population, while in the United States - 19%, in Japan - 15%. Almost 87% of the top management personnel of large enterprises did not have higher education, universities were no longer able to respond to the situation in the country.

Analyzing the state of higher education of this period, it should be emphasized that in England in the middle of the 20th century there was a tendency to increase the number of universities: from 1965 to 1975, the number of educational institutions in the country doubled: 23 universities were opened (based on university colleges) - Essex, Lancaster, Kent,

Ulster, Warwick, etc. All the universities of England in the years 60-70 began to be divided into universities, colleges of higher education and, in part, further education colleges that provided higher education services. In 1969, the Open University was established - one of the first mega-universities, which has become a leader in the field of distance learning, offering hundreds of diverse programs to students from all over the world. The most popular universities in the country, Oxford, Cambridge, and London, continued to be in greatest demand, in which the characteristic feature of the curriculum was the destruction of traditions in the organization of the educational process, in particular: firstly, the introduction of new combined training courses; secondly, training was conducted on integrated courses in a combination of natural and humanitarian disciplines. For example, about 80 combinations of subjects for study were offered to students at the Humanities Faculty of Leeds University: 10 of them were courses in one subject (English, history and classics), 70 - courses in two subjects (Arabic and English, Arabic and French, Arabic language and religion, Arabic and Spanish, etc. At the University of Birmingham, the Faculty of Humanities proposed, for example, studying the Russian language in combination with English, French, Italian, history, geography, etc. [3;5].

In the second half of the 20th century, on the recommendations of the committee of K. B. Robins, a new type of higher educational institution was created - the technological university, which included 10 former colleges of advanced technology. During this period, a total of 10 technological universities were opened. In the years 1969-1970, 30 polytechnic colleges appeared, which included the College of Arts, commercial and technical colleges. A binary system is being established in the country, which determined the distribution of higher education into two sectors (university and non-university), which differ in quality and amount of educational preparation, amount of state funding, degree of control and autonomy. By the middle of the 20th century, funding for science reached 6.5% of GDP [4]; only 15% of all comers could enter higher education institutions and become students.

Due to globalization and integration processes taking place at the end of XX - beginning. XXI centuries in all the countries studied, the trends in the organization of students' research activities acquired the following characteristics: a radical restructuring of the system of higher pedagogical education was outlined; with the increase in universities, the emphasis is on improving the quality of the educational component, increasing

the requirements and effectiveness of the preparation of students' research activities; increased competition for the quality of scientific research between European and other countries of the world. The new system of training for future specialists reflected the characteristic features of a foreign higher pedagogical school, as well as national features due to cultural traditions, the level of economy and technology. If during the entire development of universities pedagogical education occupied a modest place, in recent years the center for the training of pedagogical personnel in the studied countries has shifted to universities. However, modern studies determine that, in contrast to the foreign experience of students' research activities, which is based on various conceptual models of European countries and is determined by historical, economic and cultural factors and the development features of higher education institutions, for domestic theory and practice of higher education this problem is extremely relevant. Thus, the main feature of all educational institutions in Europe, the third stage was their flexibility, accessibility for a wide range of people and the ability to quickly respond to educational changes that took place in the country.

In each of the studied countries there are features of professional and pedagogical education: in England (universities, colleges of higher education, colleges of further education, polytechnic institutes, technological universities); in Germany (specialized educational institutions based on former engineering and special institutes, specialized (professional) universities, pedagogical, theological universities, higher schools of management and the arts); in France (universities, institutes of higher education, “big schools”, colleges), but, of course, the university is the only institution of higher education in which future specialists are trained for research activities.

But along with this, there were shortcomings in higher education that impeded progressive processes in this area: firstly, most university teachers did not have the proper level of education and high qualifications; secondly, educational and technical support did not meet all the changes that took place in the country. At the same time, the various processes of modernization in the higher education system in the countries studied, the study of the experience of organizing research activities of students in European countries are of particular importance for determining the features of modern higher pedagogical education in Europe, which will determine the ways of harmonious modernization of higher education in Russia.

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GRUNGE STYLE AND ITS INFLUENCE ON PROCESS OF FORMATION OF RUSSIAN SPEECH STANDARD

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Abstract. The article describes the new (grunge style) slang and discusses its influence on the process of formation of the speech norm of the Russian language. Speech practice in social networks as a way of penetrating new units into a normalized language and strengthening new word-formation and syntactic models in it. The formation of perception of the surrounding reality through information technology. The danger of public approval of low speech culture, expressed in literary and theatrical pop art.

Keywords: normativeness of speech, the formation of the speech norm, of «grunge» style in Russian, wordplay, information technology, social networks, a decrease in the level of education.

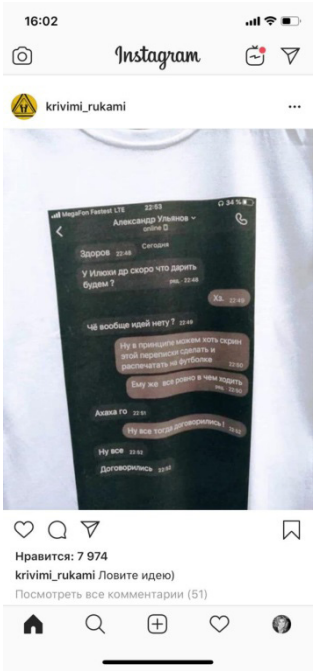
The language norms of any language change and are codified after speech norms, which mirror the state of society at a certain stage of development. We can say that the speech culture of the people – is a reflection of their spirituality, a characteristic of their moral values.

At different periods of language development, the literary norm has qualitatively different interactions with speech practice. In the past historical periods of the democratization of the literary language, that is, the periods when a wide mass of people who did not speak the literary norm became familiar with it, the conservativeness of the normative tradition, its resistance to innovations weakened, and elements appeared in the literary language that the norm had not accepted until then, qualifying them as foreign to normative language.

In our post-Soviet space, processes are happening that are opposite to those just identified. The democratization of society led to the fact that the majority of the population brought up by the Soviet school and adopted the literary norms of the language thanks to the compulsory reading of Rus-

sian classics published in large publishing houses (after checking the texts by editors and proofreaders!) Began to lose literacy skills and went after that minority, which promoted freedom of expression in all possible forms. As a result, there was first a decrease in the linguistic-stylistic norm, and then a conscious rejection of it under the slogans of permissiveness of the so-called "Olbanian language".

Slang, which appeared on the Internet in the late 90s of the 20th century - the beginning of the 2000s, during the rebellion against the previous social foundations, is characterized primarily by anti-normative spelling and some lexical innovations that initially appeared as elements of a wordplay, a kind of linguistic creativity. Slang became fashionable, the site udaff.com appeared, which became a kind of center, bringing together those who liked this slang and who actively used it. The success of the site was largely due to the commenting system, where the well-known *«аффтар жжот»*, *«исчо»*, *«убицца апстену»* etc. first showed up.



A deliberate deviation from the norm was dictated by the desire of Internet users to achieve communicative freedom in a particular social environment. To express irony and ridicule, methods of a language game began to be used, designed to testify to the freedom of treatment with speech norms and ignoring normative settings. (1) In the process of a wordplay, a deliberate violation of the word-formation standard occurs in order to most effectively influence the reader/listener. «Olbanian language» was also originally a variation of a wordplay, reflecting the creative abilities of the communicants who used this slang.

With the help of the Internet, a mean of convenient public communication, this "Olbanian language", "yazyk padonkaff", quickly gained fame and popularity. The peak of public interest in this phenomenon falls according to A. Berdichevsky on 2004-2006. (2) However, by the end of the 2000s, Internet users began to write less "padonkafsky", perhaps due to the fact that "writing and making mistakes every time it is possible" (Maxim Krongauz) is quite hard, and reading such texts is difficult. (3)

Now researchers say that the “Olbanian language” has outlived itself and died. In our opinion, this is not entirely true. We believe that this slang has transformed into a new shape in the wake of fashionable grunge-style clothing.

Adherents of the grunge style call it impudent, and the appearance of this style is considered by them as a protest against glamor – a demonstration of luxury and external splendor. The grunge style at first existed only in rock music, then it was transferred to clothes, and later to interiors. And now, in our opinion, it has settled in a speech, not only of youth, but also of different age groups. Increasingly, in comments on social networks, in private correspondence online, you can find abbreviated versions of words based on the phonetic principle of spelling, but not completed to the full regulatory analogue: *«ща» (сейчас), «канеш» (конечно), «прям» (прямо), «хор» (хорошо), «оч хор» (очень хорошо), «чо» (что), «тя» (тебя)* etc. Sentences made up of such words most often do not contain punctuation marks, although they can be “decorated” with commas, as a rule, placed randomly.

The adoption of anti-glamorous, «tattered» clothing style by almost all residents of different countries of the world is surprising and alarming. Everyone see that it is graceless, untidy, ugly, but nevertheless put on ripped jeans, shapeless T-shirt and sweaters, with holes in all possible places, because «it is fashionable». And the fact that it does not (and cannot!) adorn anyone and accustoms one to carelessness in different areas of life, for some reason, does not concern anyone.

The fashion of negligence has already penetrated speech interaction and has firmly established itself there. It is difficult to call such speech behavior a speech culture, since the concept of “speech culture” presupposes the possession of linguistic norms in pronunciation, emphasis, word formation, word usage, and the ability to build logically connected text in different conditions of communication in accordance with the purpose and content of speech. All this is absent in texts written in the style of «grunge».

As a result of our survey of different age groups of people with higher and incomplete higher education, it turned out that in the speech style, which we called «grunge» in relation to the speech behavior of Russian speakers on the Internet, there is currently a clear conscious tendency to spelling violation without violating pronunciation, partial or complete rejection of punctuation marks. It is possible that this is primarily due to the fact that many Internet users simply do not remember the spelling rules or do not have enough knowledge in the field of Russian grammar. Using shortened forms of words and sentences, they cover up their ignorance by following the fashionable style of speech interaction.

In our opinion, the "grunge" style in Russian speech, although based on the grammatical incorrectness of the "Olbanian language," nevertheless differs from it. In the «Olbanian language» there is a lot of wordplay, conscious word-making, the desire to be as original as possible. The grunge style is primarily distinguished by the negligence of the native language, the desire to use shortened forms of word variants formed by transferring phonetic sound into the written text. "Torn" words are like torn clothes, carelessness in syntax - is like "freedom" of combining incompatible wardrobe items. A complete disregard for the rules of spelling and punctuation follows the «relaxedness» of the behavior of adherents of the «grunge» style.

As an example, we give a screenshot of a conversation, kindly provided by a student at the Plekhanov University of Economics.

As we see in this example, the «relaxedness» of written speech in social networks affects all the mechanisms of the Russian language – from word formation to syntax. And there are hundreds of such examples.

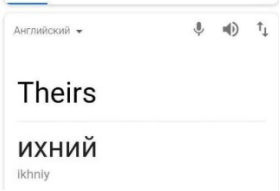
Over the past 10-15 years, greeting in the form of a genitive has become frequency in virtual space: *«Доброго времени суток!», «Доброй ночи!».* Traditionally, the genitive in Russian is used when parting: *«Всего доброго!», «Всего наилучшего!», «Счастливого пути!», «Приятного путешествия!», «Хорошей дороги!», «Спокойной ночи!», «Сладких снов!»* etc. Greetings in the genitive form now began to appear as a replacement for codified forms, for example: *«Доброго утра!»* instead of *«Доброе утро!»*, *«Доброго вечера!»* instead of «*Добрый вечер!».* It is possible that similar new designs with genitive form will soon become normative.

A very peculiar false-polite construction *«можно, пожалуйста»* is also widespread, both verbally and in writing. The users of 'Ok Google' search engine often use voice commands such as: *«можно пожалуйста игры», «»можно пожалуйста песню...», «можно пожалуйста страшилки»* (punctuation of written internet requests is preserved) and so on. The same

request form has been transferred to normal real, not virtual communication, for example: *«Можно, пожалуйста, стакан воды?»*. Here, the conversation participant asks for a glass of water, combining two different types of sentences into one: *«Можно стакан воды?»* and *«Дайте, пожалуйста, стакан воды!»*, expressing both a question and request. Erroneous word replacements also signal falsely understood politeness *«последний»* to *«крайний»*, *«садитесь»* to *«присаживайтесь»*, *«есть»* to *«кушать»* etc. How great is this influence and what will its effect on the language be, time will tell.

Information technology has firmly entered our lives and is already affecting the formation of our perception of surrounding reality. It is difficult to imagine the modern world without a mobile phone with advanced features and even more so without a computer. Almost all letters, business documents, various texts - from simple greetings and farewells to multi-page novels and scientific works - are created using a computer, and real communication is often replaced by virtual. Search for any information, as a rule, is carried out in the Google system. So imperceptibly from the category of "just an assistant", the computer (and its many variations) passed into the category of "indispensable assistant", and then "adviser". And we accept these advices, moreover, follow them. This way, information technology shapes our worldview and our speech behavior.

A decrease in the linguistic-stylistic norm occurs before our eyes and with our participation. It is likely that in the near future the innovations that appeared in free speech will penetrate not only electronic dictionaries (this has already happened, for example, with the word *«ихний»*), but also academic ones: first as an acceptable option, and then as a literary norm. How legitimate are these words as normative? This question requires a detailed analysis.



The grunge style in the Russian language is far from being as harmless as it might seem at first glance. The negligence of parents in handling the language entails the same negligence on the part of our children. Already now, schoolchildren write in their essays *«чёнить»* instead of *«что-нибудь»*, *«какнить»* instead of *«как-нибудь»*, *«канеш»* instead of «*конечно*» etc. It is difficult to blame our younger generation for repeating the mistakes that we ourselves replicate in electronic networks. It is difficult for children to distinguish literate from illiterate writing, as they do not yet

have the stable skills in the field of grammar, which are formed at school, but not always successfully.

Without going into a detailed analysis of the educational standards of different countries, we note that the Soviet system had a number of advantages over them, as previously foreign teachers have repeatedly stated at international conferences. At present, the Russian educational system follows, perhaps, not the best examples of training programs borrowed in other countries.

Following the foreign experience in the study of the humanities, the style of teaching the Russian language and literature in the Russian high school has changed. As a result, students began to read less, even less analyze what they read, and based on this, synthesize their own conclusions. Even the publication of fiction in the last 30 years has sinned with grammatical errors, since many works are published either in the author's editorial office, or with the participation of not quite competent editors. The post of proofreaders in many publishers has long been abolished, as modern computers have a function of auto-correction. However, computer editing helps only in cases of obvious errors in spelling words and is far from consistent correction of other spelling and punctuation errors.

We have become very dependent on the software of modern computers. And who makes these programs? Our former graduates, sometimes not getting enough knowledge at the university. The mistakes made by them are replicated due to a large number of computer users, becomes frequent, and now is a new applicant for the speech norm. It is well known that in the process of updating the linguistic-stylistic norm, the prevalence and frequency of the use of a particular innovation in speech practice is of great importance. In order for the speech phenomenon to become normative, the following conditions must be met:

1) the relative stability of this method of expression;

2) regular use and prevalence;

3) the correspondence of this method of expression to the custom and the capabilities of the literary language system;

4) public approval.

The last point – approval – more than others demonstrates the level of speech culture of society. The future normative base of the language depends on what the educated part of society accepts (scientists, teachers, writers, public figures, etc.). And we see that here, too, not everything is great.

Let us turn to the works of V. Pelevin, Z. Prilepin, V. Erofeev, V. Sorokin and see that the obscene vocabulary is present there in large volume. The

debate about whether its use on the pages of books is justified has been going on since non-literary words began to appear on paper. For abusive vocabulary to harmoniously fit into the text of a work, you need talent, the skill of the author and a sense of proportion, say some literary scholars. To show the life of Russia in the 90s (Generation P by Victor Pelevin), the characters of teenage revolutionaries (Sankya by Zakhar Prilepin), tell about the fate of Venichka's booze (Moscow-Petushki by Venedikt Erofeev) and look into the future with characters the novel «Blue Lard» by Vladimir Sorokin, obscene vocabulary and relishing of explicit scenes are not required at all, it is enough to do with descriptive turns, other researchers think. But both those and other critics allow the publication of literature of this kind. And if such books are printed, that means this kind of literature is approved by society, and the lexical content of these works can be accepted, repeated and replicated.

The fact that the concerts of the «Leningrad» group are held with the same full house in all cities of our country also speaks about the acceptance by the society of texts with non-literary vocabulary. Using obscene vocabulary has become a kind of calling card of this group. Can we talk about the depth of thought expressed in this way in the lyrics? How justified is the use of this vocabulary? For which speech characteristics and which heroes is this necessary? All these, in our opinion, are rhetorical questions. Musicians simply fulfill the social order of a society that is ready for speech interaction at such a level.

We regret to note that the literacy of the population of our country is declining every year. One of the key indicators of the social development of the state is the Education Index. From 1980 to the present, the UN regularly conducts research to determine the level of social development of the countries of the world. In the ranking of countries of the world in terms of the educational level index for 2018, Russia took 32nd place out of 189 with an indicator of 0.832 (research data is published on the website: http://hdr.undp.org/ Humanitarian Technologies: Analytical Portal). This index measures the country's achievements in terms of the level of education of the population and is quite universal, although it does not reflect the quality of education itself.

Returning to the question of modern influences on the process of forming the linguistic-stylistic norm, we note that the emergence of a new version of speech use does not mean that this option will necessarily receive the status of normative (the words *а́лкоголь, наркомани́я, обыска́, осу́жденный* are used for a long time in the professional sphere, but have not become normative). In addition, the initial version does not always go

out of use over time. For example, the word *«кофе»* in 1980-90 began to be used primarily as a noun of the neuter gender, although the normative version fixed the masculine form. Changes were made to the dictionaries, indicating the possibility of the variable use of the word. It could be assumed that in 20-30 years the main option would be the form of the neuter gender, but this did not happen. Modern speech practice supports the original version, which only for several years has given way to widespread use. This is an example of how, as a result of the protection of the old literary norm, the new, permissible, did not supplant the former.

I would like to believe that the emerging speech norms with our active opposition to the grunge speech style and the illiteracy of many users of computer systems will be able to preserve our Russian literary language and fulfill their main functions:

1) ensure the integrity, comprehensibility of the literary language;

2) protect the literary language from the penetration of jargonisms, dialectisms, vernaculars;

3) allow the language to perform an accumulative function - the function of accumulation and

preservation of culture.

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TIME AND BIOGRAPHICAL CONSTRUCTS IN M.ZENKEVICH'S NOVEL MUZHIK SPHINX (1921-1928)

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Abstract. The main aim of this article is linked with the estimation of the specific of the reflection of the events of the time in the individual evidence in the form of literal biography (memoires). The subject of the reflection is the novel of M.Zenkevich: the author analyzes the specific realization of the events, peculiarities of narration, various constructs.

Key words: memory, M.Zenkevich, structure, biography, roman, construct.

The form of the literary memoires was popular in the beginning of the XX century in the modernistic environment. V.Rudnev says that among the symbolists dominated the idea of «lifebuilding/жизнестроительства», when the real events and the events of life link in the mutual narrative.[10, p. 6]. The researchers agree that the feelings of the author and his reactions became the subject of this text. T.Kasatkina speaks about «the event of the creative work and the event of life». She says: «Поэт-символист делает именно «приключения сознания» и «события творчества» основой своей биографии»… [6, p.251]

The conception of this form was presented by U.Lotman and became the methodical basis for the description of the memories model. U.Lotman estimates that everybody must have his own biography, so the writer has the same right. We can add that the events of the XX century were so great that almost everybody wrote diaries. letters. autobiography, memories. The writers transformed and accommodated the features of the roman, simultaneously reflecting their individual features. This is their main quality, stress L.Ginsburg. [3, p.16]

The estimation of this assumption we find in the books of different writers. For example, A.Cristie says that the autobiography «implies names, dates and places in tidy chronological order». But the author has the right to chose: «What I want is to plunge my hand into a licky slip and come up with a handful of assorted memoires». [2, p.12]

But the events of revolution of 1917 year were interpreted in another way; we meet with numeral naturalistic and realistic descriptions. The author's narrative doesn't dominate; his reactions and opinions are equivalent with the views of the other people. As the example we can record memories, diaries, romans of Z. Gippus, G. Ivanov, R. Ivnev, A. Mariengov.

Our subject is linked with the novel of M.Zenkevich who became the witness of the great events of wars and revolutions. So he decided to represent his vision of the time and his contemporaries. He relates the following events: The First World War. revolution of 1917 year, hunger and destruction in 1921. He mentions also the deaths of Gumilev, Rasputin, attack on Lenin and his death, the beginning of the rule of Stalin.

The main construct (G.Kelly) in this case is memory [7]. It helps to organize the subject of the roman, the author's interpretation is very specific. M.Zenkevich says that he links the real and the fantastic events, because that is his autobiographical truth. The interesting opinion we find in the monograph of J.Baeley where he reflects about Proust: «he necessarily ignored the fact that like most truth is not as true as all that». [1, p.6]

The roman of M.Zenkevich has two parts, the scene of action is set in Petersburg and in the village. The author stress: «Роман построен по принципу лирической поэмы, со строфическим, отрывистым чередованием глав, эпизодов и действующих лиц». [5, p.657] We meet with the realistic, adventurous and surrealistic events, the author describes: «целый ряд необыкновенных приключений и событий», among them are the meetings with the dead, the search of the mystic ladanka. The hero was kidnapped, he flies on the plane. takes a trip on the car and bike.

The narration begins with the intrigue, M Zenkevich relates the searches of the author: «Первым делом по приезде я отправился на Васильевский остров взять свое английское демисезонное пальто, оставленное в семнадцатом году». [5, p.416] During his searches he meets with the contemporaries, among them are A. Akhmatova, M. Lozinsky, F. Sologub. In the dialogs appear additional time details:: «... А что, правда у вас на Волге мертвецов едят?» «– Да, было несколько случаев трупоедства». [5, p.418]

The narration moves from one event to another, but the histories of the other heroes break the liner movement of the action, they open the narration, which can take place not in the real, but in the past time also. «Я рассказывала вам про мою подругу»... - so begins her story the heroine, adding the details of the civil war. [5, p.406] We see that the a' part's lead to the complicated narration which is composed from the individual and social events. Including such similar micro biographies the author ex-

pands the narration because he tells about significant actions in the history of Russian state, of the opposition between people of the same country («White movement»).

Simultaneously with the description of the events follows his memoires and reflections. which we can call a'parts. «Непочатаевская земля напоминает мне мое детство, проведенное на такой же приволжской саратовской равнине, бывшей когда-то дном схлынувшего к Каспию Хвалынского моря». [5, p.535]

Using associations and toponimic details the author indicates the place where he was born. In the succeeding narration he adds further facts: he lived in Saratov province, then he comes to Petersburg. He relates also about «Workshop of poets» («Цех поэтов») and the publication of the book «The Wild Porphyry («Дикая порфира»).

Another events of his life are merely mentioned, usually in the dialogues and the memoires of the other heroes: «Убийство Распутина оказалось прообразом других роковых ужасных событий. …», - states Вл.Пуришкевич. [5, p.494] The author transforms his emotions and links them together so he forms the individual construct which helps to include the philosophical extract dedicated to the fate of Russia. Sometimes the opinions of the heroes replace the author's attitude: «– Господи, господи! – всхлипывает рядом со мной бедно одетая старушка. – Вот так же и сына моего убили в японскую войну под Мухденом». [5, p. 423]. The detail determines individual construct.

Simultaneously the author organize the special rhythm and combines different times as if they absorb each other. The main principle is association. «И передо мной проносится величественная манифестация похорон жертв Февральской революции». «И мне мерещатся парады и смотры, что развертывались когда-то на Марсовом поле». [5, p.418] The using of inversion creates the feeling that the texts is formed at the similar time when we are reading, so we became the same creators.

We meet another time and space in the portrait, in the description of the poet Vladimir Khlebnicov: «Из угла угловато-неловко отделяется, болтая тяжелыми ботинками, долговязый, сутулый, небритый солдат в гимнастерке без пояса, с обстриженной под нолевой номер головой. Таким я видел Хлебникова летом семнадцатого года, рядовым запасного полка из Царицына. ». [5, p.440]

The details become characteristic because they indicate the moment; many people after the war wear military form. We can meet this detail in many works, so we can call it the detail of the time. The author activates our attention with the rhetorical question. This type of memoires usually is called vivid memoires.

Sometimes M.Zenkevic shows not the event, but the author's vision of it, the event can be and it can't be. «Лица и предметы то кажутся близкими, то уменьшаются и становятся далекими, как будто я попеременно смотрю с двух сторон, прямо и обратно, в стекла бинокля. Так же сдвигаются и события в искаженной перспективе времени...» [5, p.450]

So the real description becomes the fantastic stage, the time developes in the mycological as in the description of the café «Stray dog» («Бродячая собака»). «Да здесь все по-прежнему, как будто я снова пришел сюда юношей. О, если бы можно было останавливать и переводить по черному циферблату лет золотые стрелки жизни так же легко, как стрелки карманных часов!» [5, p.446] The description is full of numerous details.

In this type of the description naturally we meet with the biographical myth. E.V.Ivanova says: «На рубеже XIX и XX в.в. в жанре биографии произошла еще одна существенная трансформация: возник так называемый биографический миф, образ писателя, который читатель домысливал за его творчеством, опираясь на сведения биографического характера». [4, p.30-31]

The main task the author sees in the preservation of the portraits of his contemporaries, as if he is a puppeteer. All his heroes have their own role: G. Gumulev, Elsa, Gilbin, Rusputin. They are the special images; we can call them masks according to the theory which was represented by Osmyhina in her works. Besides they correspond with the author and complement the biography of the author. [9, p.60]

That is why the author leads us into another world, the hero acts in the real and mystic spaces simultaneously. The signals of transformation are the key words «mist» and «mirror». This is the description of the meeting in the pharmacy where the hero meets the heroine. It is the prologue for his future adventures. The motive meeting dominates in this narration:

«В конце очереди какой-то человек в оленьей дохе точно лорнировал меня своим немигающим стеклянным взглядом, я был как бы в фокусе расхождения его косящих глаз. Как он похож на Гумилева! То же неправильное, холодное, деланно-высокомерное лицо и серые, слегка косые глаза!» [5, p.480] In their researches U.Lotman [8, p.30] and V.Toporov speak about specific interpretation of the Petersburg, they show that the description is like the stage. [11, p.60]. So we meet again with the mythological time and the interpretation of Gumilev as a mythological figure:

The description continues: «Под изогнутым подвесным фонарем, напоминающим фонарь похоронной процессии, стоял Гумилев. Он пристально и строго смотрел на меня своими слегка разведенными вкось глазами на бледном, как гипсовая маска, лице». [5, p.490] The detail «фонарь похоронной процессии» indicates the unreal world.

Using the associations the author records his state (individual construct): «И чувствуя уже обморок, я рванулся от спасательных шаров и крикнул далеким, отделившимся от тела чужим голосом, как в счете при хлороформировании». [5, p.560] The main construct is fear: «А ну их к черту, все эти страшные мысли!» Rhetoric construction is used to show the author's impression. Psychological chronotope amplify the impression. The key word mist which has also another function of the space construct indicates this situation. If we follow the conception of Bergson the forms of time became the forms of memory.

After the meting in the night stage the hero returns to the real world. Standing on the ground of reality he descries another situation: «А у Исакия что делается! – обернулся извозчик. – Вся площадь полна народу. Громят германское посольство и коней чугунных с крыши сволокли в Мойку. И чего радуются? Разве мало народу перепортят...» [5, p.506]

When the Zenkevich descries his contemporaries he uses the method «memory in memory». He describes accurately and with every detail involuntary memories. «При чтении Ахматовой передо мной проносятся обрывки воспоминаний». So we see that the past becomes the reality, the reader becomes the coauthor because we have the illusion that the events develop simultaneously with the time of the creation of the texts, the present time complements by the past time, the past time of the author duplicates with the past time of his heroes.

Conclusions

The contemporary memoires differ from the classic ones because the author's reflections are the main subject of the description. M.Zenkevich tells about his time and his contemporaries from the prism of the state of his hero. The psychological experiences dominates. So we meet with the individual constructs (dominates construct fear). The main construct is memory. It helps to organize the subject of the roman and represent complex time system.

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THE PLACE AND ROLE OF EXECUTIVE REPRESENTATIVES IN THE REGIONS OF MODERN RUSSIA

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Abstract. Article reveals the place and role of governors in modern Russia based on the analysis of the data obtained. Being mostly from the ruling party - "United Russia", the governors occupy a very important place in the structure of the Russian political system, leading individual regions of the Russian Federation.

Key words: governor, political system, regions of Russia, level of trust in the authorities.

The representatives of the executive branch in the regions of modern Russia are primarily governors. For the first time, the post of governor in Russia appeared in 1708 in connection with the introduction of the provincial division of the country. Initially, the governors had a fairly wide range of powers, performing administrative, financial, police, judicial functions, and they also commanded the troops located on their territory. After the February Revolution of 1917, the governors were replaced by the commissars of the Provisional Government. The post of governor in Russia was returned in 1991 to designate the appointed heads of administrations in the constituent entities of the Russian Federation, and the term "governor" began to be officially used only in 1993 in some of them, such as Nizhny Novgorod Oblast, St. Petersburg. In other regions, this happened much later. So, for example, in the Chelyabinsk region, a change regarding the equivalence of the definitions "head of the regional administration" and "governor" was introduced only in 1997 (Basic Law of the Chelyabinsk region of April 13, 1995).

In the structure of modern executive power, the governor is the highest official of the region of the Russian Federation, who is called upon to fulfill the tasks of realizing domestic policy. His powers, first of all, include such functions as - determining the main directions of domestic policy, ensuring the protection of the rights and freedoms of citizens, signing and promul-

gating the laws of the region, interacting with the President of the Russian Federation, the Government of the Russian Federation, other constituent entities of the Russian Federation, as well as plenipotentiaries representatives of state authorities of the regions of foreign states.

The scientific community of scientists is interested in studying the political system, including the problems of regional governance related to the activities of individual governors, as well as issues of legitimacy and constitutional legal foundations of the institution of governorship. We can distinguish the work of Scott, Z., Mcloughlin, C. (2014), D.S. Soloviev (2015), A.V. Samokhina, A.L. Khudoborodov (2018).

The rapid development of the Russian state and society presents ever new requirements, including to the heads of regions. Today, according to the Public Opinion Foundation, an "ideal governor" is an honest and decent person, a strong business executive, with managerial experience in the real sector of the economy, who knows the problems of the region and is able to defend his interests in front of the federal center (Russian newspaper, 2019, p. 2) In general, the region's population expects from its leader a new work style, new ways to solve problems, and change their lives. A set of relevant requirements for power on the part of citizens is, first of all, a request for energy and independence, also such qualities as openness and accessibility, responsiveness and respect for people, honesty, rigidity and personal control over the activities of officials, focus on a long time are also in demand work in the region (Russian newspaper, 2019, p. 2). The main trend is the growing demand for reducing the distance between citizens and senior officials, namely the willingness of the authorities to hear, understand and, most importantly, solve the problems of citizens.

In turn, the President of the Russian Federation Vladimir Putin, in Decree of April 25, 2019 No. 193 "On assessing the performance of senior officials (heads of the highest executive bodies of state power) of the constituent entities of the Russian Federation and the activities of executive bodies of constituent entities of the Russian Federation" approved a list of indicators for assessing the performance of regional leaders. Among them are the level of trust in the government, the number of high-performance jobs in the off-budget sector of the economy, the number of people employed in the field of small and medium enterprises, including individual entrepreneurs, labor productivity in the basic non-resource sectors of the economy, the level of real average monthly wages, the volume of investments in fixed assets, with the exception of investments in infrastructure monopolies (federal projects) and budget allocations from the federal budget. Further on this list are the poverty level, life expectancy at birth,

natural population growth, number of families who have improved housing conditions, housing affordability, the proportion of cities with a favorable urban environment, environmental quality, and educational level. This list is completed by the requirement for roads, namely, the share of regional roads and motor roads that meet regulatory requirements in urban agglomerations, taking into account congestion (Decree of the President of the Russian Federation of April 25, 2019. No. 193). The performance of regional leaders will be evaluated by the Government of the Russian Federation and the President of the Russian Federation. For this, the governors will annually, until April 1, present reports on the achieved values of indicators, on the basis of which grants will be distributed between the regions.

In the autumn of 2019, elections of governors were held in many regions of Russia, direct voting took place in 16 of them, and in Ingushetia the head of the region was appointed by the parliament - it was Mahmud-Ali Kalimatov, who until then temporarily acted as the head of the republic (hereinafter referred to as acting). Basically, all who took the post of governor are representatives of the ruling “United Russia” party. So, in the Orenburg region, the interim governor Denis Pasler wins (65.94% of the vote), in the Kursk region the interim governor Roman Starovoit wins (81.07% of the vote), in the Altai Republic, the interim head of the republic Oleg Khorokhordin wins (59% of the vote), in Lipetsk region - acting head of administration Igor Artamonov wins (67.29% of the vote), in the Kurgan region - acting governor Vadim Shumkov wins (80.86% of the vote), in the Volgograd region - acting governor Andrei Bocharov wins (76.81% of the vote), in Astrakhan oblast - acting governor Igor Babushkin wins (75.64% of the vote), in the Republic of Bashkiria - the interim the head of the republic, Radiy Khabirov wins (82.02% of the vote), in the Trans-Baikal Territory - acting Governor Alexander Osipov wins (89.61% of the vote), in the Stavropol Territory - acting Governor Vladimir Vladimirov wins (79.65% of the vote), in the Chelyabinsk Region - the interim Governor Alexei Teksler wins (69.31% of the vote), in Kalmykia - the interim head of the region Batu Khasikov wins (82.57% of the vote), in the Vologda Oblast - the current governor Oleg Kuvshinnikov wins (60.79% of the vote) (Single voting day. October 16, 2019).

The effectiveness of their activities was confirmed by the governors of such regions as Moscow, St. Petersburg, Moscow Region, the Republic of Tatarstan, Belgorod Region, Krasnodar Territory, Voronezh Region, Khanty-Mansi Autonomous Area - Ugra, Lipetsk Region, Kaliningrad Region, which are among the best in the quality of life of the population in this subject, which is a direct merit of the head of the region (Rating of Russian regions by quality of life. October 22, 2019).

According to the results of the national rating of the heads of regions of the Russian Federation, the top ten best governors today are Vladimir Vasiliev (Republic of Dagestan), Alexander Brechalov (Udmurt Republic), Ramzan Kadyrov (Chechen Republic), Natalya Komarova (Khanty-Mansi Autonomous Area), Maxim Reshetnikov (Perm Krai), Alexey Dyumin (Tula Region), Rustam Minnikhanov (Republic of Tatarstan), Sergey Tsivilev (Kemerovo Region), Mikhail Ignatiev (Chuvash Republic), Gleb Nikitin (Nizhny Novgorod Region) (National rating of the heads of regions of the Russian Federation. October 22, 2019). Among the indicators that were taken into account when compiling the rating are the governor's performance, information transparency, public trust, the standard of living of the population in the region, the quality of roads and infrastructure, the image and tourist attractiveness of the region, safety and environment, business climate, the fight against corruption, and respect for rights person. According to the media ratings for September 2019, the governors are located as follows. In the first place is Alexander Beglov (St. Petersburg), in second place is Sergei Sobyanin (Moscow), in third place is Radiy Khabirov (Bashkortostan). Then follow Alexey Teksler (Chelyabinsk Region), Sergey Aksenov (Crimea), Andrey Vorobyov (Moscow Region), Ramzan Kadyrov (Chechnya), Aisen Nikolaev (Republic of Sakha), Gleb Nikitin (Nizhny Novgorod Region), Oleg Kozhemyako (Primorsky Territory) (Governors: September, 2019. October 22, 2019).

Thus, the governor occupies a key position in his region, largely determining its development, the quality of life of the population. Its role is to coordinate the activities of all bodies and structures of power at the regional level, as well as to determine the vectors of interaction with the federal center. In modern Russia, the main “supplier” of governor cadres is the ruling party, “United Russia”, which was once again confirmed by the election of governors in 2019.

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CIVIC IDENTITY AS A PRODUCT OF THE INSTITUTIONS OF CIVIL SOCIETY – PRO ET CONTRA (THE CASE OF KAZAKHSTAN)

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Abstract. In this article, the author examines the issue of civic identity and the role of institutions of civic society in its formation. I analyze opposite viewpoints on the issue which investigates it from various angles. It also examines the feasible problems that the institutions of civil society and civil society organizations face in the formation of institutional and civic identity. The article discusses the civil society of Kazakhstan and the difficulties in the formation of civic identity in the republic.

Key words: civic identity, civil society, institutions of civil society, Kazakhstan.

Indeed, conventional wisdom holds that modern democratic state distinguishes itself by open and vibrant civil society, and civic identity of the population involved in civic activities. What is the identity in this case? This is the process when participants realize themselves as a part of a group, bound up with it emotionally and get acknowledgement of the others [1]. Social class, gender, ethnicity, or age might be a platform for unification, but not quite. Usually, shared values, orientations, attitude, world outlook, and previous experience of participation lay on an institutional identity. As a general rule, identity is not regarded as a membership in a solo group. Mostly, people wield attitudes and views which several institutions are able to promote. Identity is a product of self-defining and exterior recognition. On the one hand, identity signifies to separate the self from a group, and, on the other hand, to be a part of the group [2]. For that reason, identity is a much more complex process than a personal attitude of people towards an institution (or the government).

While participating, people are getting involved in legal, political, economic spheres around an issue in hand. They read newspapers, listen to reports of officials and businesspersons, watch news, which revolves around the issue. Through practical activities people learn how to attain the goal and develop empirical skills. It seems probable that if organizations of civil society are vibrant and experienced the process of civic identity formation progresses intensively. Apparently, active citizenry is well-informed on the political situation in the country. Such citizens realize the common good clearly and the way it combined with private good [3, p.365].

Political theory supposes that ***the institutions of civil society enable people to learn how to become citizens, to nurture civicness and civility***. ***Civicness*** implies an intention to participate and to effect transformation in the social and political system. ***Civility*** signifies civilized face-to-face contacts with representatives of civil society organizations and institutions of civil society [4]. One assumes that an individual learns to be a citizen while acting as a member of an institution of civil society. Nevertheless, theorists of civil society underscore that professional, social and gender identity affects the wish to participate in civil activities tremendously even in "old" democracies. Hence, despite that institutions of civil society are able to form a civic identity of their members, their further engagement varies [3, p. 247].

Obviously, institutions of civil society shape a citizen from the position of civil society but not from the position of government. What are the vital characteristics of a citizen in civil society? Firstly, it is political activism, particularly in the time of elections. Secondly, it is civil duty which translates into obeying laws and paying taxes. Finally, it is social accountability which is reflected in environment protection and tolerance [5].

Speaking about Kazakhstan's understanding of citizen one should bear in mind that this category is regarded from the position of government but not that of civil society. Most of various officials and of population do not consider civil society as a working platform to create a citizen and civic identity of people. Only government is deemed to serve as such sort of platform. According to the First President of Kazakhstan N. Nazarbayev, "A perfect citizen is a resident of Kazakhstan who knows the history, language, culture of the republic. At the same time, s/he must speak foreign languages and share advanced and global views" [6].

Foreign research have found out that high-school graduates believe that a citizen first and foremost must be politically active and socially responsible. Whereas uneducated people mark law-abiding as the most essential feature of citizen [5]. Up to this time, Kazakhstan does not wield

such sort of statistics. We have done research of the blogosphere of Kazakhstan. We have found out that from bloggers' perspective a citizen of Kazakhstan is a person who loves and respects his/her motherland, who knows its history in order to realize events which take place in contemporary republic, who respects laws and who is ready for its protection if necessary [7]. Thus, drawing a parallel with foreign inquiry we may detect that there is no point about social accountability and political activism at all in Kazakhstan. One may notice some overlap in civil duty (obeying laws).

Theorists of political science delineate the level of influence of institutions of civil society and public associations on civic identity of participants. In general, grassroots organizations focus on addressing local daily problems, for instance, unwanted construction near a house or a state of playgrounds, etc. Such sort of organizations wield ad hoc character – they function so long as there is a problem and participants wish to cope with it. Institutions of civil society have bigger objectives, more finances, and more organizational and reputation capabilities than grassroots associations. According to theoretical research, as a rule, grassroots associations include representatives of a similar social class. Therefore, such sort of organizations are regarded as one of the most effective instrument to form civicness and civility. The scholars suppose that individuals who share approximately equal social position in stratification, who gain rather similar income, education and knowledge on society and government. Those institutions, which engage absolutely different people in activities, usually are in need of much time to develop similar way of thinking and doing [3, p. 224].

Furthermore, too much financial accountability and other sort of papers before sponsors, and other organizations may dampen the progress of civility of members of association since they spend much time doing paperwork but dealing with problems or communicating [3, p. 225].

Values enable to affect institutional and civic identity to some extent. We analyze the role of values in decision-making whether to engage and to solve the dilemma of participation. If an individual and a public organization share the same values, it does not signify automatic engagement. People decide to get involved owing to principles of an organization, their attitude towards them, estimating opportunities of activities and possible problems.

Values are shaped by a particular aims of an individual and are constructed according to strategic behavior to attain them. The most difficult thing for the organization and institution of civil society is to transform individual value orientations into collective ones to mobilize for action [8].

It is wrong to think that culture, which affects a decision to participate, can merely be reduced to values. In fact, culture influences an action not only by disseminating values, but also by shaping the habits, skills, and lifestyle. All this constructs strategic behavior of individuals aimed at further action [9]. Engagement in the activities of institutions and public organizations impacts on people's attitude and worldview. People may open opportunities to expand contacts and acquire new social bonds. Joint participation is able to unite people from different regions and various views by common aspirations. The ability of institutions to change values in such a way as to meet the needs of society and to recruit new members in the face of changing circumstances is vital [10].

Formed institutional and civic identity enables to diminish the complexity and potential costs of participation - material, physical, time and mental ones [11, p.102]. Definitely, symbolism of the events, which are promoted by organization, induce the identity of a member. Moreover, informal events such as the admission of new members are valuable as well as public events covered by the media [11, p. 111].

Institutional identity does not arise if participants do not name the organization "we" and regard themselves as its members. Therefore, common goals are insufficient. A formed cluster of individual solidarity with the group is needed [11, p. 94]. Moreover, the continued collective "we" is hardly feasible [12]. This statement is true regarding the formation of civic identity.

The problem of Kazakhstani civil society institutions is that their activities are of non-system character. Since the self-identity of the participants of the institute is formed in the process of participation, which should be a long, eventful one, public organizations do not create a strong enough basis for the effective formation of the identity of their participants in Kazakhstan. Probably, that is the reason why civicness and civility is underdeveloped in the republic.

In the political sphere, civil society institutions that shape the identity of participants enable to stimulate policy changes regarding groups which members belong to. Moreover, civil society institutions and their participants are able to influence the evolution and reform of the political system of the state [13].

Presumably, in the case of civil society institutions in Kazakhstan, since the government nurture the most effective of them, one may point out that the state seeks to create a civic identity of the population in order to implement further reforms jointly and evolutionally, with no any extremism. For now, public associations "from below" do not possess sufficient resourc-

es to construct the identity of their members. By the term “resources” we mean, first of all, the number of events, their scale, entertainment, youth involvement, media coverage.

Along with proponents of the idea that civil society institutions are capable of shaping civic identity and nurturing civicness, there is an opposite point of view. Its supporters give the following arguments.

1. In practice, the so-called "non-civil society", consisting of chaotic individuals (atomized society) overlaps civil society;

2. Frequently, civil society institutions wield hierarchical strict structure and have quite authoritarian attitude towards their members. Therefore, they are not able to form an institutional and civic identity of a democratic nature;

3. Generally, participants are passive, inert, because they participate either out of hopelessness or under duress (communist states) [14].

4. Usually, the most successful civil society organizations are very large (of national level), and professionals manage them. The main goal is to maintain the vitality of the organization, owing to its size, it absorbs the individual and does not pay enough attention to him/her, and, ultimately, does not contribute to the development of his/her civility skills [15].

4. The pluralism of civil society institutions, by virtue of its diversity, does not create accurate and clear rules of conduct, therefore, it does not form the identity of participants and their civicness [16].

5. Finally, there is a data gap and the absence of a direct relationship between civility within the institution of civil society and outside it, that is, ceasing to be part of the institution, the individual does not necessarily retain the desire to act independently [3, p. 291].

To summarize, researchers emphasize that civic education should go hand in hand with the development of democracy. If civil society institutions are created by the state in order to form this kind of culture, behavior and identity, it intervenes in the sphere of activity of civil society, crosses its borders, violating the idea of the existence of civil society [17].

Conclusion:

1. Identity is a process, on the one hand, which forms a person’s sense of unity with a group, and on the other hand, separates him/her from the group. Identity is not regarded merely as the attitude of the person to the group.

2. There is a point of view that civil society institutions can educate members to be citizens and nurture their civicness and civility.

3. Vibrant civil society organizations help bring up a citizen who has a civic duty, who is politically active and socially accountable.

4. In Kazakhstan, a citizen is a person who knows the history, language, culture of the country, speaks foreign languages and shares global values. In addition, s/he loves and respects his/her homeland, respects laws, and ready to defend the homeland, if necessary.

5. Civil society organizations and civil society institutions wield different effects on the formation of civic identity. Grassroots organizations, as a rule, solve everyday issues, therefore, they have less opportunity to nurture civicness - on the one hand. On the other hand, they usually unite representatives of the same social class, with the similar level of education and income.

6. Values are a very important part of constructing the civic identity. They shape human behavior. The most important task of civil society organizations is to transform individual values into civic ones.

7. Institutional identity, as well as civic identity, does not arise if participants do not call themselves "we." This means that they do not consider themselves part of a group without sharing its values and goals.

8. The problem of civil society institutions in Kazakhstan is that their activities are of non-system character. Furthermore, civil society organizations are not regarded by the state and society as an effective platform for the development of civic identity.

9. Opponents of the idea that civil society organizations are able to form a civic identity believe that these organizations are hardly able to overcome the passivity of the population, they are focused primarily on preserving the life of the organization. Institutional identity does not necessarily develop into a civic one.

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EXPERIMENTAL STUDY OF PHARMACOLOGICAL EFFICIENCY OF TURMERIC

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Abstract. Curcuma longa L. – is widely used in cooking. It is known that the rhizome of a plant has healing properties. Therefore, the aim of the research was to identify in the blood of experimental animals in which alloxan diabetes was simulated a change in the content of glucose, insulin and C-peptide, diene conjugants, malondialdehyde, and lipid metabolism. A placebo-controlled experiment was performed on 35 white outbred laboratory rats.

As a result, it was found that against the background of the alloxan model of diabetes, when applied orally for 3 weeks, a 10% solution of turmeric in olive oil at a dose of 5 ml / kg normalizes carbohydrate and lipid metabolism and reduces the severity of oxidative stress.

Keywords: experimental diabetes, glucose, insulin, C-peptide, lipid peroxidation, lipid metabolism, turmeric

The homeland of turmeric (Curcuma longa L.) is tropical countries such as India, Iran, Indonesia, China, Vietnam. The rhizome of the plant is widely used in cooking around the world as a spice and as a natural food coloring. Rhizome powder is known in the world under the trade name "turmeric." Given the great demand for raw materials and climatic conditions for plant growth, turmeric since 1986 began to be cultivated in Azerbaijan.

The data of traditional medicine and a number of scientific studies have proven the healing properties of turmeric, which is rich in sesquiterpene essential oils, isomers of turmeric (fellandren, zingiberin, sesquiterpene ketones, borneol, etc.), flavonoids, and also contains alkaloids quinoline, terpecumin, starch, yellow starch, curcumin, starch fatty oil, polysaccharides and oxalates [1]. The use of rhizomes in the form of a solution had

a beneficial effect in atherosclerosis, hypertension [2]. Experimental studies have revealed that turmeric rhizomes have the ability to regenerate cardiomyocytes after myocardial infarction, have a cardioprotective effect. Turmeric reduces the risk of vascular thrombosis, has an antiplatelet, lipid-lowering, adaptogenic effect [3-5]. The literature also provides information on the efficacy of long turmeric in diabetes mellitus (DM) [6]. The rich composition of the biologically active substances of turmeric, the severity and versatility of the pharmacological effect in the absence of toxicity, pleasant organoleptic properties, which is important for the patient, determined the feasibility of a thorough study of its therapeutic properties and mechanisms of pharmacological effect. In these studies, the effectiveness of the action of turmeric rhizome long for the course of the pathological process in diabetes mellitus modeled by alloxan was evaluated.

Materials and research methods. The experiment was performed on 35 white outbred rats of mature age weighing 240-268 grams. Animals were divided into 4 groups: group 1, consisted of 5 intact animals. The remaining groups included animals with simulated diabetes mellitus, 10 rats each. Moreover, in the 2nd group - the model group - the animals were decapitated on day 10 and blood was taken for research. The results of this group were taken as initial values. Animals in the 3rd control group received olive oil at a rate of 5ml / kg for 3 weeks. Animals of the 4th group also received a 10% solution of turmeric in olive oil at a dose of 5 ml / kg within 3 weeks. On the 21st day, after a preliminary 24-hour starvation, the animals were decapitated, blood and organs were taken for biochemical studies.

All animals used in the experiments were kept in the same conditions of care and food regimen. All animal experiments were carried out in accordance with the "European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes", Strasbourg, 1986.

A model of experimental diabetes was created by intraperitoneal injection of sexually mature male rats with alloxanate trihydrate (La Chema, Czech Republic) (according to a modified method of R. E. Dzhafarova, 2013) [7]. When simulating diabetes, fractional administration of alloxan (1.35 days) reduces the mortality of rats in the acute period of intoxication and allows to increase the period of spontaneous β-cell regeneration. The results of biochemical determinations of this group were taken as initial values.

Biochemical determinations of glucose were determined by a test analyzer using IME-DC indicator paper, and insulin and ELISA C-peptide by the Chemwell immunoenzymatic analyzer using a standard set of reagents DEMENITECKILL-WELLSEE, Cermany. The determination of diene conjugates (DC) and malondialdehyde (MDA) was carried out by the enzymatic

colorimetric method using a set of chemical reagents manufactured by Human, Germany using colored products of thiobarbituric acid, lipids, triglycerides and free fatty acids using an enzymatic colorimetric method using a set of chemical reagents manufactured by Human, Germany. Analyzer FP-901 (manufactured in Finland) and Stat Fax chem.-well (made in Germany).

Statistical processing of the results was carried out by non-parametric determination of U values for the Wilcoxon-Mann-Whitney criterion.

The results obtained and their discussion. The research results showed that by the end of the experiment in the 4th group, where animals on the background of the alloxan model received a 10% solution of turmeric in olive oil at a dose of 5ml/kg, the blood glucose content decreased by 56% compared to the control group receiving placebo, and the content of insulin and C-peptide increased by 32.0% and 36.7%, respectively. Therefore, it can be argued that, against the background of the use of turmeric, the process of regeneration of ß-cells of the pancreas accelerates. But a decrease in blood glucose has more pronounced indicators than an increase in the content of insulin and C-peptide, which suggests peripheral mechanisms of the sugar-lowering effect of turmeric.

Studies have shown that a sharply increased level of DC and MDA on day 10 of modeling subsequently showed a downward trend both in the control group receiving placebo and in the main group receiving 10% oily solution of turmeric root powder. But in the group receiving turmeric, the DC and MDA levels were significantly lower than in the control group, which proves that turmeric reduces the level of LPO in the blood and tissues of vital organs such as the heart, liver, and kidneys, which reduces the risk of developing angiopathies in these tissues, and also prevents pancreatic damage [7]. The analysis of the results of biochemical data showed that, against the background of the use of turmeric, the DC content in the blood plasma decreased by 38.7%, in the liver tissue - by 88.3%, in the heart tissue - by 35.6%, in the tissues of the kidneys - by 46.8%, in the tissues of the pancreas - by 110.1% compared to the control group, while the content of MDA decreased in the blood - by 22.1%, in the tissues of the liver - by 89.6%, in the tissues of the heart - by 77, 1%, in the tissues of the kidneys - by 101.4%, in the tissues of the pancreas - by 122.2%. At the same time, normalization of lipid metabolism was observed, which was disturbed against the background of the alloxan model of diabetes. Compared to the control group, the blood lipid metabolism decreased more: triglycerides - by 5.9%, total cholesterol - by 1.4%, low density lipoproteins - by 8.6%, very low density lipoproteins - by 2.9 %, free fatty acids - by 2.3%. The content of high density lipoproteins increased by 2.5% more than in the control group.

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STUDY OF ACUTE AND SUBCHRONIC TOXICITY WITH DETERMINATION OF THE CUMULADIA INDEX FOR A METAL-COMPLEX COMPOUND BASED ON PALLADIUM AND MEXIDOL

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Abstract. Platinum preparations, which are widely used in the treatment of cancer patients in practice, have shown a significant antitumor effect and prevent the development of metastases, have high toxicity, which limits their use. Therefore, the search for effective, but low toxic chemotherapeutic agents among metal complexes close in structure to platinum preparations, in which palladium is a complexing metal, appears to be relevant in view of the lower toxicity of such compounds with equal efficiency. A new complex compound based on palladium and mexidol was synthesized in the Scientific Research Center of the Azerbaijan Medical University. The chemical structure of the compound, where 2-valent palladium forms a complex with a pyridine derivative, suggests the presence of an antitumor effect. Based on this, the aim of the research was to study the acute and subchronic toxicity of a new complex compound based on palladium and mexidol. The study of acute toxicity with the determination of LD_{50} was carried out in 2 series on 84 white laboratory outbred rats separately for females and males according to the Spearman-Kerber method. The results of the studies showed that LD_{50} is a semi-lethal dose, for the studied complex compound it is 0.04/100 grams of rat weight for males, and 0.045/100 grams of rat weight for females, which, according to the classification of toxicity of substances, allows characterizing it as a highly toxic substance, but which can be used for medical purposes. The toxicity of this compound is significantly inferior to the toxicity of platinum group drugs widely used for chemotherapy.

Subchronic toxicity was studied in 24 (12 + 12) rats of both sexes using the Lim R.K method. The results of the studies showed that the complex compound studied by us has Kk <1 for both females and males.

The search for new biologically active compounds for use in medical practice has been and remains an important task of medical and pharmaceutical science. Of particular interest are substances that can stop the development or destroy malignant neoplasms. Platinum preparations, such as cisplatin, carboplatin, nedaplin, proved to be good as anti-cancer agents, but their significant drawback is their high toxicity. In this case, the kidneys are especially severely affected. Another significant drawback of platinum preparations is the development of multidrug resistance to them. Therefore, the search for new drugs with a similar effect, but less toxic, is carried out among complex compounds of palladium - a metal from the chemical group of platinum. Special attention is paid to structural analogues of cisplatin, as well as compounds of palladium with pyridine derivatives [1]. One of such compounds is a complex compound of mexidode (ethylmethylhydroxypyridine succinate) with 2-valent platinum (Pd (II)), synthesized at the Scientific Research Center of Azerbaijan Medical University.

The mechanism of the antitumor action of both platinum and palladium preparations is explained by their violation of DNA replication by the formation of intramolecular crosslinks in DNA, intercalation, and the modification of a DNA chain that impedes their replication. A number of studies have found that cationic allylic complexes of palladium [C3 H5 PdL] Cl with chelated heteroaromatic ligands L can disrupt DNA replication by several mechanisms simultaneously, which reduces the likelihood of resistance to them. Therefore, the aim of our research was to study the toxicity of a new complex compound based on palladium and mexidol [2, 3].

Materials and research methods. The experiment was performed on 84 white outbred rats of adult age weighing 240-268 grams. The determination of acute toxicity (LD_{50} - semi-lethal dose) was carried out on 60 (30 + 30) rats of both sexes using the Spearman-Kerber method. 2 series of studies were conducted. In the first series, acute toxicity of the substance was determined for male rats, and in the second series for female rats. In each series, animals were divided into 5 groups of 8 rats each. Palladium-Mexidol complex was administered to animals intraperitoneally in the form of a 2% aqueous solution. The calculations were made in accordance with the formula $LD_{50} = m = X_k – d (S_1 – {}^1/_2)$. Where

LD_{50} – semi-lethal dose

X_k – the lowest dose at which 100% death of animals begins

d – difference of doses from each other

S_1 – total proportion of dead animals x

Subchronic toxicity was studied in 24 (12 + 12) rats of both sexes according to the Lim R.K method (1961) [4]. The experiment was also conducted in two series, separately for males and for females. According to this technique, the algorithm for conducting the study is as follows: the animals are administered a total dose of a substance equal to 12.8 LD_{50} within 24 days. Moreover, in

on day 1-4, 0.1 LD_{50} is administered daily.,

on day 5-8, 0.15 LD_{50} is administered daily. ,

on day 9-12, 0.22 LD_{50} is administered daily,

on day 13-16, 0.34 LD_{50} is administered daily

on day 17-20, 0.50 LD_{50} is administered daily

on day 21-24, 0.75 LD_{50} is administered daily.

In this case, the number of dead animals was estimated.

All animals used in the experiments were kept in the same conditions of care and food regimen. All animal experiments were carried out in accordance with the "European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes", Strasbourg, 1986.

The results obtained and their discussion.

As a result, it was found that LD_{50} for males is 0.04/100 g of rat weight, and for females - 0.045/100 g of rat weight. Thus, according to the results of studies based on the classification of toxicity of substances, the new complex is a highly toxic substance, but can be used for medical purposes.

Toxicity classification

№	Toxicity group	LD_{50} mg/kg
1.	Extremely toxic	up to 1
2.	Highly toxic	1 - 50
3.	Very toxic	51 - 500
4.	Moderately toxic	501 - 5000
5.	Low toxicity	5001 - 15000
6.	Practically non-toxic	over 15000

Comparing the obtained results with the published data, it can be stated that the new complex compound based on palladium and platinum synthesized at the SIC AMU has significantly lower toxicity with respect to the platinum group drugs [6], which are widely used for chemotherapy.

The study of subchronic toxicity allows you to determine the cumulation index (Kk), which is calculated by the formula: $LD_{50;\,n}$ / $LD_{50;1,}$ where

$LD_{50;1}$ –is the average lethal dose in a single injection,

$LD_{50;\,n}$ – average lethal dose in multiple injections.

Determination of subchronic toxicity using the Lim R.K method allows revealing not only the cumulative properties of a substance, but also its addiction (tolerance) characteristics. So, if Kk <1- the substance has cumulation and vice versa, if Kk> 1- tolerance develops to the substance.

The results of the studies showed that the complex compound we are studying has in both series (1st series — males, 2nd series — females) Kk <1.

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FORMING STATIN RESPONSE IN PATIENTS WITH CORONARY HEART DISEASE IN COMBINATION WITH ACUTE RESPIRATORY VIRAL INFECTIONS BY MEANS OF GENETIC MARKERS

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Despite the immense efforts of modern medicine, cardiovascular diseases remain very common in different human populations [1,2]. Genetic disorders, often in the form of point nucleotide substitutions in different regions of the genome [3,4], as well as the presence of various modifiable risk factors [5, 6] are of great importance in their widespread occurrence. One of the leading reasons for limiting the lifespan of people of working age is the continuing high mortality from coronary heart disease [7]. Most deaths from all diseases are specifically diseases of the cardiovascular system [8]. According to the WHO, in 2017 in Russia, 53.3% of deaths were due to coronary heart disease [9]. One of the main ethiopathogenetic components is atherosclerosis. The etiology of atherosclerosis is diverse, currently there is no one accurate theory of its development. Immuno-inflammatory theory is considered to be the most relevant [10]. Today, inflammation is considered as the effect of aggression factors on the endothelial layer of blood vessels with the development of endothelial dysfunction [11]. Stress, viruses, hypercholesterolemia, toxins, arterial hypertension, impaired hemodynamics, exposure to catecholamines, serotonin, angiotensin II act as provoking factors that violate the endothelium integrity. The role of inflammation in the development of atherosclerosis is due to the production of T-helper type 1 pro-inflammatory cytokines tumor necrosis factor-a, IL-1β, IL-6, contributing to the proliferation of smooth muscle cells of the media and the release of collagen and elastin for the future plaque. Proinflammatory interleukins activate endotheliocytes, macrophages, promote the production of free radicals and enhance coagulant activity [13, 14]. So, atheroma is a chronic asep-

tic inflammation. There are published data confirming the detection of influenza viruses, chlamydia pneumonia, and cytomegalovirus in atherosclerotic plaque [15]. The addition of any infectious disease can activate the course of chronic inflammation in an atherosclerotic plaque, with the involvement of the cytokine system [16]. There are lots of works, that confirm the existence of a relationship with a change in the status of patients with coronary heart disease with concomitant acute respiratory viral infections. Infectious disease can appear as a trigger to destabilize the course of atherosclerosis and coronary heart disease. There are known facts of the negative impact of viral and bacterial infections on the course of atherosclerosis, confirmed laboratory and instrumentally [17]. The aggravation of the course of atherosclerosis in viral infections of the upper respiratory tract (influenza, acute respiratory viral infections), confirmed by changes on the electrocardiogram with ST depression, was noted. Most cases of infectious diseases occur in the autumn-winter periods of the year, which lesds to the growth of hospitalization of patients with coronary heart disease in cardiology departments, which is especially characteristic for Russia, where the the cold season accounts for about 6 months [18,19]. The course of acute respiratory viral infections is characterized by an imbalance of the cytokine system against the background of herpes, cytomegalovirus and other infections, and may be irreversible with the active development of inflammation, which in turn will cause irreversible changes in the lipid transport system of patients with ischemic heart disease [20]. Thus, the role of inflammation in the processes of changing the course of coronary heart disease is indisputable, which motivates to revise the usual approaches to the pharmacological correction of hyperlipidemia in the presence of viral diseases of the respiratory system. The aim of this work was to assess the relationship of polymorphism of pro- and anti-inflammatory interleukin genes (IL-1β, IL-6, IL-4 and IL-10) with changes in the drug response of statins in patients with ischemic heart disease with acute respiratory viral infections.

Materials and methods

The study included 170 patients with ischemic heart disease, stable angina, I-II functional class with atherogenic hypercholesterolemia (men and women in postmenopausal age from 41 to 60 years). The diagnosis of ischemic heart disease and functional class of angina of exertion is confirmed by the clinical picture and data of veloergometry at the prehospital stage. Verification of hypercholesterolemia was carried out on the basis of the presence of elevated lipid metabolism (cholesterol> 5.5 mmol/l, triglycerides> 1.7 mmol/l).

Patients were excluded from the study to identify individual intolerance to rosuvastatin; adverse reactions from therapy (increased levels of alanine aminotransferase and aspartate aminotransferase 3 times); refusal of therapy; associated diseases that can cause changes in the lipid system. 120 patients with coronary heart disease with acute respiratory viral infections included in the study comprised a group of patients with coronary heart disease with comorbidities. As therapy for coronary heart disease, patients received antianginal drugs (nitrospray on demand), β-blockers (bisoprolol 5 mg / day, statins (rosuvastin 10 mg / day) [21, 22]. Pharmacological correction of infectious agents was carried out with antiviral drugs: (oseltamivir - 0.75 g 2 times a day., Umifenovir - 0.2 g 4 times a day), antibiotics (macrolides - azithromycin - 0.5 g 1 time a day. Or cephalosporins III generation - ceftriaxone - 1 g, 2 times per day/M) with the development of bacterial complications [23]. The content of low-density lipoprotein cholesterol was determined using Vitalab Flexor E kits and Analyticon kits. The level of interleukins in the serum was determined by the method of immunofermental analysis on the analyzer "Tecan" sets of the company "Vector Best". For the detection of influenza ribonucleic acid, a polymerase chain reaction was performed. Genotyping of polymorphisms of proinflammatory IL-1β –511C> T IL-6 –174G> C, anti-inflammatory cytokines IL-4 –589C> T, IL-10 –1082G> A was performed by polymerase chain reaction on a CFX96 amplifier of Bio-Rad Laboratories (USA). Statistical processing of the results was carried out in Microsoft Excel Office 2007 The nature of the distribution of quantitative traits was normal, and therefore the reliability of differences in the groups was evaluated by the Student's t-test. Significantly significant indicators took the value of the level of $P < 0.05$. Correlation analysis was carried out by calculating the correlation coefficient (r) by Pearson. The distribution of genotypes of the studied cytokine genes corresponded to the Hardy – Weinberg law. The significance of differences in the frequency distribution of alleles and genotypes between groups was assessed by $\chi 2$. The relative risk of developing a phenotype for a specific genotype was calculated as a odds ratio [24].

Results and discussion

Patients with coronary heart disease before inclusion in the study as a hypolipidemic correction of hypercholesterolemia received rosuvastatin 10 mg / day. The estimated level of the target density of low-density lipoprotein cholesterol (1.8 mmol/l) showed a decrease in the possibility of achieving it when verifying with acute respiratory viral infections, which resulted in a decrease in the number of patients who reached the target level of low-density lipoprotein cholesterol from 55.7% to 49, 7% of the studied. In order to achieve the target level of low-density lipoprotein cholesterol, the dose of rosuvastatin was

increased to 20 mg / day. 7 days after detection of signs of an infectious process. Achieving the target level of low-density lipoprotein cholesterol in both dose regimens of rosuvastatin was monitored 7, 14, 30 days and 3 months after the addition of an infectious disease. So, by 3 months, 69% of patients with coronary heart disease were able to reach the target cholesterol level while taking rosuvastatin 20 mg / day. and 60% at 10 mg / day. In the group of patients with ischemic heart disease with acute respiratory viral infections, the target level of low-density lipoprotein cholesterol reached 64% of patients with a dose regimen of 20 mg / day. And To assess the contribution of acute inflammation to the destabilization of atherosclerosis, associations of interleukins with lipid spectrum parameters have been studied [25, 26]. In patients with ischemic heart disease under conditions of concomitant pathology with the carriage of the genotype -511CT, an increase in the level of low-density lipoprotein cholesterol, an increase in the level of IL-1, and a decrease in the level of high-density lipoprotein cholesterol were observed. For patients with the genotype -511TT, there is a connection with an increase in C-reactive protein and triglycerides [27]. The - 174GG genotype is also associated with the growth of C-reactive protein, low-density lipoprotein cholesterol and IL-6 [28]. Genotypes -1082AA and -589TT anti-inflammatory cytokines are associated with increased cholesterol levels. In patients with the detection of the genotype -1082AA, there was a decrease in the production of IL-10 itself, and in the presence of the genotype -58CSS - a decrease in the production of IL-4 In the group of patients with ischemic heart disease without an infectious process, the genotype -511TT was associated with increased levels of high-density lipoprotein cholesterol, C-reactive protein and lower levels of low-density lipoprotein cholesterol (Figure 3). This genotype had anti-inflammatory properties [30, 31]. At the same time, the anti-inflammatory genotypes -1082GG and -589CC were characterized by an increase in the production of these cytokines, low-density lipoprotein cholesterol, and a decrease in high-density lipoprotein cholesterol [32,33]. Genetic analysis to personalize the pharmacological correction of lipid metabolism disorders in patients with ischemic heart disease during acute respiratory viral infections contributed to the isolation of genotypic models when low-density lipoprotein cholesterol was reached or not achieved. By the end of the observation, 67% of the studied patients had reached the target level of low-density lipoprotein cholesterol. They identified genotypes of the pro and anti-inflammatory cytokine genes, in which the lipid-lowering effect of rosuvastatin 10 mg / day was realized. and 20 mg / day [34]. Patients who did not achieve the target level of low-density lipoprotein cholesterol in the course of pharmacological correction were carriers of the IL5 genotype -589CC, and therefore needed to be given higher doses of statin therapy.

Conclusion

We studied the effect of polymorphism of proinflammatory and anti-inflammatory interleukin genes on the severity of the lipid-lowering effect of rosuvastatin in the starting dose in patients with ischemic heart disease in combination with acute respiratory viral infection. The study of phenotypic features showed the presence of associations between the genotypes –511CT of the IL-1β gene and an increase in the synthesis of IL-1β and low-density lipoprotein cholesterol; –511CC IL-1β gene - with increased levels of low-density lipoprotein cholesterol; –174GG IL-6 gene - with increased production of IL-6 and low density lipoprotein cholesterol; –1082GG of the IL-10 gene - with an increase in the synthesis of IL-10, a decrease in the level of cholesterol and C-reactive protein; –589TT of the IL-4– gene with increased formation of C-reactive protein and IL-4. Detection of genotypes –511CT, –174GG, –1082AA recommends the prescription of rosuvastatin 20 mg / day. to achieve the target level of low-density lipiprotein cholesterol.

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CYTOLOGICAL PARAMETERS OF WOUND EXUDATE IN PATIENTS WITH PHLEGMON OF SOFT TISSUES OF THE LEG

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Abstract. Cytological methods were used to study the course of the wound process in patients with phlegmons of the soft tissues of the lower leg under the conditions of using **ß-carotene**. It is shown that in the studied groups of patients treated both in the traditional way and with the use of **ß**-carotene, a positive dynamics of the course of the wound process is observed, characterized by the transition of the inflammatory-regenerative tissue reaction to the regenerative one. However, with the use of **ß-carotene**, the dynamics of the process are preferable, since already on the 3rd day there is a transition of the process from the inflammatory-regenerative phase to the regenerative-inflammatory one.

Introduction

Despite numerous studies, the problem of treating wounds and wound infections remains relevant for many years [1, 2, 9]. An equally important problem is the restoration of the barrier function of the skin with injuries of various etiologies [3, 6]. A special treatment option for patients with purulent-inflammatory processes are bandages with **ß**-carotene**.** The use of **ß**-carotene can significantly increase the effectiveness of treatment, wounds and burns [5, 7]. Currently, more than 300 types of various types of bandages are used in clinical practice [4], which have various properties that contribute to the regeneration process in the area of wound surfaces.

The aim of our work was to study the dynamics of the course of the wound process under the conditions of applying bandages with **ß**-carotene.

Materials and methods

The material for the study was smear prints of the wound discharge obtained from the wound cavity during planned revisions of the zones of surgical intervention performed for phlegmon of the soft tissues of the lower leg. The examined patients were divided into two groups of 10 individuals each. The first group was the control. The treatment of the wound process in these patients was carried out by traditional methods without the use of β-carotene. In the second group of patients, in addition to traditional treatment, bandages with β-carotene were used. The material was taken at the time of opening the phlegmon, on the 3rd, and on the 7th day. The wound material was removed from the wound with a cotton swab and applied to fat-free glass slides. After drying for an hour, the prints were fixed with a mixture of ethanol-acetone in a ratio of 1: 1. The fixation time was 15 minutes. Fixed prints were stained with azure-eosin according to Romanovsky. Stained prints were examined using an MBB-1a microscope at 400x and 1000x magnification. In each printout, the average number of leukocytes in the field of view of the microscope, the average number of leukocytes subjected to destruction, the percentage of neutrophilic, eosinophilic granulocytes, and the percentage of monocytes were calculated. Separately, the percentage of mononuclear cells represented, apparently, by lymphocytes, as well as the percentage of multinucleated cells (macrophages) were calculated. The number of fields of vision examined in each print varied widely, which was determined by the number of cells in the print. The total number of cells examined in each print ranged from 200 to 100. In cases where the cells within one print were not enough to obtain representative results, counting was performed on several prints received from one patient at the same time of the study.

The obtained results were processed by the method of variation statistics on a computer using the program Statistica 6. Analysis of the results was carried out in accordance with the principles of M. P. Pokrovskaya and M. S. Makarov (1942) [8].

All research results are presented in the table and in the figures.

Results and discussion

The results of the study showed that at the **first sampling** of the material **in the control group**, the number of leukocytes in the field of view of the microscope ranged from 55 to 61, averaging 58 cells. The average number of leukocytes subjected to destruction is 46+4. Among these leukocytes, 87% are segmented neutrophils, 1% are eosinophils, and 8% are mononuclear cells (lymphocytes). Monocytes and multinucleated cells were absent.

In patients treated with **ß-carotene**, at the first sampling of the material, the number of leukocytes in the field of view of the microscope ranges from 53 to 59, averaging 56 cells. The average number of leukocytes subjected to destruction is 35 + 3. Among these leukocytes, 83% are segmented neutrophils, 2% are eosinophils, and 11% are mononuclear cells (lymphocytes). Monocytes and multinucleated cells are absent. There were no statistically significant differences between these groups of patients (P> 0.05). In accordance with the principles for assessing cytograms of the wound discharge established by Pokrovskaya and Makarov (1942), in both cases, the course of the wound process at this time of the study was attributed to the inflammatory-regenerative type.

Analysis of the results of the study showed that **on the 3rd day** after the surgery, the number of leukocytes in the field of view of the microscope in individuals of the control group ranges from 28 to 36, averaging 32 cells. The average number of leukocytes that underwent destruction is 22+1.1. Among these leukocytes, 77% are segmented neutrophils, 0.7% are eosinophils, and 17% are mononuclear cells (lymphocytes). Monocytes in the composition of the imprint amounted to 2%, multinucleated cells were detected in an amount of 1%.

In patients treated with **ß-carotene, on the third day** after surgery, the number of leukocytes in the field of view of the microscope ranges from 8 to 16, averaging 12 cells. The average number of leukocytes that underwent destruction is 7.1+1.3. Among these leukocytes, 65% are segmented neutrophils, 0.3% are eosinophils, and 23% are mononuclear cells (lymphocytes). Monocytes are detected in an amount of 4%, and multinucleated cells make up 2%. Discovered differences between patients are statistically significant (P <0.05).

In accordance with the principles for assessing cytograms of wound discharge established in the control group of patients, the course of the wound process is still inflammatory-regenerative, although it tends to improve. In patients treated with **ß-carotene**, the course of the wound process at this time of the study can already be attributed to the regenerative type.

The results of the study showed that on the 7**th day from the start of treatment** in people of the control group, the number of leukocytes in the field of view of the microscope ranges from 6 to 10, averaging 8 cells. The average number of leukocytes subjected to destruction is 2 + 1. Among these leukocytes, 55% are segmented neutrophils, 0.2% are eosinophils, and 41% are mononuclear cells (lymphocytes). Monocytes make up 2%, the number of multinucleated cells is 2%.

In patients treated with **ß-carotene** on the 7th day from the start of treatment, the number of leukocytes in the field of view of the microscope ranges from 3 to 7, averaging 5 cells. The average number of leukocytes subjected to destruction is 3+1.2. Among these leukocytes, 51% are segmented neutrophils, 0.2% are eosinophils, and 36% are mononuclear cells (lymphocytes). Monocytes are found in an amount of 3%, multinucleated make up 3%. There were no statistically significant differences between these groups of patients (P>0.05). In accordance with the principles for assessing cytograms of wound discharge in both cases, the course of the wound process at this time was attributedto the regenerative type.

Thus, the results of the study showed that in the studied groups of patients treated both in the traditional way and with the use of **β-carotene**, a positive dynamics of the course of the wound process is observed, characterized by the transition of the inflammatory-regenerative tissue reaction to the regenerative one. However, with the use of **ß-carotene**, the dynamics of the process are preferable, since already on the 3rd day there is a transition of the process from the inflammatory-regenerative phase to the regenerative-inflammatory one.

So, ceteris paribus, the use of **β-carotene** for the treatment of postoperative wound healing in the treatment of phlegmon of the soft tissues of the lower leg is appropriate.

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CLIMATE CHANGES AND STRUCTURE OF NEW BIRD SPECIES AT THE LAKE BAIKAL DEPRESSION (EASTERN SIBERIA)

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Abstract. Based on many years of research, materials are given on climate warming in Eastern Siberia and, in particular, on Lake Baikal in the second half of the XX and beginning of the XXI centuries - 1.9 ° C / 100 years, i.e. 2.7 times stronger than the average in the northern hemisphere of the Earth - 0.7 ° C / 100 years. This caused strong changes in the boundaries of the areas and the appearance of a large number of new bird species - 86 species out of 415 registered on Lake Baikal in the modern period and completely not characteristic of this region. It has been shown that mainly birds of wetland ecosystems are evicted. The northern borders of their areas shifted by 500 km or more, often reaching the Central Yakut lowland and of the tundra zone. At the same time, the high stability of the main species complexes characteristic of natural zones has been shown, the most part of the new species are birds of passage. The reasons for the mass evictions of birds of near-water complexes are obvious; these are the species of intrazonal habitats found in all natural zones and mountain-ridge belts. Evictions of steppe bird species are limited. They are redistributed within the initial areas with individual cases of flights to the north. Modern climate changes cannot yet be called global, since they are relatively weakly reflected on the borders of natural zones.

Key words: the depression of Lake Baikal, climate warming, changes in the structure of birds, a large number of vagrant species, changes in the areas of birds of near-water complexes.

Introduction. The fauna of birds in the depression of Lake Baikal currently numbers 415 species, 86 of which are new to it. A detailed list of

depression birds is available in a special publication [13]. Overview of new species, including and not previously included in the above publication, is given in separate special works [11-12]. At the same time, an additional analysis of the species and ecological structure of new bird species is necessary, without which it is impossible to determine the reactions of birds of different systematic and ecological groups to significant changes in the natural environment, in particular, the current severe climate warming, often considered as a global process. Its consequences are very strong changes in the bird areas, the borders of which, as well as the plots of the region that are most optimal for their nesting, have shifted significantly to the north. In this regard, this work is very important and timely.

Work area, material and methodology. The dynamics of the bird fauna of the Baikal depression is clearly related to the current climate dynamics in Eastern Siberia and, in general, in North Asia. These regions are characterized by strong climate fluctuations, often accompanied by severe, extensive and even catastrophic droughts, located mainly in Central Asia [3, 9-12]. The depression of Lake Baikal is quite well isolated from the surrounding territories and changes occurring under the influence of climate are very well detected here. This allows you to specifically consider some issues related to the long-term reformatting of the bird fauna, due to the dynamics of the modern climate. First of all, this refers to new bird species in this region, whose composition probably reflects the localization and long-term movements of the longest and most extensive droughts and dry periods [2]. A detailed analysis of the species and ecological structure of new bird species in the region allows us to approach decide this complex and multifaceted problem.

Lake Baikal is one of the largest continental freshwater reservoirs in North Asia (the area of the water mirror is 31500 km^2), characterized by high seismicity. Separate earthquakes reach a strength of 10-11 points here [9]. It has a peculiar climate that affects the course of biological processes both in the aquatic ecosystem and on the coast. According to modern concepts, the influence of its climate can be traced to the ridges of the surrounding ridges, and along the valleys of the rivers leading to Lake Baikal, it is traced more than 40 km from its coastline. Mountain ranges, in turn, limit the impact on the lake of the climate of the adjacent territories. In this regard, the bird population associated with changes in its climate can be identified most accurately here. However, it should be borne in mind that the bulk of the new species appeared on Lake Baikal as a result of evictions from Central Asia, which was swept by severe droughts and long dry periods [2, 15].

From south to north, the climate of Baikal is becoming more severe and its coefficient of rigidity (according to Zenker) increases from 62 to 64 [9-12]. The lake freezes from north to south and its deepest southern regions are covered with ice no earlier than January 11-14, and in recent years only in the first five days of February [12]. The periods of complete freeze-up over the years vary by 40 or more days. Opening of the ice cover in the south is observed on April 25-30, and in the north only on June 9-14. Throughout the year, the lake is characterized by very strong winds, reaching the greatest strength in April, May and November, often comparable in strength to hurricanes. The climatic features of the lake make it possible to distinguish Lake Baikal in a separate climatic province with well-defined features of oceanicity - relatively mild winters and cool summers. The large extent and well-pronounced climate variability of different parts of Lake Baikal greatly complicate the analysis of its the bird fauna, and full-fledged work can only be done taking into account the division of its depression into climatic districts: South Baikal, Middle Baikal and North Baikal [9-13].

The latest modern review of the bird fauna of Lake Baikal falls at the end of the heat-dry period of the last century, and possibly multi-centuries of the climate cycle [9-13]. Such periods always end with very strong fires, which is also confirmed by present observations. In the second half of summer 2015, the entire coast of the lake was covered by fires, the intensity of which lasted several years. Therefore, our analysis ends with this period. It is known that after fire periods they differ in significant changes in the structure of forest stands and, accordingly, in the species composition and density and structure of the bird population. Such changes should be taken into account in special analyzes of long-term changes in the bird fauna. In the process, we used standard methods of statistical processing of materials, with the predominant use of nonparametric methods [4].

Results. The collected materials show that the systematic composition of new bird species in the depression of Lake Baikal is quite heterogeneous, but several families stand out that are distinguished by great species richness. At the same time, in a number of families of shorebird and waterfowl, which are distinguished by their high species richness, new species are found in small numbers. However, it is precisely for these systematic groups that mass evictions to the northern boundaries of their ranges are most characteristic. In many respects, this is due to the fact that this group of birds uses for their nesting widespread intrazonal habitats - wetland ecosystems, within which the intensity of species exchange in the southern and northern regions is very high [6, 9-12]. For other ecological groups of birds, such reasons are not always obvious, which requires special analysis (Fig. 1).

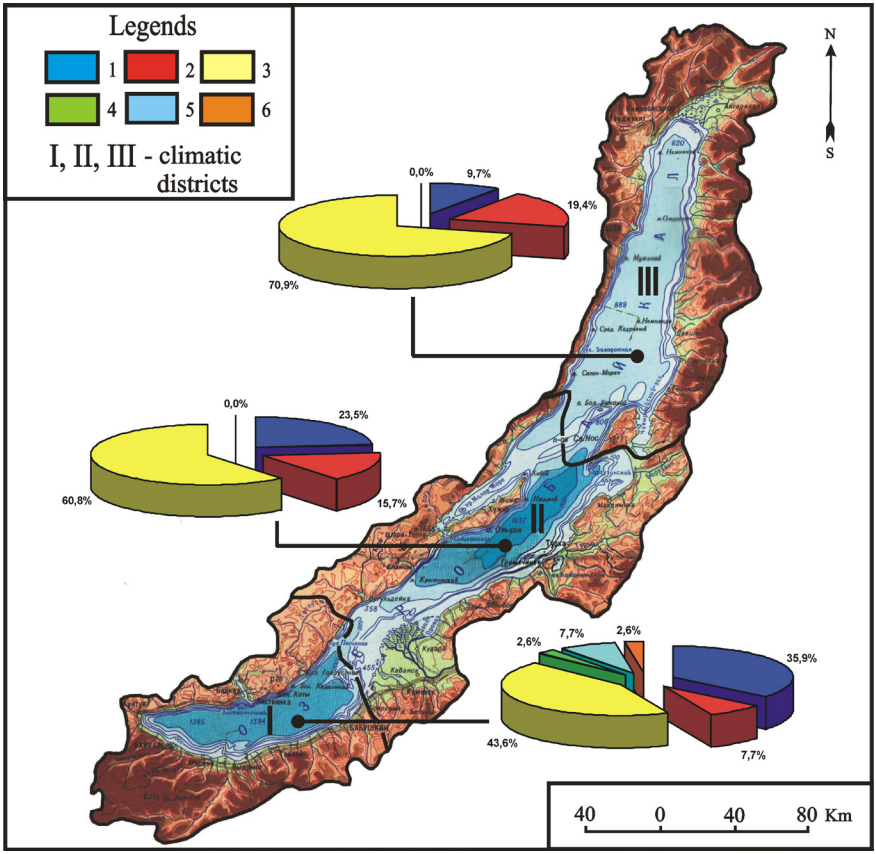

Fig. 1. Distribution of categories of new bird species for Lake Baikal Depression by climatic districts [on 7, with Additions]. Climatic districts: I - South Baikal, II - Middle Baikal, III - North Baikal. Categories of bird species: 1 - breeding migratory, 2 - migratory, 3 - vagrant, 4 - summering, 5 - only wintering, 6 - escaping from cages or aviaries

Among the new of bird species in the depression of Lake Baikal, we distinguished six well-distinguished categories: nesting migratory birds - 22 species (26.2%), migratory birds - 8 (9.5%), vagrant birds - 51 (58.3%), summering - 1 (1.1%), wintering (at least part of the population) - 3 (3.6%) and escaped from cells or aviaries - 1 (1.1%). In the climatic districts, their composition varies greatly. From south to north, the share of vagrant (from

43.6% to 70.9%), as well as migratory (from 7.7 to 19.4%) birds, sharply increases. The share of new breeding migratory species in the same direction is significantly reduced - from 35.9 to 9.7% (Fig. 1). It is well known that in the main of evicted species are usually vagrant birds. However, in this case, mass displacements over a considerable distance were revealed in ordinary and mass species of shorebird and waterfowl [6–13].

It is characteristic that among the new bird species in the depression of Lake Baikal there are no completely settled species. At the same time, some scanty species, which had previously partially remained for wintering, actually went into the category of settled species. Their number is scanty and there are no new species for the region among them. These are alpine species (finches, curlers, lentils), the comfort of winter conditions for which, due to climate warming, has increased dramatically [9-13]. On the southern and partly Middle Baikal, they go down to the foot of the mountains and winter in the areas of large rocky mountain-ridges and mountain uncoverings.

On the whole, the process of eviction of new species of birds from Central Asia to the north was very complex, lengthy, and included several stages that we had previously described [9-12]. Mass evictions of birds are associated with significant changes in the quality of wetland ecosystems as a result of prolonged exposure to severe, extensive and prolonged droughts and dry periods. They cause a sharp reduction in the area of shallow-water lake systems and change the direction of their successions. The consequence of this is the modern reformation of the areas of shorebirds and waterfowl. The southern limits of their distribution often remain unchanged, although the number of birds here is sharply reduced, and the northern borders are noticeably moving to high latitudes.

The number of distinguished categories among new species of birds in the Baikal depression was twice as high in the South Baikal climate district. The ratio of the selected categories has noticeably changed from south to north. The revealed differences are significant and significant - $\chi^2 = 20.9 > 18.3 = \chi^2_{10;\,0.05}$. However, pairwise comparisons of the frequency of occurrence of new bird species of different categories showed that real differences exist only between the South Baikal and other climatic districts - $\chi^2 = 10.1 > 7.81 = \chi^2_{3;\,0.01}$. As they move north, they for certain increase - $\chi^2 = 13.0 > 11.3 = \chi^2_{3;\,0.01}$. However, between the Middle Baikal and North Baikal climatic districts, differences in the ratios of different categories of birds are not for certain. This situation clearly indicates a stronger influence of limiting factors in the south of the depression.

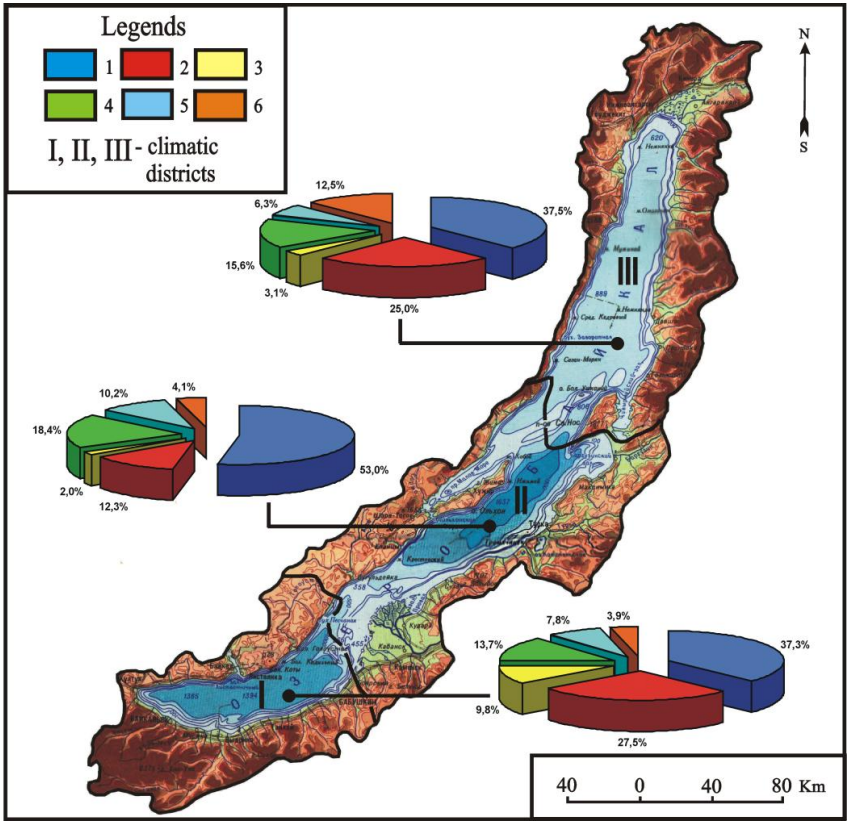

Fig. 2. Distribution by characteristic ecological groups of new for the lake Baikal Depression of bird species [on 7, with Additions]. Climatic districts: I - South Baikal, II - Middle Baikal, III - North Baikal. Ecological groups of birds: 1 – shorebirds and waterfowl, 2 - forest, 3 - shrub, 4 - meadow, 5 - steppe, 6 – mountain

To fully identify the changes that are taking place, an additional analysis of the distribution of the ratios of new bird species by ecological groups is clearly needed. In accordance with the developed habitats, they are formed by shorebirds and waterfowl, forest, shrub, meadow, steppe, and mountain bird species. In the total composition of the new bird species, the depression of Lake Baikal are clearly dominated by shorebirds and

waterfowl - 36 species (43.0%). The share of forest birds is significantly lower - 17 (20.2%), and other ecological groups are even poorer: shrub - 6 (7.1%), meadow - 11 (13.1%), steppe - 8 (9, 5%) and mountainous - 6 (7.1%) (Fig. 2). It is clearly seen that the share of shorebirds and waterfowl is higher in the Central Baikal climatic region - 53.0%. At the same time, the share of forest birds is significantly reduced here, while in other districts it is approximately the same. From south to north, the share of shrub birds significantly decreases (from 9.8 to 2.0-3.1%), while in meadow grasses it increases (from 13.7 to 15.6-18.4%). The shore of steppe birds in this direction decreases to 6.3%, and that of mountain birds increases significantly (12.5%) (Fig. 2). The Baikal climatic districts clearly differ from each other in these indicators, but these differences are not sharp pronounced.

A check based on a table of contingency of signs of type r * s showed that differences between districts are unreliable: $\chi^2 = 11.61 < 18.31 = \chi^2_{10; 0.05}$. Pairwise comparisons of the frequency of occurrence of new bird species of different ecological groups using the Brandt-Snedekor criterion also confirm the absence of significant differences in their ratios in the districts: $\chi^2 = 3.38\text{-}7.28 < 11.07 = \chi^2_{10; 0.05}$. Obviously, this indicates a fairly uniform distribution of various ecological groups of birds across Lake Baikal. However, given that we are dealing with general totalities, the differences between the districts should nevertheless be recognized as significant [4]. Taking into account a small number of new species among families with high species diversity and using wetland ecosystems for nesting, this group of birds is formed mainly due to families whose separate species make extensive use of wetlands. Meadow and the main part of the shrub new bird species master mainly wet meadows and sweaty lowlands, and therefore they could be attributed to the group of shorebirds and waterfowl. This underlines the paramount importance of well-watered habitats for evicted species. This conclusion is confirmed by an insignificant proportion of typical steppe bird species that appeared at the northern border of their distribution.

An analysis of the distribution of finds of new bird species on Lake Baikal for different time periods, differing in the level of watering over a vast territory, showed the absence of significant differences between the periods: $\chi^2 = 11.1 < 25.0 = \chi^2_{15; 0.05}$. Two of them were characterized by high water availability (1950-1975 and 1983-1995), and two were characterized by low water availability (1976-1982 and 1996-2011) [2]. An additional analysis of the materials showed that the eviction of a large number of new bird species to the north to a greater extent caused not general trends of drying out of the territory, but concrete seasons with abnormal situations

(extensive and severe droughts). This conclusion was made by us earlier in the general analysis of the situation associated with the sharply increased number of registrations of new species on Lake Baikal. At the same time, the number of annual meetings of individuals of species whose appearance on Lake Baikal was established for the first time, is significantly growing throughout the entire period under consideration (1950-2011) - $\chi^2 = 63.9 > 37.7 = \chi^2_{15;\,0.001}$. This indicates an increase in the flow of evicted birds as the area covered by droughts increases. The linear regression of the interdependence of the number of birds evicted and the level of water cut in the territory is small, but significant: $\chi^2 = 4.98 > 3.8 = \chi^2_{1;\,0.05}$ and selects 7.8% of the total variability of these factors. Given the many unaccounted factors affecting the relationship of these indicators, it can be considered quite significant.

Discussion. The modern fauna of birds in the depression of Lake Baikal was formed as a result of the mass eviction of birds from Central Asia. The main reason for this is the strong climatic anomalies observed from the late 50s - early 60s of the 20th century (catastrophic droughts) with a general tendency to severe climate warming [9-10]. East Siberia, in comparison with many regions of the Earth's Northern Hemisphere, is characterized by stronger climate changes. Significant warming intensity and its very long duration indicate the end of the currently warm-dry period of the climate cycle, not a century old, but most likely a multy-centuries level, lasting about 2 thousand years [5, 9-11]. Significant changes in the fauna of birds in Eastern Siberia, including Yakutia, can be traced from south to north from deserts and steppes of Central Asia to the tundra of the Arctic, covering the mountains of the Subarctic and islands of the Arctic Ocean [1-3, 9-12, 14]. The position of the depression of Lake Baikal, located actually in the middle of North Asia, allows you to well monitor the general dynamics of the areas of many bird species. The data collected here make it possible to obtain a complete and reliable picture of the characteristics of the reaction of birds of various systematic groups and natural zones to changes occurring in ecosystems of vast territories [1-3, 5-12, 14]. In the depression of Lake Baikal, a characteristic feature is pronounced warming in winter and early spring, on average, 1.9º C/100 years [15]. At the same time, in some areas of this large lake, other directions and the strength of these changes may be observed. So, in the Barguzinsky depression, warming is less pronounced - on average, only 1.0° C [16].

A general analysis of the materials shows that among the new species of Baikal coasts, predominantly vagrants, and in the ecological groups, the share of shorebirds and waterfowl is clearly greater. In the group of

vagrant species, taking into account other ecological groups that also use wetland ecosystems, it reaches 75.0%. Therefore, despite the relatively high species richness of the new species, their main core is formed due to vagrant coastal birds [11]. Given the environmental situation characteristic of the studied period, this combination of species is not surprising. The main part of the shorebirds and waterfowl, with the exception of typically southern and steppe species, have extensive areas in which consistent use of the southern and northern sections is observed [5, 7-12]. All species of this ecological group are characterized by the cyclical dynamics of their areas, clearly related to the level of waterlogging of the territory. In this case, it should be borne in mind that wetland ecosystems are intrazonal landscapes found in all natural zones and mountain belts. They are characterized by a very high variability of species complexes at the places of migration and in new nesting areas, high dynamism of the spatial structure and areas, which are very large in size. Evictions are one of the main adaptations of birds of this complex to living in extremely dynamic and unstable wetland ecosystems. They are well explained by the concept of cyclic dynamics of areas developed by V.G. Krivenko [5].

Conclusions. Over the entire observation period (the second half of the 20th century – the beginning of the 21st century), the most massive evictions were characteristic of birds of wetland ecosystems. To a much lesser extent, such climate changes are reflected in the native desert and steppe bird species. Their redistribution is observed within the main zone of the habitat, and only in extremely unfavorable conditions are some bird of passage species beyond the northern boundaries of their areas. They are characterized by high stability of sreas and a high level of adaptation to living in their zones. In general, modern climate changes have not yet led to a very strong displacement of the boundaries of natural zones and a change in the boundaries of the areas of native desert and steppe bird species, the most mobile group of animals. The bulk of the new bird species of Lake Baikal and Pribaikalye are vagrant species found in single specimens.

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THE NATURE OF THE CHANGE IN THE TYPE OF RELIEF FORMATION IN THE SUBZONE OF THE NORTHERN TAIGA OF THE FAR EAST

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Abstract. The goal and objectives are to elucidate the nature of the change in the prevailing type of relief formation in the subzone of the northern taiga of the Far East. Such a study was performed for the first time and therefore is new.

Materials – data of route studies (1974; 2012), performed by the author along the Kolyma highway (respectively, from the coastal strip of the Sea of Okhotsk to the Upper Nersky plateau, inclusive), using literature and the results of aero-visual observations in most areas of the northern subzone taiga of the Far East. Methods – comparative geographical and informational.

Main conclusions. - The main tendencies of exogenous relief formation within the mega-coast of the Sea of Okhotsk for the near future are determined by the retreat of marine abrasion and accumulation before erosion and alluvial accumulation, and in the mountains by an even greater displacement of nation processes as a whole by a sharp increase in the specific gravity of cryogenesis (in particular, kurum formation) in general morphogenesis.

Throughout the entire geomorphological stage (from the Mesozoic to the present), the chionosphere invariably acted on the topography of the Kolyma region from the Arctic and Pacific Oceans. Now there is mainly a weak influence of the Pacific Ocean (in particular, the Sea of Okhotsk), as a result of which parallel-valley snowfields form only in the extreme southeast. Thus, in the wide areas of the Upper Prikolymie, the late Holocene and modern exogenous formations were superimposed on the ancient Pleistocene relief of various genesis. A more ancient relief, related by age to the Paleogene, in the studied area is of limited distribution.

In connection with the increase in continentality observed throughout the territory under consideration, cryogenic features begin to dominate in the relief. In the future, this trend will further intensify, which will lead to an increasing frequency of geoecological risks.

Keywords: The Far East, the Okhotsk mega-coast, the Upper Nerskoye plateau, modernity, methods, age, nivation, permafrost creep, kurum formation, geoecological risks.

Introduction

The thematic solution of the stated goal is made on the example of 2 districts - the Okhotsk coast and the Upper Nersky plateau.

The features of relief formation within the Okhotsk mega-coast were examined in detail earlier (materials of the author, 1975 and 1976). The specifics of the geomorphological appearance of the Verkhne-Nersky plateau are traced below, with the involvement of early publications [1].

Targets and goals – elucidation of the nature of the change in the prevailing type of relief formation from the coastal strip of the Sea of Okhotsk to the Upper Nersky plateau inclusively, in the subzone of the northern taiga of the Far East. Such a study was performed for the first time and therefore is new.

Materials and methods

The proposed article is based on route research materials (1974; 2012), performed by the author (partially, in 1974, together with V.V. Nikolskaya) in a strip along the Kolyma highway (respectively, from the coastal strip of the Sea of Okhotsk to the Upper Nersky plateau, inclusive), with the involvement of early authorship publications [1], literary sources and the results of their own aerovisual observations in most areas of the northern taiga subzone of the Far East.

Results and discussion

The geographical position of the Far East was determined by the uniqueness of its nature not only in Asia, but also within other continents of the Northern Hemisphere [2, 3]. This is also true in relation to the peculiarity of the relief of this region.

For the inland part, the growing dominance of continental influence is characteristic throughout the year, and for the coastal territory it is growing, which is consistent with the development of many researchers [4, 5]. This influence obeys first of all the law of latitudinal zonality and is expressed in morphogenesis, on the one hand, in the enhancement of physical and mechanical weathering, denudation and accumulation, and on the other, in a decrease in the morpholithogenetic effect of nivation.

During the geomorphological phase (from the Mesozoic to the present day), the leading role in the exogenous relief formation of the Okhotsk mega-coast belongs to the climate, which has repeatedly experienced sharp fluctuations - from the continental variant (to the maximum of the Quaternary glaciation, which coincides with the greatest regression of the sea) to the wet oceanic - during the cooling period at the turn Pleistocene and Holocene, when the sea was transgressive (with a Holocene minimum).

The specific development of the relief of the Okhotsk mega-coast is connected, on the one hand, with the peculiarity of the subpolar climate, and on the other, with the antiquity of the Kurum formation process, which reached its peak on the Taui mega-coast during the maximum of Quaternary glaciation, which coincides with the greatest regression of the sea]. The peak of nival relief formation, in our opinion, was noted later, during the cooling at the turn of the Pleistocene and Holocene, when the sea was transgressive.

The peculiarity of the modern climorogenetic appearance of the mega-shores of the Sea of Okhotsk was created for the most part by ancient and modern nivation, and to a lesser extent by permafrost processes. At the same time, it should be noted that in the last 2–3 decades, according to our studies, the processes of kurum formation within the mega-coasts of the Sea of Okhotsk have intensified (according to the author, 1977). The Kurums, within the limits of the dominance of the oceanic relief-forming influence still existing here, serve as one of the diagnostic signs of an increase in the continental climate. Here, active Kurums on loaches increased their area, “living” and previously immobile such formations along the hollows in the forest belt intensified, and their young forms appeared in some places on the mountain slopes directly adjacent to the sea. We quite reasonably believe that the kurums, within the limits of the prevailing dominance of the oceanic relief-forming influence, are one of the diagnostic signs of an increase in the climate continent [6].

The main tendencies of exogenous relief formation within the mega-coast of the Sea of Okhotsk for the near future are determined by the retreat of marine abrasion and accumulation before erosion and alluvial accumulation, and in the mountains, by even greater crowding out of nation processes by further growth of kurum formation and, as a whole, by a sharp increase in the specific weight of cryogenesis in general morphogenesis.

The development of the relief of the Upper Nersky plateau is clearly visible in the spectrum and change in relief types (Fig.).

In the basin of the upper reaches of the Kolyma River and its tributaries, the landscapes of the northern taiga are characterized by the following altitudinal-belt structure: the lower levels are mainly occupied by mountain sparse forests, and at altitudes above 800 m above sea level, loam belt complexes dominate. The set and tension of exogenous relief-forming processes here are in accordance with the high-altitude climatic zones.

So, if erosion and permafrost processes are leading in the landscapes of mountain woodlands, then in the alpine belt these are permafrost and to a lesser degree nivational.

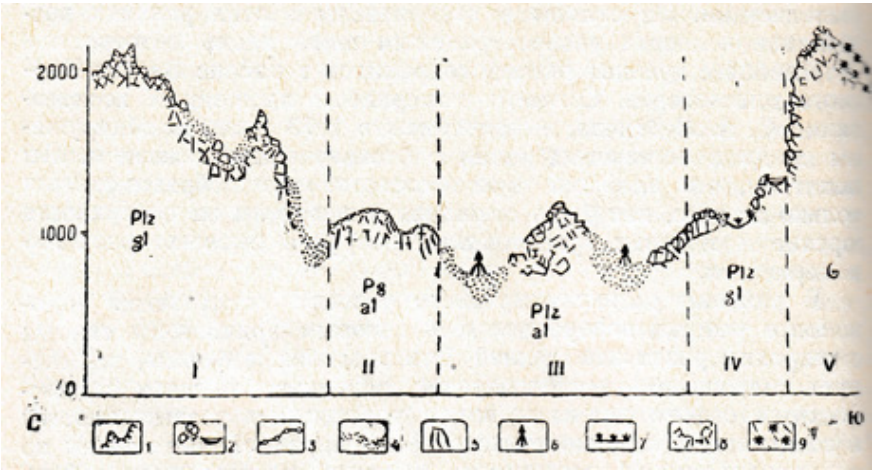

Fig. Schematic regional profile of the mountains of the Upper Kolyma basin [1].

Horizontal scale – arbitrary. *Indices* (I, II, III, IV, V - decoding in the text) show the oldest age of the relief, which determines the specifics of geomorphological areas. *Relief types*:

1 - ancient glacial examination;
2 - ancient glacial accumulative; 3 - ancient erosion-alluvial;
4 - erosion-alluvial of different ages; 5 - cryogenic-proluvial (delly);
6 - anthropogenic; 7 - phytogenic; 8 - cryogenic of different ages;
9 - nival Holocene.

The morpho-sculptural appearance of the alpine-mountain-tundra landscapes within the entire investigated territory is characterized by the presence of linear and curly kurums and kurum fields. These formations are a product of coriomorphogenesis, which proceeds actively in a sharply continental climate.

On loaches outside the coastal spaces (about 100 km wide), filled with a group of wooded ridges, parallel-valley systems of snowfields can be traced. They are confined to the lower parts of the loach belt and stretch in narrow linearly elongated formations, 5-50 m wide and 20-200 m long.In contrast to the snowfields parallel to the Tauisk Bay, the sea has a more mega coast, they do not go to undivided intervalley sections of flattened watershed spaces. In addition, the farther the continent, the more areas in the alpine belt of the snowfields that have already descended. At the same time, it is evident that among the

snowfields their parallel-valley forms prevail, restored on the ground by the distribution of the spots of grayish-fawn loesslike deposits formed by them. The thickness of the latter, according to individual measurements, is 20–40 cm. It should be noted that, unlike the seaward macro slope, there are practically no avalanche trays, morphological traces of snow wasps and avalanche cones.

Within the vast saddle spaces, along the main divide between the basins of the Arctic and Pacific Oceans, in addition to areal kurums, frequent remains of weathering and well-defined forms of exacration of the ancient glacier of the era of maximum cooling, the first, from the Sea of Okhotsk, pronounced kar and glacial lakes appear. They are located at various hypsometric levels. Those lakes that are located in areas of hilly moraine relief undergo various stages of overgrowing.

In the northern direction, the areas of ancient glacial landforms increase sharply; nival formations almost completely disappear; The modern climorogenetic appearance of these territories is formed mainly under the influence of intense permafrost processes. Among the landforms created by erosion, the inland continental mountain slopes of the northern taiga are dominated by erosion sinkholes and erosion steeply sloping runoff channels that are subject to active permafrost treatment, in particular, ice formation.

In the wide valleys of the river. Kolyma and its large tributaries are often traced creating bends of the common surface of the edge of the lower parts of the slopes, due to cutting by steep cliffs of exposed bedrock expressed in the relief by lateral erosion. The farther from the upper reaches, the more and more development in the valleys is gained by alluvial accumulations and the relief forms created by it, which is natural for river basins as complex developing systems. Among accumulative formations, the following levels are most widely and clearly distinguished: 1) numerous sandstone-pebble braids; 2) low flat islands; 3) three-meter terrace.

Based on the above materials, an extensive zone is distinguished where erosion and alluvial accumulation dominate from the modern exogenous processes of relief development in river valleys of the mountain forest belt, and physical weathering, permafrost creep and frost cracking prevail in the char belt, the processes of cryomorpholithogenesis, superimposed on the forms of the ancient glacial genesis, concentrated mainly on the slopes of the northern exposure.

In diverse river valleys related to the R. Kolyma basin, closer to its middle course, low accumulative landforms are, as a rule, destroyed by anthropogenic interference, and the thermokarst caused by it. On the slopes and watersheds in these areas, human exposure extends only along the highway.

The most ancient relief is preserved in the region of the Verkhne-Nersky plateau. According to the materials of areal studies of S.A. Lebedev, made in 1973, traces of paleogene valleys with quartz-free alluvium were found here. In our opinion, alluvium of such a composition could have formed only before the Jurassic and Cretaceous granitoid intrusions of the highest points of mountains and passes were dug up and brought to the surface [1].

In the areas of the development of the ancient relief, flattened sections of the watersheds are noted, to which the slopes with wide development of delleas are connected. These erosion forms, according to most researchers, arise in connection with the planar runoff of storm water from flattened hills, transformed into numerous and parallel stripes along the slopes. Such an explanation, in our opinion, can be accepted only for furrows that are separated from each other by different distances and are more often uncoached. The formation of typical delleys (formations parallel to each other, laid at regular intervals, with flattened interband sections and oriented at an insignificant angle or strictly along a slope - in the form of grooves, hollows or faint bands) occurs in a different way. In addition to the planar runoff of rainfall, a complex of processes (sub-sod and intra-ground runoff, together with permafrost creep and solifluction) plays a much larger role in their formation. This is confirmed by the materials of our semi-stationary studies (1957-1959; 1971-1972) in many areas of Chukotka and Wrangel Island. The noted processes are concentrated along frost cracks, which is why they divide and acquire a regular (equal in dimension) pattern in the plan.

Analyzing the above materials and considering the results of our research from a certain angle, the following circumstance should be noted. Fully agreeing with the opinion of K.K. Markov, P.A. Kaplina and A.A. Svitoch (based on materials from 1974), that completeness and continuity of paleogeographic information, as well as an raise and increase in its intensity up the stratigraphic column are necessary to determine the development trends of the relief, we do not set the task of futurological constructions. Nevertheless, we assume that the indicated results of route studies provide an opportunity to outline the series of changes in the directions of development of the relief, although in the most general form. Thus, our data are the most primary material for small-scale zoning of paleogeography of relief formation (see Fig.).

The above schematic profile shows 5 large areas, within which the formation and development of the relief took place and is taking place under the influence of various agents.

So, in the north of the surveyed territory of the Kolyma Highway (I), an area of high mountain ranges and massifs with an ancient exaration-glacial relief and superimposed postglacial and modern cryogenic formations (Kurums, weathering remains, etc.) is distinguished.

This region (I) is adjoined from the south by the region of the intracontinental Early Cenozoic plateau-valley erosion-alluvial relief (II), with superimposed younger erosion-alluvial and proluvial (for example, dellei) formations against the background of the widespread development of ancient and modern cryolithomorphogenesis.

The low-mountain large-valley region of the ancient perischlacial relief of the upper Kolyma (III) basin is characterized by cryogenic forms of different ages in the mountains and also erosion-alluvial forms of different ages in the valleys. Here, the natural surface is destroyed by a modern anthropogenic factor. The area borders in the northwest with the first area.

The territory of a part of the upper Kolyma river basin, exposed to the north, belongs to the region of upland-glacial hilly moraine relief, with a postglacial superposition of cryogenic and phytogenic forms (IV).

Further, to the southeast of region IV, an alpine area of loach relief is distinguished with ancient glacial-exaration forms on the slopes of the northern exposure and a cryogenic relief of equal age with them on the southern slopes, and the postglacial one in the caravans (V). In addition, here on the southern slopes, modern nival formations superimposed on cryogenic forms.

Thus, in the wide areas of the Upper Prikolymie, the late Holocene and modern exogenous formations were superimposed on the ancient Pleistocene relief of various genesis. A more ancient relief, related by age to the Paleogene, in the studied area is of limited distribution.

Conclusion

The main tendencies of exogenous relief formation within the megacoast of the Sea of Okhotsk for the near future are determined by the retreat of marine abrasion and accumulation before erosion and alluvial accumulation, and in the mountains by an even greater displacement of nation processes as a whole by a sharp increase in the specific gravity of cryogenesis (in particular, kurum formation) in general morphogenesis.

Throughout the entire geomorphological stage (from the Mesozoic to the present), the chionosphere invariably acted on the topography of the Kolyma region from the Arctic and Pacific Oceans. However, while in the Pleistocene precipitation in solid form, accumulating and forming glaciers in the mountains, came mainly from the side of the Arctic Ocean, now such a northern influence on the examined territory has come to naught. Now there is mainly a weak influence of the Pacific Ocean (in particular, the Sea of Okhotsk), as a result of which parallel-valley snowfields form only in the extreme southeast.

In connection with the increase in continentality observed throughout the territory under consideration, cryogenic features begin to dominate in the relief. In the future, this trend will further intensify, which will lead to an increasing frequency of geoecological risks [6].

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ORIGIN AND DEVELOPMENT OF THE FAR EAST RELIEF IN THE LIGHT OF PRINCIPLES OF ACTUALISM AND HISTORISM

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Abstract. The object and subject of the study is the origin and development of the relief of the south of the Far East.

The goal and objectives are to show the differences in the application of the principles of actualism and historicism for understanding the nature of regional climorogenesis. This is the unique novelty of the author's research. The main findings of the study are: 1) the greatest effect is given by a method based on a combination of both principles - actualism and historicism; 2) the presented results revealed the need to take into account the peculiarity of the Far East, reflected in many ancient and modern sloping processes that create forms that are not repeated in other regions; 3) completed developments can make significant adjustments in the selection of optimal environmental management options. This is especially significant in the context of the outlined directed strengthening of continentality and general regional cooling, accompanied by a widespread increase in environmental risks.

Materials and methods - the author used the data of many years of research in Chukotka, Wrangel Lake and Kolyma (1957-1959; 1971-1972), as well as in the lowlands (1974-1979) and in the mountains (2007-2011) of the south of the Far East, and available literary sources. In the analysis, comparative geographical and information methods were applied.

In the Far East, there is a mutual overlapping of relief forms in time and space created by different processes generated by changing climates or changing climatic seasons. This creates age-related multiplicity within the same shape or single relief element.

The destruction of ancient landforms occurs most rapidly on the slopes of river valleys, and the maximum complication of morphogenesis corresponds to the upper zone of the mountains and the transition bands from areas of denudation to areas of stable accumulation. An analysis of the relief within these spaces makes it possible to identify the degree of complication of morphogenesis.

Keywords: The Far East, actualism, historicism, methods, principles, age, antiquity of the relief, cooling, geoecological risks, nature management.

Introduction

Natural scientists carry out the regularities of the origin and development of the terrestrial and underwater relief of our planet, usually using methods that are based on the principles of actualism and historicism [1].

The possibilities of applying the principle of actualism in structural geomorphology are much greater than in climatic, because it addresses a much wider time frame. For example, the formation of folds at the site of the geosynclines of the Far East, beginning with the Proterozoic and ending with modernity, occurred along one path and has a similar reflection in the relief. Even earlier, before the Earth's hydrosphere appeared, fault tectonics and volcanism began to appear and be reflected in the relief here. The environment in which the above processes of morphotectonics proceeded has repeatedly changed over the geological time: a) from anhydrous at the beginning of development, in a gas atmosphere (other than modern), to underwater in the Paleozoic at the beginning of the Mesozoic; b) eruption of lavas and sedimentation in the hydrosphere that arose as a result of volcanism; c) because of the increase in the amount of water vapor in the atmosphere, shadow climates formed, with the further development of which turned into differentiated solar climates.

The possibility of applying the principles of actualism in climatic geomorphology arose only from the last stage of the Earth's development - from the moment of the existence of morphostructures in sunny climates.

The principle of historicism, on the contrary, has greater potential for application in climatic geomorphology than in structural. So, a historical approach, as a rule, is necessary due to the fact that climatic influences on the relief of the Far East left deep traces, created new forms (moraine shafts, ozas, canes, dunes, kurum fields, drift cones, mudflows, etc.). Climate change has caused a change in the nature of their impact on the terrain. The traces of such shifts, overlapping each other, were imprinted in a climoromorphic shell. At the same time, the situation of the latter became so complicated that correctly deciphering the origin and assessing the stability of a particular relief becomes possible only from the standpoint of historicism, using its paleogeographic method.

The mismatch in time of sedimentation and erosive incisions in river valleys, on the one hand, and climatic rhythms on the other, expressed by the "Zergel – Penka" law [2], is quite explainable by the superposition of processes caused by changes in climates and self-development of the relief of the river basin. Considering only the change in relief forms due to climatic fluctuations in geomorphologically homogeneous regions, we came to the conclusion that three types of relationships between modern and ancient relief forms arose in the general course of climomorphogenesis of the Far East:

1) in inherited from the early stages to the present, development of geomorphological processes in large main valleys (for example, Amur, Zeya and other rivers) in the continental climate with pronounced monsoon features;

2) the cyclic variability of geomorphological processes during rhythmic climate change at the last stages of the Pleistocene (for example, in the mega-coasts of the Japan, Okhotsk and Bering Seas);

3) directionally-irreversible change in geomorphological processes during directional-rhythmic climate change, accompanied by a decrease in humidity and an increase in continentality, in the Late Cenozoic (for example, on the shores of the East Siberian and Chukchi Seas).

Deciphering a complex combination of really existing modern and ancient landforms is practically impossible without identifying trends in morphogenesis, i.e. It requires establishing the age and conditions of formation of the most ancient ("relict") elements of the modern relief. The "relictness" of the relief in the understanding of the antiquity of its individual elements is applicable only with a radical change in the direction of geomorphological processes. If the tendency of the relief development persists, then, apparently, it is necessary to single out the forms of the retrospective series that correspond to the earlier stages of morphogenesis. During climorogenesis, relict elements that arise as a result of directional rhythmic processes that do not correspond to the modern climate, but are expressed in a morphogenetic complex, contribute to the complication of the relief [1].

Goal and tasks – showing differences in the application of the principles of actualism and historicism for understanding the nature of regional climorogenesis. This is the unique novelty of the author's research.

Materials and methods

The data of many years of research by the author in Chukotka, about. Wrangel and Kolyma (1957-1959; 1971-1972), as well as in the lowlands (1974-1979) and in the mountains (2007-2011) of the south of the Far East, and available literary sources. In the analysis, comparative geographical and information methods were applied.

Results and its discussion

The issues under discussion are distinguished by the complexity and variety of aspects, so below we will focus on only the three most important problems..

Relief age. The relief of the Russian Far East is diverse in age. This affects even the most “large features of the surface of the continents and the bottom of the oceans” - morphotecture [3]. Its age in the southwestern part of the Far East was defined as Precambrian platforms, and to the east - Paleozoic, Mesozoic, and Cenozoic folding.

The geomorphological stage [4], which began for the western part of the land of the Far East from the Early Cretaceous, corresponds only to its climomorphogenetic component, always younger than the structural one.

For the relief of the islands and peninsulas of the Far East in the field of development of modern volcanism, it is specific that the plain at the age of two components is almost reduced to zero. Mesozoic climorogenetic forms are preserved in the relief only in those places where the process was later preserved in its former form.

Determining the age of climomorphogenetic formtion is more difficult than structural. This is due to the fact that climate changes cause relief changes, as a rule, gradually, and traces of the relief-forming work of more ancient atmospheric agents often for a long time remain more pronounced on the earth's surface than the effects of modern exogenous processes. In addition, with climate changes, the relief-forming role of some of its components can increase and, conversely, decrease in others. Such shifts can occur seasonally and with constant climate. This can also happen in connection with an abrupt change in the relief both in the natural and in the anthropogenically disturbed course of development of its genetic types.

For the Far East, humid climate, a specific regional feature, represents the most archaic factor of relief formation. Humid conditions in this region covered the entire geomorphological stage and currently dominate.

In the Far East, there is a mutual overlapping of relief forms in time and space created by different processes generated by changing climates or changing climatic seasons. This creates age-related multiplicity within the same shape or single relief element.

Preservation of ancient relief elements. The time of coexistence of elements of ancient and modern relief, as is known, is determined by the intensity and direction of exogenous processes [4]. So, with increasing intensity of erosive disintegration, the preservation period of relict forms is reduced, and with a decrease, a greater preservation of the ancient relief elements is observed, but at a certain stage they are buried under an accu-

mulative cover. There is also the assumption that the destruction of traces of an ancient relief most rapidly occurs in the summit of the mountains [5]. This is motivated by the fact that the maximum values of the relief energy are fixed here. At the same time, it is assumed that the destruction of ancient landforms by denudation (for example, in the Far East) is so intense that only young sloping surfaces are expressed in the landform.

The study of the steepness of the slopes and watershed lines within the large drainage basins of the Far East allowed us to identify four zones with different intensities of denudation processes and, accordingly, with different conditions for the preservation of ancient relief elements:

1. The lower parts of the catchment basins with relatively gentle slopes and arranged thalwegs of different order streams (in particular, the Amur River, the Ussuri River and others) are characterized by a low intensity of denudation processes. Here, in the region of "zero gradients", and further within the framework of stable sedimentation, the most complex different-aged relief forms is formed and stored for a long time.

2. The middle part of the drainage basins (for example, on the western mega-slope of the Sikhote-Alin ridge), corresponding to a moderately steep topography with maximum erosion planned separation, is distinguished by a rather rapid development of deep and especially lateral erosion. The forms that arise here are short-lived. Fragments of the ancient relief are most often observed in the middle part of the drainage basins in the areas of large planned restructuring of the hydro-network or in the outlying areas of intramountain depressions. Long-term directional displacement of river flows leads to the appearance of pronounced asymmetry of valley forms. In this case, conditions are created on a gentle slope for preserving erosion-accumulative and sloping landforms, and in places of negative bends, burial of the most complete sections of sediments correlated with these ancient forms is created. At the same time, almost complete "rejuvenation" of the slope surfaces takes place on a steep, undercut slope of the pool.

3. In the upper parts of the catchment basins (in particular, on the eastern megascope of the Sikhote-Alin ridge), where a steep-slope relief is formed with a maximum depth of erosive dissection, the resulting elements of the erosion-alluvial relief are characterized by a small area distribution and therefore, as a result of a significant intensity of slope processes are very quickly destroyed. It is here that the most rapid renewal of the exposure of slope surfaces occurs.

4. In the upper parts of the catchment basins (in particular, on the eastern megascope of the Sikhote-Alin ridge), where a steep-slope relief is formed with a maximum depth of erosive dissection, the resulting elements

of the erosion-alluvial relief are characterized by a small area distribution and therefore, as a result of a significant intensity of slope processes are very quickly destroyed. It is here that the most rapid renewal of the exposure of slope surfaces occurs.

The correctness of the above conclusions is confirmed by the results of our comparative analysis of the modern erosion activity of the river and the rate of denudation, for example, in the apex belt of the Sikhote-Alin Mountains. So, if we assume that the summit belt here arose due to the activity of the alpine plantation, then with the modern width of the aligned watersheds from 0.6 to 1.5-2.0 km (the dimensions are determined taking into account the slope angles at which the plantation develops), the total precipitation carried into river valleys and their slopes would make up about one quarter of the total volume of relief in the belt of midlands and highlands. With a modern runoff layer, similar to the degree of erosion partition and average slopes of the relief, the modulus of solid runoff for Sikhte-Alin hr should exceed the modern modulus by several orders of magnitude. Naturally, due to the insufficient transporting ability of modern watercourses, clearly unable to move all this volume of loose material, river valleys should be overloaded with clastic material. Observations of the thicknesses of the Quaternary alluvium in the bottoms of river valleys and slope deposits allow us to consider them as corresponding to the modern energy of slope and erosion-accumulative processes. Consequently, the actualist approach allows us to evaluate the conditions for the appearance of a flattened relief in the upper zone of the mountains in a different way and makes us look for more rational, from the point of view of actualism, solutions to these problems.

The distribution of bands of various intensities of modern processes in catchment basins is explained, to a first approximation, by the law of factor relativity [6]. On this basis, we can conclude that the destruction of ancient landforms occurs most rapidly on the slopes of river valleys, and the maximum complication of morphogenesis corresponds to the upper zone of the mountains and the transition bands from areas of denudation to areas of stable accumulation. An analysis of the relief within these spaces makes it possible to identify the degree of complication of morphogenesis [1].

Similarity of landforms. The formation of such relief forms is possible by different types of geomorphological processes not only in the same, but also in different climatic conditions [1]. As an example, we can point to the so-called system of drainage funnels (Fig.), Or circuses, well expressed in the upper reaches of erosion forms of any order [7].

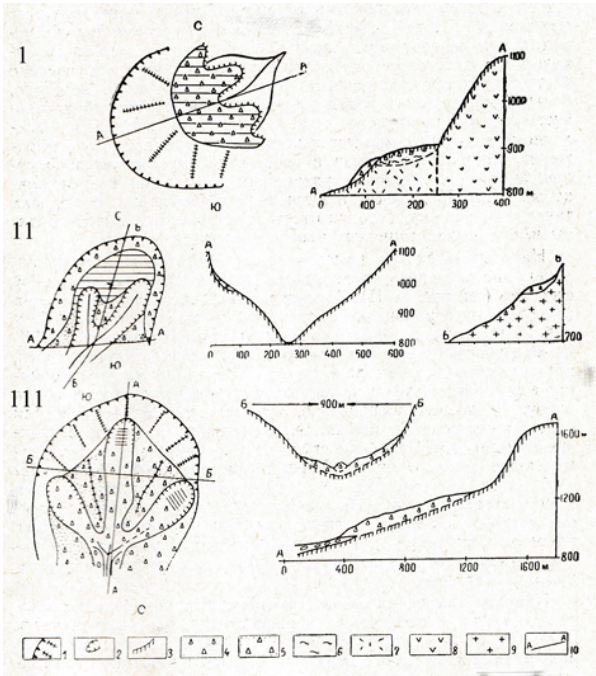

Fig. Morphology of drainage funnels in the summit of Sikhote-Alin [7].

Legend:

1 - steep ledge with outcrops of bedrock;

2 - elementary drainage funnels;

3 - base of bedrock;

4 - gravelly cover;

5 - crushed stone in the sandy loamy material (ancient generation of the "stone" river);

6 - flattened sections of the bottoms of the funnels;

7 - strongly altered acidic effusives;

8 - porphyrites;

9 - granites;

10 - line profiles.

The positions of the drainage funnels:

Section I — the sources of the Chernaya River;

Section II - the sources of the Kievka River;

Section III - the origins of the Medvezhya River

(the basin of the Malaya Izvlinka River).

Thus, the morphology of funnels, depending on the intensity of erosion and slope (nival-glacial-permafrost) processes, when the latter dominates the former, appears as a reflection of the climatic conditions of different altitude zones.

Conclusions

1. In the practice of geomorphological analysis, the patterns of origin and development of land and underwater terrain are usually clarified using the methods of actualism and (or) historicism.

2. The analysis of the possibilities of applying the principles of actualism and historicism, on separate examples of climomorphogenesis mainly for the south of the Far East, showed that the greatest effect in the study is given by a method based on a combination of both of these principles.

3. The presented research results revealed the need to take into account the peculiarity of the Far East, reflected in many ancient and modern sloping processes that create forms that are not repeated in other regions. In this case, it was necessary to take into account the antiquity of the leveled relief and hollow forms in the apex belt of the Far Eastern mountains. An analysis of these types of topography made it possible to speak of the multiplicity of ages of the processes that formed them.

4. It is thought that the theoretical studies carried out in the field of studies of actualism and historicism can make significant adjustments in the selection of optimal environmental management options. This is especially significant in the context of the outlined directed strengthening of continentality and general regional cooling [8], accompanied by a widespread increase in environmental risks.

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THE DEMOGRAPHIC POTENTIAL OF PRIMORSKY KRAI: TRENDS AND DEVELOPMENT PROSPECTS

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The research results presented in the article were obtained within the state assignment of Ministry of Science and Higher Education of the Russian Federation/(Russia) (theme “Geographical and geopolitical factors in inertia features, dynamics and development of different rank territorial structures of economy and settlement of the population of Pacific Russia” No. AAAA-A16-116110810013-5).

Abstract. The current trends and prospects of the demographic development of the southern Far Eastern subject are considered. It has been shown that the growth and quality of the demographic potential is influenced by a steady decline in the resident population due to natural decline and migration outflow. The aging process continues, deformation of the population structure (decrease in the proportion of the working-age population and an increase in the population of older ages) becomes an additional factor in the downward demographic dynamics, which entails the need to attract additional labor resources using inter-regional and external migration. The results of the study of the current demographic situation and trends in the demographic potential can be used to justify the demographic policy of the Primorsky Krai, which should have its own specific algorithm for solving socio-demographic problems.

Keywords: natural reproduction, migration flows, age structure of the population, demographic policy, estimated population (middle option), Primorsky Krai

Primorsky Krai is one of the most developed entities in the Far Eastern Federal District (FEFD). With a territory of 2.7% of the total area of the Far Eastern Federal District, Krai takes first place among the constituent entities in terms of population (1902, 7 thousand people, 2018). The predominant part of the population is concentrated in urban areas - 1,472.4

thousand people (77.4%); rural residents in the region - 430.3 thousand people (22.6%). Among the constituent entities of the Russian Federation, by the rank of population indicator as of January 1, 2019, Krai is in 79th place, including in the urban population in 76 and in the rural population in 78th place.

The population density in the Primorsky Krai as of January 1, 2019 is 11.6 people per 1 sq. Km. km (55th place among the constituent entities of the Russian Federation and 1 - among the Far Eastern constituent entities).

Under modern geopolitical conditions, the preservation and growth of the demographic potential in the Far Eastern regions is a strategic task. In recent years, decisions aimed at regulating demographic and migration processes have been made at the state level: ANO ("Agency for the Development of Human Capital") has been created; a mechanism has been launched to attract the population by free provision of a hectare of land; legislative acts in the territories of advanced social and economic development and the free port of Vladivostok are aimed at enhancing the migration flow towards the region. But, despite this, the population in Primorsky Krai continues to decline, having decreased by 35.8 thousand people or 1.9% over the past five years and amounted to 1902.7 thousand people as of January 1, 2019. Persistent trends in demographic degradation indicate that efforts are not yet changing the current situation. According to the calculations of the Federal State Statistics Service, according to the average version of the development of demographic processes, the population of Primorsky Krai by 1825 will be 1877.9 thousand people. Therefore, the growth of 97 thousand people fixed by the Concept for the Demographic Policy of the Far East for the period until 2025 [1] can be considered very optimistic.

Stability, quantitative and qualitative growth of the demographic potential is a criterion for the effectiveness of the socio-economic development of the subject. The risk in the demographic development of Primorsky Krai arose in 1991, from the beginning of a steady natural population decline (-7.3 thousand people). Despite the fact that for many decades migration played a positive role in the formation of the Krai population, since the beginning of the 1990s it has turned from a factor of population growth into a factor of its reduction.

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(-7.3 thousand people). Despite the fact that for many decades migration played a positive role in the formation of the Krai population, since the beginning of the 1990s it has turned from a factor of population growth into a factor of its reduction.

A steady natural population decline over the past five years is characteristic not only of Primorsky Krai, but also of the Amur oblast, the Jewish Autonomous Oblast. The positive dynamics of the main demographic indicators are characteristic of the Republic of Sakha (Yakutia), Chukotka Autonomous Okrug.

The birth rate in Krai is still insufficient even for simple reproduction of generations. The dynamics of this indicator does not show a clear growth trend, and the observed increase in the number of births from 2007 to 2014 is largely due to the contribution of women aged 20-29, that is, numerous cohorts of the 1980s birth. Over the past ten years, their number decreased by 84.5 thousand people, or by 15.5%, and the largest decrease in the number of women occurred in the age group of 15-24 years - by 41.7%. In 2017, the total birth rate in the Primorsky Territory amounted to 1,583 (in the Russian Federation - 1,608) [3]. The continuing decline in the number of women of reproductive age, as well as the postponement of the birth of the first child to a later period, will restrain the growth of birth rates.

One of the most acute problems of the demographic development of Primorsky Krai remains a high mortality rate. The mortality rate before 2005 was lower than in the Russian Federation, but higher than in the FEFD as a whole. The maximum value of 16.3 people per 1000 population was recorded in Primorsky Krai in 2005, then the indicator began to decline and in 2018 amounted to 13.4 $^{o}/_{oo}$, exceeding the average Russian (12.5 $^{o}/_{oo}$) and the Far Eastern level (12.0 $^{o}/_{oo}$). Changes in the mortality rate of the population are largely associated with the dynamics of mortality of people of working age. This is an important demographic indicator that determines the number of labor resources and affects the socio-economic development of the territory. Over the period under review, it tends to decrease. In 2016, Primorsky Krai lost 615.9 people per 100,000 people of working age (Russian Federation - 526.3, Far East - 641.5). It is the mortality rate of the working-age population that not only affects the mortality rate as a whole, but also determines it. High premature mortality among men results in a significant difference in life expectancy for men and women, which in the Russian Federation is 10.56 years, in the Far East - 11, and in Primorsky Krai - 10.58 years.

An important indicator influencing the formation of the demographic potential and characterizing the socio-economic development of the territory is infant mortality, which has a downward trend. For 2011-2017, the decrease was 32%. However, this indicator in Krai remains high: out of 1,000 births, 6.6 children under the age of 1 year old died (the Russian Federation - 6.0, among the subjects of the Far Eastern Federal District the highest indicator is in the Chukotka Autonomous Okrug - 16.1, the lowest in the Magadan Oblast - 3, 7).

Among the positive trends in the development of the demographic potential of Primorsky Krai include a decrease in the mortality rate of the working-age population. Annually, 1/3 of all deaths occur at this age, in 2017 - 6481 people, or 25.5% of all deaths (2008 - 10,077 people, or 34.8%). The structure of the causes of death in Krai as a whole repeats the all-Russian picture. The largest share in the structure of mortality of the able-bodied population is occupied by deaths from diseases of the circulatory system - 30.8%, deaths from external causes - 23.6% and from neoplasms - 15.1%. Moreover, there are 3.6 times more men who died of working age than women.

Positive dynamics of indicators of infant mortality and mortality of the working-age population contributed to an increase in the life expectancy of the population. In the Far East, it is below the average Russian level, and the district in this indicator takes the last place among the federal districts. In 2017, life expectancy in Primorsky Krai was 69.66 years, an increase of 2.49 years relative to 2011. According to this indicator, Krai ranks second among the Far Eastern entities after the Republic of Sakha (Yakutia), where life expectancy is 70.84 years [3]. This is largely due to the development of the regional health system.

The forecast of the demographic situation in the region shows an increase in the aging tendency of the population and a deterioration in its age structure. Among the federal districts, the Far Eastern Federal District is distinguished by the structure of the population, since the formation of its population was largely influenced by migration processes, which contributed to a younger age structure of the population: the district has a low proportion of people over working age - 22.0% (Russian Federation - 25%), according to this indicator, the Far Eastern Federal District is second after the North Caucasus Federal District (17.5%). In the Far East, the highest proportion of people of working age is 58.4% (Russian Federation - 56.7%). For the period of 2011-2017, there has been a trend not only in a quantitative reduction in the working-age population, but also in its qualitative deterioration - the aging of the

economically active part of the population. The reason for this is the exhaustion of the possibilities of its growth, due to those born in demographically favorable years, the transfer of part of the population to the category older than working age, but most importantly, by the migration outflow.

The northern regions of the Far Eastern Federal District differ from the average Russian and Far Eastern indices by a higher proportion of people of working age - from 63.2% in the Chukotka Autonomous Okrug to 61% in the Kamchatka Krai; a low proportion of pensioners - from 16.4% in the Sakhalin Oblast to 13.9% - in the Chukotka Autonomous Okrug and, accordingly, a higher share of children in the total population - from 24.8% in the Republic of Sakha (Yakutia) to 22.9 % in the Chukotka Autonomous Okrug.

75.7% of Primorsky Krai residents - the proportion of people younger than working age and able-bodied age, with an average Russian rate of 75%, Far Eastern - 78%. At the same time, this advantage is lost, because against the background of a decrease in the share of people of working age (2011 - 62.4%, 2017 - 58.1%), the share of the population over the working age is growing (2011 - 22.0%, 2017 - 24 , 3%) [3]. Among all Far Eastern subjects, Primorsky Krai has the highest rate of people over working age, which causes an additional increase in the load on social infrastructure.

In connection with the growth of the population younger and older than working age, while reducing the number of working population, the demographic burden increases from 603 in 2011 to 720 in 2017.

The main role in reducing the population of Primorsky Krai for the period of 2011-2017 was played by migration outflow (22.9 thousand people, or 56.5% of the total population decline), 1.3 times higher than the natural decrease (17.6 thousand people, or 43.5%). In the structure of migration flows of Primorsky Krai, intraregional migrations predominate, but due to an increase in the share of international migration (from 7.5% in 2011 to 12.6% in 2017), they decreased from 61.9% to 57.9% [4]. Among the main reasons, intraregional migrants cite reasons of a personal and family nature, a return to their previous place of residence, study and job search. Among the Far Eastern subjects, Primorsky Krai, along with Khabarovsk Krai and the Republic of Sakha (Yakutia) are most active in this migration flow.

The inter-regional migration, necessary for the socio-economic development of the territory and improving the demographic situation continues to remain with a negative migration balance. Its specific weight in the structure of migration turnover is 29.9%. Primorsky Krai for the period 2011-

2017 lost 176.7 thousand people in this direction. The main reasons that cause migration from Primorsky Krai to other Russian regions are the low level and quality of life. They leave Krai for permanent residence mainly in other subjects of the Far Eastern Federal District: Khabarovsk Krai, Sakhalin and Amur Oblasts, as well as in the Central, North-Western, Southern and Siberian Federal Districts.

Primorsky Krai lags behind in terms of health, high mortality, especially among the working-age population, which reduces overall life expectancy. Against the background of the subjects of the European part, Primorsky Krai loses in terms of standards and quality of life, as evidenced by a stable inter-regional migration outflow. Despite the increase in the purchasing power of Krai's population incomes in relation to the subsistence level, these indicators are significantly lower than the average Russian level, and most importantly, they are significantly lower than in those entities that Primorsky Krai residents choose as their permanent residence.

The able-bodied population is mainly involved in migration processes, occupying 3/4 in the age structure of the migration turnover. From 2011 to 2017, the population of working age due to interregional outflows decreased by 26.6 thousand people. The outflow of the population, especially at working age, leads to a deterioration in the vocational qualification structure of the employed, and limits the innovative development of the Krai economy. Migration losses of the population increase the unmet demand for labor, exacerbate the shortage of specialists, and lead to a shortage of personnel, partially compensated by the attraction and use of foreign workers.

International migration plays a positive role in replenishing the resident population of Primorsky Krai and its labor potential; its growth over the past seven years has amounted to 18.5 thousand people. In our opinion, this migration flow, subject to effective state management by selection methods, can become not only a factor in population growth, but also labor resources.

A change in the demographic potential of Primorsky Krai in the future will inevitably face restrictions in its development, primarily its quantitative component. The decrease in numbers will occur mainly due to an increase in the natural population decline, which will increase to 2027 and then decrease by 2035. The annual number of deaths will remain at the level of 22-24 thousand people, and the number of births will decrease annually from 20.9 thousand in 2017 to 17.5 thousand in 2035 Migration outflow (5.6 thousand people in 2017) will be replaced by an increase from 2020 [2].

Implementation of the measures adopted by the Concept of the demographic policy of the Far East for the period until 2025 “provides for the suspension of the migration outflow of the population from the regions of Siberia and the Far East by 2021, and the provision of the migration influx of the population in these areas by 2026 [1, p. 18]. Opportunities to stop the outflow of the population from the Far Eastern territories, including from Primorsky Krai, are only limited by measures of migration policy. It is hardly possible to change the situation in the field of migration in the near future. It is possible to restrain the outflow of the resident population and increase the migration attractiveness of Krai for potential migrants by building up social and infrastructural potential.

As part of the development and implementation of the National Program for the Development of the Far East, measures to accelerate the implementation of housing construction programs and reduce the cost of housing and communal services are important. Large-scale construction of housing, social infrastructure facilities should create incentives and conditions for expanded reproduction of the population, reduction of the migration outflow of the population and labor resources, especially youth. To increase the migration attractiveness of Primorsky Krai, as well as other Far Eastern entities, the influx of specialists, compatriots living abroad, it is important to increase the wages of workers, improve the quality and standard of living that exceed the national average.

The solution of demographic problems on the territory of Krai should become not only a regional, but also a state task, and an active socio-demographic policy should be considered as the most important condition for the economic and political security of Russia.

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EFFECT OF ORGANIC AND MINERAL FERTILIZERS ON WINTER WHEAT YIELD IN THE FOREST-STEPPE OF THE MIDDLE VOLGA REGION

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Abstract. The influence of organic and mineral fertilizers on agrophysical and agrochemical indicators of soil fertility, yield and grain quality of winter wheat is analyzed. The studied options made it possible to ensure favorable water-air and nutrient regimes of the soil, as well as increase and maintenance of organic matter in arable chernozems, due to the introduction of manure, crop-root residues, straw and green manure by 0.29-0.51%. Effective options for influencing productivity and quality indicators of winter wheat grains are established in comparison with an unfertilized background.

Keywords. Winter wheat, moisture, soil density, food regime, biological activity, productivity, grain quality.

Introduction

An important factor in maintaining soil fertility in the Volga region is the balance of organic matter. The use of organic fertilizers in the form of manure, straw and green manure has the most significant effect on this indicator of chernozem soils. Nutrients alienated from crop yields must return to the soil in excess, as the basic law of fertility states [1]. If this does not happen, then there is an increased mineralization of humus, especially in those farms where the specific gravity of pure steam and row crops is high. The cultivation of grain by intensive technologies indicates that among all the factors determining crop productivity and grain quality, various fertilizers are of paramount importance [2,3,4,5]. To prevent the degradation of chernozems, it is necessary to use alternative, cheaper sources of organic matter in crop rotation, such as introducing a non-commodity part of the crop, using sideration and their combination with technogenic factors [6,7,8].

Therefore, our research was aimed at studying the methods of biologization, providing increased fertility and productivity of winter wheat.

The aim of the research was to determine the effect of organic and mineral fertilizers on the fertility of leached chernozem, yield and grain quality of winter wheat.

Methods

To improve the functional properties of the potential fertility of the soil cover and create a deficit-free balance of humus on leached chernozem, the non-marketable part of the crop, green manure and manure of 20 t/ha were used.

Scheme of application of organic and mineral fertilizers.

1. B/Y (control);
2. N_{30} P_{30} K_{30};
3. Manure 20 t/ha;
4. Manure 20 t/ha + N_{30} P_{30} K_{30};
5. Straw;
6. Straw + N_{40} P_{30} K_{30};
7. Green manure;
8. Green manure + N_{40} P_{30} K_{30}.

In the autumn, after harvesting the precursor (barley), organic matter was introduced in the form of compost, spreading uniformly over the field surface with its subsequent cultivation. The straw mass was introduced during harvesting of the precursor with a compensating dose of ammonium nitrate (N_{10}). The main processing in the experiments was carried out at the optimum time from the third decade of August to the first decade of September with the PN-4-35 device to a depth of 20-22 cm. Presowing and spring-summer treatments were the same and generally accepted for the conditions of the Ulyanovsk oblast. Spring harrowing of ploughland was carried out with the BZTS-1.0 tool in two tracks, pre-sowing cultivation with KPS-4.0 by 5-6 cm. The siderats were sown according to the experimental scheme at the end of the third decade of April. As siderat sown - vetch + oats. Legumes 25% + cereal 75% of the total seed rate. Rolling was carried out by ring-spur rollers. During the fallow period, four cultivations were carried out in pure steam. Mowing and grinding of KSK-100 in the second decade of July was carried out on a sideral pair (Wiko-oats). Its completion was carried out at the beginning of the first decade of August with the BDT-3 + BIG-3A + rink tools. The first continuous cultivation of vapors was carried out in the second decade of August. Pre-sowing cultivation was carried out immediately before sowing. Azofoska was applied under pre-sowing cultivation in a dose of $N_{15}P_{15}K_{15}$, with an AMAZONE tool.

Winter crops, varieties "Kharkov-92" were sown with a norm of 5.5 million germinating seeds per hectare. Sowing was carried out with the SZ-3.6 seeder to a depth of 5-6 cm with a further rolling with a tool ZKKSh-6A in the first ten days of September.

Fenizan herbicide, BP with a drug consumption rate of 200 g/ha, was added to tillering aggregates MTZ-82 + AGS-1100. Harvesting was carried out by direct combine harvester "Niva-Effect".

The experiments were conducted in the fields of the Department of Agriculture of the Ulyanovsk Research Institute of Agriculture, which were laid down in the fall in 2003. The location of the plots is systematic. The repetition is threefold. The accounting plot area is 188 m^2 (37.5x5m). In the experiments, the following studies and observations were performed.

Humidity was determined by drying in a thermostat at a temperature of 1050C to a constant weight, in 1-3 repetitions in three terms before sowing, spring and full ripeness.

Density was determined by the method of cutting rings, by sampling with undisturbed addition in three repetitions, samples were taken at the end of the growing season of crops.

The structure was determined on a Baksheev instrument, in 1-3 repetitions at the end of the growing season. The mobile forms of NO_3, P_2O_5, K_2O were determined in soil samples taken in the wet layer by the Malkov drill at the dates: before sowing, spring and in full ripeness of the culture, in 1–3 repetitions. The amount of nitrate nitrogen was determined by the method of Tyurin and Kononova, mobile phosphorus according to Chirikov, exchange potassium - on a flame photometer according to the Maslova method.

Biological activity was determined by the method of linen "applications" for the growing season, sowing - harvesting in three repetitions.

Grain quality (1000 grains, gluten, protein) was determined in the analytical laboratory. Samples were taken in triplicate.

Harvest accounting was carried out by continuous threshing of the entire mass from the logging plot by the Niva-Effect combine.

Mathematical processing of yield data was carried out by the method of variance analysis according to the method of B.A. Armor [9].

Results and discussion

Determination of the structural-aggregate composition of the arable horizon of leached chernozem showed that agronomically valuable water-resistant aggregates (diameter> 0.25 mm) in the control variant showed a high value of 76.1% (Table 1).

1. The effect of fertilizers on agrophysical indicators of leached chernozem under winter wheat, (2004-2006)

Variant	Indicators				
	Water resistance of aggregates (diameter> 0.25 mm) in a layer of 0-30 cm,%	The density of addition in the layer is 0-30 cm, g/cm^3	Reserves of productive moisture in the layer 0-100 cm, mm		
			before sowing	tillering phase	full ripeness phase
B/Y	76,1	1,12	107,9	106,4	95,0
$N_{30}P_{30}K_{30}$	78,8	1,09	139,3	116,4	84,0
Manure 20 t/ha	79,0	1,04	146,3	161,8	109,9
Manure 20 t/ha +$N_{30}P_{30}K_{30}$	80,1	1,03	142,6	155,3	125,7
Straw +N_{10}	78,7	1,09	129,1	159,3	113,9
Straw + $N_{40}P_{30}K_{30}$	79,5	1,07	132,5	142,1	123,0
Green manure	78,8	1,11	135,3	159,2	110,2
Green manure + $N_{40}P_{30}K_{30}$	81,2	1,08	138,2	151,0	115,9

The use of organic and mineral fertilizers in all cases increased the role of water-resistant aggregates by 2.6–5.1% compared with no fertilized background. Against the background of organic matter, the content of water-resistant aggregates increased by 2.6-2.9%. That is, this indicates that the introduction of biological mass together with mineral fertilizers helps to strengthen soil aggregates and increase their water resistance with respect to erosion.

The optimal addition density for the development of major crops is created with a bulk density of 1.05-1.20 g/cm^3. Biologized crop rotation has a positive effect on physical properties. Density and hardness decrease [10,11].

The density of chernozem in the experiments, during the harvesting period, was in the optimal range for the growth and development of plants (1.03-1.12 g/cm^3). The use of non-commodity parts of the crop, green manure and organics had a positive effect on the decrease in density by 0.01-0.09g/cm^3 compared to b/y.

Provision of crops with moisture depends on the amount and distribution of precipitation, physical properties, composition and their ratio, their alternation in crop rotation, as well as on the technology of their cultivation [12,13].

Reserves of moisture available to plants in the meter profile in the autumn before sowing, in the spring during tillering and during harvesting, to a greater extent had the effect of biologized options. The highest reserves of productive moisture before sowing were recorded for 146.3 and 142.6 mm in fertilized and non-fertilized manure, which is 38.4 and 34.7 mm higher than the control variant, respectively. On the other studied variations, the moisture reserves were also higher by 21.2-24.6 and 27.4-30.3 mm, respectively. The same pattern was observed in the phase of full ripeness, which is explained by the fact that a kind of mulch is formed in the upper profile, which makes it possible to save moisture until the end of its growing season.

Providing plants with affordable nutrition is one of the main features characterizing its effective fertility. Their source is the abandonment of plant residues and fertilizers. Under the influence of microbiological activity, the soil reserves of nutrients pass into the forms assimilable to plants. The process of formation and accumulation of forms of nutrients available to plants is one of the main conditions for obtaining high yields [14,15,16].

The research results showed that the introduction of compost at a dose of 20 t/ha significantly changed the role of nitrates, before sowing and spring tillering, in the direction of its increase was 51.7-64.5 and 56.4-63.4 mg/kg, respectively (tab. 2).

2. The effect of fertilizers on the agrochemical parameters of leached chernozem under winter wheat, (2004-2006)

Variant	Indicators				
	The content of nitrate nitrogen in the layer 0-30 cm, mg/kg			The biological activity in the layer of 0-30 cm,%	The organic matter content in the layer is 0-30 cm,%
	before sowing	tillering phase in spring	full ripeness phase		
B/Y	38,1	40,1	21,2	32,1	6,87
$N_{30}P_{30}K_{30}$	40,2	48,3	27,0	33,9	7,16
Manure 20 t/ha	51,7	56,4	26,9	38,5	7,24
Manure 20 t/ha+$N_{30}P_{30}K_{30}$	64,5	63,4	34,2	52,2	7,38
Straw +N_{10}	39,1	42,1	27,5	41,6	7,18
Straw + $N_{40}P_{30}K_{30}$	43,6	43,5	28,6	53,1	7,20
Green manure	41,5	43,6	33,1	34,3	7,28
Green manure + $N_{40}P_{30}K_{30}$	45,4	44,1	29,4	43,3	7,32

All values of nitrate nitrogen, compared with the control, increased by 13.6-26.4 and 16.3-23.3 mg/kg. In the remaining studied variations, nitrate nitrogen was also higher by 1.0–5.5 and 3.4–7.3 mg/kg. In the phase of full ripeness, the values of nitrate nitrogen decreased by 10.5-29.5 mg/kg compared to the control. Although, it should be noted that there was more nitrate in siderates and fertilized background with compost of 20 t/ha (33.1 and 34.2 mg/kg).

A study of the intensity of biological processes occurring on chernozem in the experiments was carried out using the linen cloth method [17].

On average, in 2004-2006 studies, biological activity ranged from 32.1 in the control to 53.1% in terms of fertilized background with organic matter and straw mass (52.2 and 53.1%). On the other variations, the linen decomposition was at the level of 33.9-43.3% or higher than the control by 1.8-9.5%.

3. The effect of fertilizers on yield and grain quality of winter wheat (2004-2006)

Variant	Productivity, t/ha	Grain quality indicators	
		gluten, %	raw protein, %
B/Y	3,24	28,0	13,5
$N_{30}P_{30}K_{30}$	3,76	30,5	13,8
Manure 20 t/ha	4,25	31,0	14,1
Manure 20 t/ha +$N_{30}P_{30}K_{30}$	4,58	31,2	14,2
Straw +N_{10}	3,68	29,1	13,9
Straw + $N_{40}P_{30}K_{30}$	4,19	30,8	14,1
Green manure	3,92	30,6	14,0
Green manure + $N_{40}P_{30}K_{30}$	4,43	31,6	14,1
HCP_{05}	0,490		

The increasing processes of decomposition of organic matter lead to an increase in the processes of mobilization of mobile forms of the basic elements, and at the same time, the degradation of the soil potential is observed. [18].

As the results of studies showed, the total humus content in the studied samples was quite high and amounted to 6.87% in the control. From the results of agrochemical analyzes, it should be noted that when organic and mineral fertilizers were added, the humus content increased from 0.29 to 0.51%. The largest increase was noted for the 20 t/ha + NPK manure variant. A slightly lower increase was obtained for siderates and sulphate, respectively 0.41-0.45 and 0.31-0.33%.

The yield of wheat in the control was 3.24 t/ha (Table 3). The mineral system provided an increase of 0.52 t/ha to the control.

The maximum grain yield was obtained on fertilizer with organic 20 t/ha - 4.58 t/ha, the increase was 1.34 t/ha. A little lower was obtained for green manure + NPK - 4.43 t/ha, an increase of 1.19 t/ha. Its lowest productivity was noted for the straw mass with a compensating dose of ammonium nitrate - 3.68 t/ha, which is associated with a deterioration in water and nitrogen regimes at the beginning of the development of the culture.

Grain quality indicators were in direct proportion to the applied organic and mineral fertilizers. In the course of the studies, the highest values of crude gluten and protein in grain were observed for siderates and organics at 20 t/ha against a fertilized background of 31.6 and 14.1%; 31.2 and 14.2%, respectively. In the remaining studied variants, gluten and protein were also higher by 1.1-3.0 and 0.3-0.6%, respectively. In terms of quality indicators, all products belong to class 1-2.

Conclusion

Thus, the main role in the formation of a water-resistant structure was played by biological factors, in which it had a high sorption and biological activity. Consequently, with an increase in organics, its density decreased.

During the enrichment of chernozem with organic matter, its moisture capacity increased and thereby the moisture remained until the end of the growing season of the culture.

The nitrate content increased in all studied variants with organic matter of 20 t/ha, straw and green manure compared with no fertilized background. The use of the organomineral system, the role of humus in the arable profile increased from 0.29 to 0.51%.

The organomineral system had the greatest impact on the crop, where the maximum grain yield was obtained on the background of organic and mineral water - 4.58 t/ha, an increase to the background without fertilizer was 1.34 t/ha.

The interaction of factors of the organic and mineral systems contributed to a positive impact on improving the quality of grain to an unfertilized background. All products can be attributed to 1-2 classes of strong wheat.

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UDC 519.23+519.245

CHECK OF THE HYPOTHESIS FOR NORMALITY OF DISTRIBUTION OF RANDOM VALUES OBTAINED WITH A ROUND, BY THE CRITERIA OF FROZINI AND OMEGA-SQUARE

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Annotation. The application of the Frozini and omega-square criteria for assessing compliance with the normal distribution of the empirical distribution of random variables obtained with rounding is considered. The results of evaluating statistics of the Frozini and omega-square criteria by the method of statistical tests depending on the amount of rounding are presented.

Keywords: Frozini criterion, omega-square criterion, random variables, statistical test method.

In the analysis of experimental data, it is necessary to evaluate the correspondence of empirical and theoretical distribution functions. This problem is solved by comparing the empirical and theoretical distribution functions with one or more statistical criteria of agreement. The distribution statistics of these criteria depends on the size of the sample, the methods of generating data and evaluating the distribution parameters [1, 2]. The paper considers the criteria for agreement Frozini [3]:

$$Fr(Xv,a)=\frac{1}{\sqrt{n}}\times\sum_{i=1}^{n}\left|F(Xv_i,a)-\frac{i-0.5}{n}\right|, \quad (1)$$

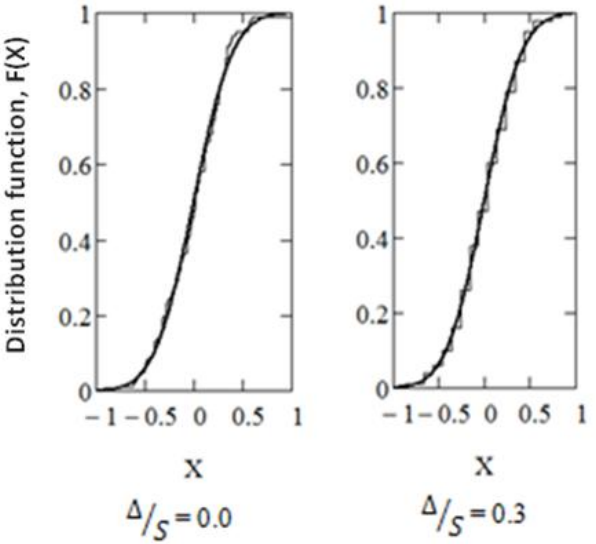
and omega square (ω^2) [4]:

$$KMC(Xv,a)=\frac{1}{12n}+\sum_{i=1}^{n}\left(F(Xv_i,a)-\frac{i-0.5}{n}\right)^2, \quad (2)$$

where Fr (Xv, a), KMS (Xv, a) - calculated values of the Frozini and omega-square criteria; Xv is the variational series of a random variable X; n is the sample size; i is the number of the element of the variation series; a - distribution parameters.

Evaluation of the statistics of the consent criteria was carried out by the method of simulation based on the results of 100,000 statistical tests [5-6]. This allows to estimate critical values of the consent criteria for significance levels $\alpha \leq 0.05$ with an accuracy not lower than 0.001 [5-7]. In each statistical test, the distribution parameters were estimated by the maximum likelihood method [7-8].

Empirical data are obtained by rounding the corresponding random variables with the accuracy Δ. The degree of rounding was estimated by the dimensionless index Δ/S. in Fig. 1 the results of one of the generated samples of volume n = 100 at different degrees of rounding are presented.



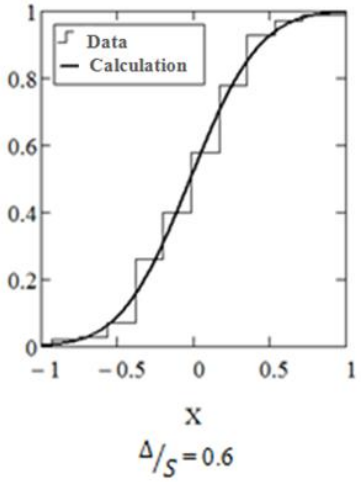


Fig. 1. Distribution functions of random variables obtained with different degrees of rounding Δ/S for the sample size n = 100

Estimates of Frozini statistics (Fig. 2) and ω^2 (Fig. 3), obtained by the method of statistical tests with different values of Δ/S and sample size n.

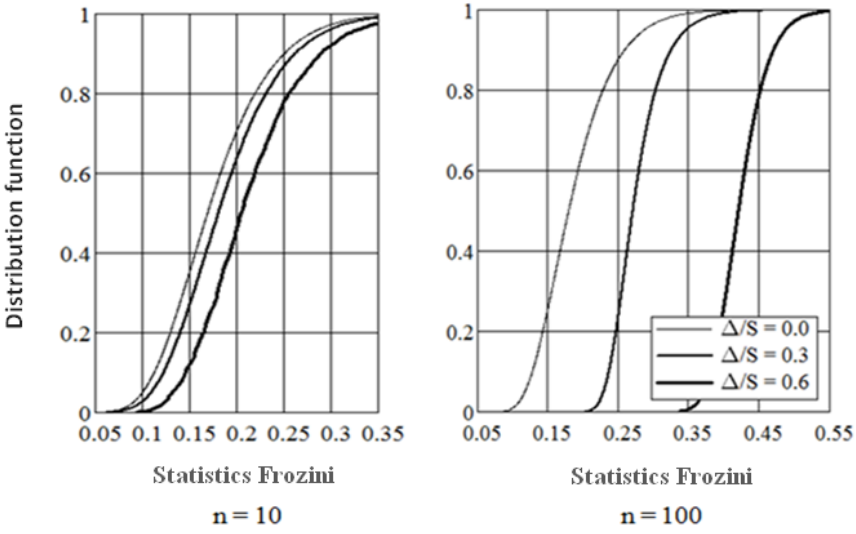


Fig. 2. Estimation of Frozini statistics for normally distributed random variables obtained with different rounding Δ/S at sample sizes n

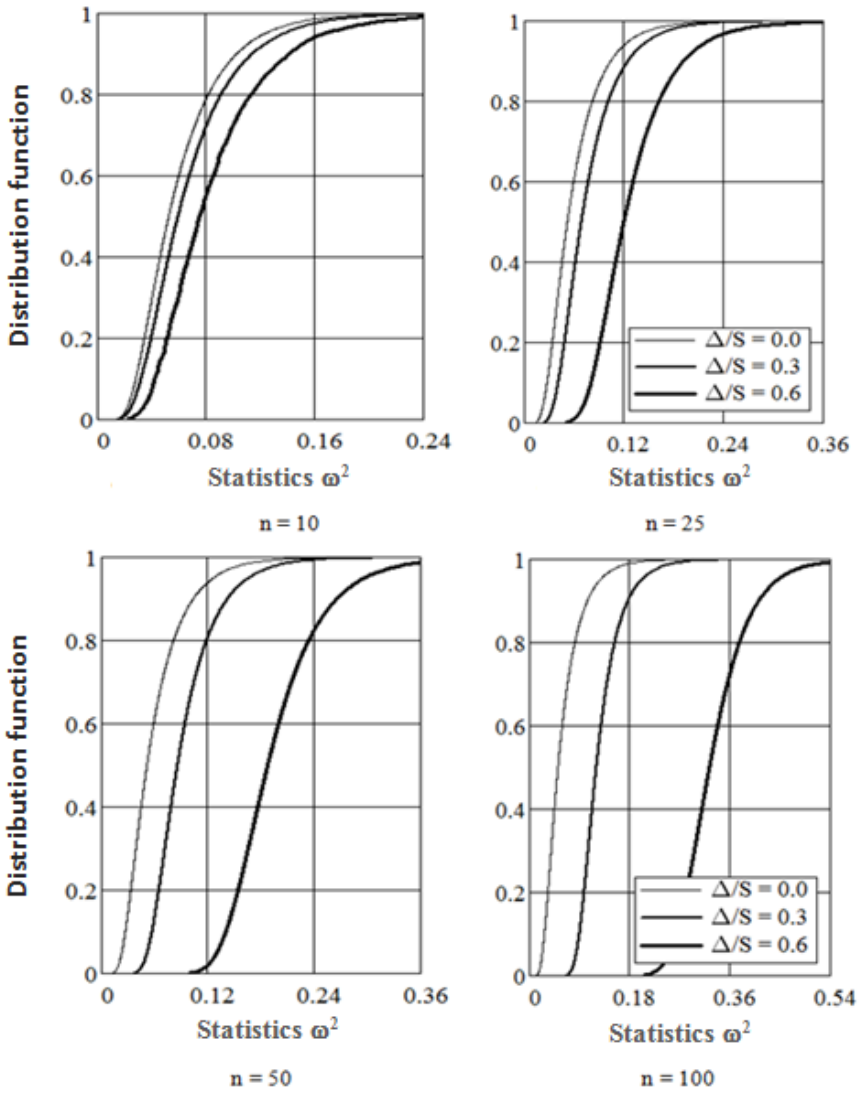


Fig. 3. Estimation of omega-squared statistics for normally distributed random variables obtained with different rounding Δ/S at sample sizes n

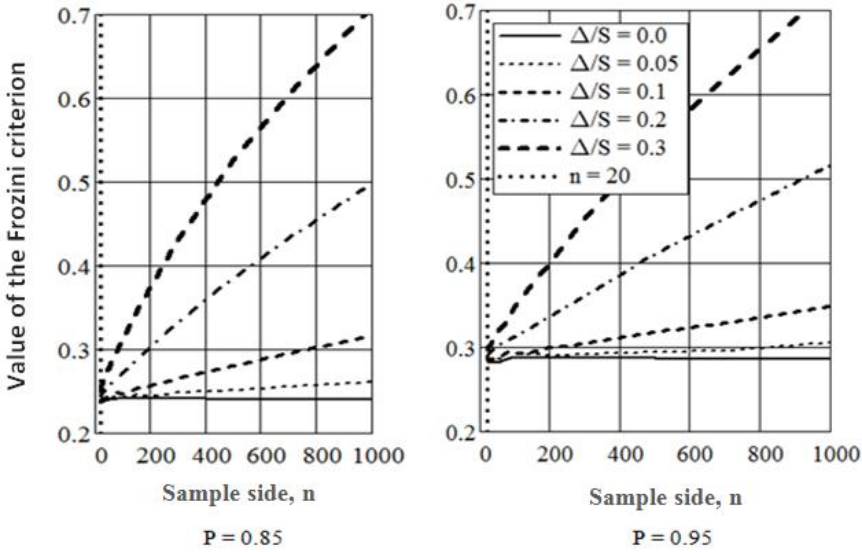


Fig. 4. Estimates of critical values of the Frozini criterion for normally distributed random variables obtained with different rounding Δ/S at sample sizes n and reliability P

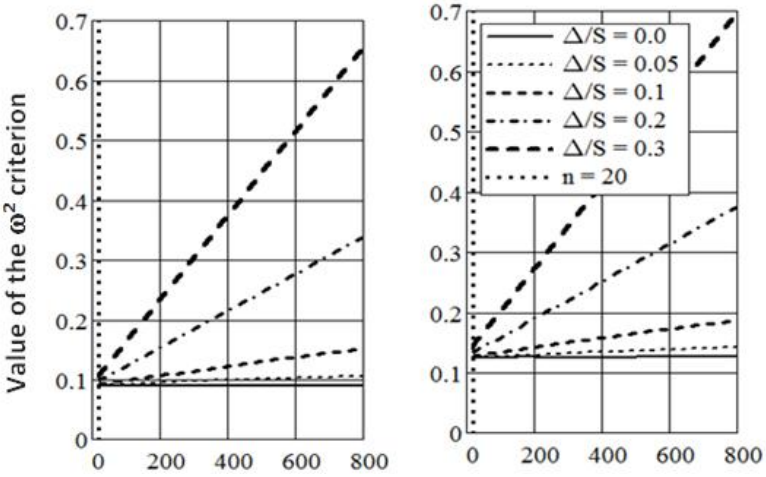


Fig. 5. Estimates of critical values of the omega-square criterion for normally distributed random variables obtained with different rounding Δ/S at sample sizes n and reliability P

Figures 4, 5 show the dependence of the critical values of the Frozini and omega-squared criteria for normally distributed random variables obtained with different degrees of rounding Δ/S and the reliability of the hypothesis P on the sample size n.

The results of the studies show:

- the critical values of the Frozini criterion increase with the increase in the degree of rounding of the data and the sample size n. For $\Delta = 0$, the critical value practically does not change at $n > 100$. The critical values of the Frozini criterion $Fkr(\Delta, n)$ at $\Delta \in [0; 0.3]$ and $n \in [20; 1000]$ correspond to the 2nd order polynomial with high accuracy. For $\Delta/S > 0.2$ further grouping of empirical data with subsequent application of Pearson's criterion to estimate the law of their distribution is expedient.
- the increase in critical values of criterion of omega-square with an increase in the degree of rounding and sample size n. For $\Delta > 0$, the critical values of omega-squared have a linear dependence on n. For $\Delta/S > 0.2$ further grouping of empirical data with subsequent application of Pearson's criterion to estimate the law of their distribution is expedient.

The obtained results are used in scientific research and educational process in the study of disciplines "Computational mathematics", "Mathematical methods of engineering", "Mathematical modeling of energy and resource-saving processes of chemical technology, petrochemistry and biotechnology" [9].

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STANDARDS OF NET'S AND THEIR USE

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Annotation. At the moment, 70% of the world's inhabitants use various modern means of communication. Every year, the needs of people in the technical quality of devices increase. Creating smart systems involves connecting many things, gadgets, devices to the network and the ability to exchange information between devices.

Keywords: standards of generation, system, technology, 5G

Eastern Economic Forum - this forum was organized by the President of the Russian Federation V.V. Putin decree to develop the economy of the Far East and improve international cooperation in the Asia-Pacific region. This forum was held in 2019.

The following points were discussed at the forum:

1) "New solutions to accelerate economic growth"

2) "Improving the investment activity of the Far East regions"

3) "Creating conditions for business"

4) "The Far East and Asia-Pacific: Developing Opportunities for Cooperation"

And the most important topic for discussion was the question of creating 5G innovation and applying this technology everywhere[1].

The development and application of 5G technology is now one of the priority areas for the development of modern society and the digitalization of various spheres of life. The tasks of 5G are to accelerate the pace of development of the modern world, the transition from globalization to digitalization and, of course, simplifying life for a person.

Let's see what at the moment, mankind has among the “G” - generations of a wireless network.

1G - Analog systems (voice data, 9.6 kB.s). The advent of several network technologies after 1960: AMPS in the USA and the combination of TACS and NMT in Europe belong to the first generation of wireless networks, because thanks to these technologies, more people began to use telephones. 1G standards were developed and used only for voice calls.

2G - Digital systems (voice data, max - 400 Kb / s, average -100 Kb / s). The first digital cellular networks, which had several advantages when compared with analog systems. GMS and CDMA had the following advantages: separation of communication channels, human voice coding, a modulated carrier frequency was transmitted with a digital code. Thanks to CSD technology, people could transfer their data faster - up to 14.4 kBit / s.

2.5G - The advent of the GPRS (General Packet Radio Service) mode of communication has changed the world of people. This technology worked faster than CSD. It is worth seeing that people at that time began to often check emails.[2]

3G - Digital code systems (voice data, max 42 Mb / s, average - 10 Mb / s) Achievement of this generation is the function of protection against disconnection due to the advent of Code Division Multiple Access (CDMA). 3rd generation technologies allow people watch to movies, and make video calls [3].

4G - Digital OFDMA systems (Max 3Gb / s, average 10-100 Mb / s) Today, the most common technology in the world. The IMT-Advanced speeds for incoming data were calculated at 1 Gbit / s for stationary terminals and 100 Mbit / s for mobile. It is 500 and 250 times faster compared to IMT-2000. WiMAX and LTE standards have low speeds of about 4 Mb / s and 30 Mb / s [4]

And about technology which will change man's life

5G - Digital OFDMA systems (Max 10 Gb / s-100 Gb / s, average 100 Mb / s-1 Gb / s). The technology of instantaneous data transmission is tested in physical laboratories, but it will be in real life in 20-30 years. A new 5th generation of communication is applicable now. 5G contains all the latest and best developments of communications and IT. This is the limit of existing microelectronics and radio data transmission technologies

There are 5 top wings which identify important and noticeable differences from other generations.

1) Gigabyte speeds
2) Ultra-high mobility
3) Millisecond delay
4) High level of energy saving
5) A million gadgets

First - Gigabyte speeds: The relevance of high speeds for the “healthy” use of phones, computers, various devices currently plays a big role in our life.

Each person should have a good speed, which will allow him to watch and transmit video in 4K, make full use of the capabilities of VR and AR technologies. Data transmission volumes grow exponentially precisely due to the popularity of video. Meeting human needs for the use of traffic and content will be possible only with 5G, but not with previous generations of networks.

Second - Ultra-high mobility: Every year the pace of life is growing. All the time, people need to move. Someone travels to different cities on business others just travel, all of them are in be always in touch - This text is about ultra-high mobility. Data transfer standards which are the most widespread in the world, now they support the speed of devices up to 200 km / h. But the emergence of new types of trains has led to an increase in their speed to 500 km / h 4G is already technically inconsistent. But the 5G standard has the ability to provide data transfer from objects that move at different speeds.

Third - Millisecond delay: People invent and implement many projects that are connected to the network: VR, tactile Internet, smart city, smart house, online car - all of these projects need millisecond delay. If the signal is delayed on such technical level as it is now, then even tens or hundreds tens of milliseconds can destroy someone's life. Example: System online a car (if you happen to delay the car when the machine needs to slow down, then this situation could become fatal for the system user).

Fourth - High level of energy saving: Critical situation also exists with the environment and with life. High level of energy saving. The worst thing is the environmental disaster, if human gadgets are not energy-efficient, then nature will suffer significantly. And if each of the millions of devices will often run out of batteries the various innovative systems will be constantly at risk of accidents.

Fifth - A million gadgets Various projects and systems need to be connected as this 5g standard has the ability to support millions of gadgets per square kilometer.

What do we need for the successful use of technologies in future?

Scientists think of:

1) Carrying out various scientific research;

2) Creation and use of own developments in industry;

3) Creating a comfortable environment for doing business and opportunities for competition;

4) Improving the technical level of information security;

Now it's important for each person to learn how to adopt to this an ever-changing world because every day people come up with new projects and refine their ideas. Now the 5th generation of network standards is being developed, but no one knows and cannot assume what will happen in 200-300 years.

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CRYPTOGRAPHY, ITS TYPES AND IMPLEMENTATION

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Annotation. This article considers the theoretical and practical part of cryptography with the implementation of several most popular algorithms.

Keywords: Symmetric cryptography, XOR, Cipher feedback, Algorithm, Asymmetric cryptography, RSA, Fast modular exponentiation, Chinese theorem of remainder.

Introduction

Cryptography. Due to rapid technological development and global computerization and increasing computer influence on all spheres of life, cryptography has become very important because only it can guarantee the security of information. One of the most important elements of cryptography is the key, which is the secret information used in the process of cryptographic operations when encrypting or decrypting data. Cryptography is divided into two types [3]. Symmetric and asymmetric. Symmetric cryptography uses one key for encryption and decryption, while asymmetric cryptography uses two different but related keys, one for encryption and one for decryption. Each method has its own advantages and disadvantages [2]. The advantage of the symmetric method is its speed of operation, as it uses an operation that does not require a lot of computational resources, and it is also easy to implement. The disadvantage is the use of a single key for encryption and decryption, which is difficult to distribute among the recipients of the cryptosystem. The advantage of the asymmetric method is the presence of two keys that provides safety of this process. Since the private key is not passed on to anyone, the possibility of breaking the encryption is very small. The main drawback is low speed of work and complexity of realization such as generation of two interconnected keys as they demand mathematical calculations. Hybrid systems are mainly used in practice, where symmetric and asymmetric methods are combined.

Symmetric algorithms

Encryption. Symmetric encryption algorithms are block based and are implemented using gamma, which is implemented by using the XOR operation. Using the XOR operation is convenient only when you apply the correct key to the encrypted fragment, which was also encrypted by it, you get the source code [1]. But in cryptography it is undesirable to use the same key characters more than once, otherwise the ciphertext becomes vulnerable to “Attacks based on the ciphertext”.

Incorrect encryption example: Ciphertext: 11011001 | 10001001 |11011001, Key: 10110001.

```
11011001 | 10001001 | 11011001
10110001 | 10110001 | 10110001
-------------------------------
01101000 | 00111000 | 01101000
```

Image 1 - Incorrect encryption with XOR

Answer: 01101000 | 00111000 | 01101000. As we see 1 and 3 bytes of ciphertext are the same, which in no case should happen. To avoid this, cipher feedback mode is used, 1 byte is encrypted using the source key, it is also better to encrypt the result of the first encryption with a sub-key, which in its turn is generated from the password phrase entered by the user, and the subsequent ones are encrypted as follows: the current byte is encrypted using the original key information, then the result is encrypted with the result of encryption of the previous byte.

Correct Encryption Example: Source data as in the previous example. Let the subkey be 00000000.

```
11011001 | 10001001 | 11011001
10110001 | 10110001 | 10110001
-------------------------------
01101000 | 00111000 | 01101000
00000000 | 01101000 | 01010000
-------------------------------
01101000 | 01010000 | 00111000
```

Image 2 - Correct encryption with XOR

Answer: 01101000 | 01010000 | 00111000. Now 1 and 3 bytes of plaintext are the same, and 1 and 3 bytes of ciphertext are different.

Decryption. Decryption process is not much different from encryption. It happens in reverse order.

$$\begin{array}{c} 01101000 \mid 01010000 \mid 00111000 \\ \underline{00000000 \mid 01101000 \mid 01010000} \\ 01101000 \mid 00111000 \mid 01101000 \\ \underline{10110001 \mid 10110001 \mid 10110001} \\ 11011001 \mid 10001001 \mid 11011001 \end{array}$$

Image 3 – Decryption with XOR

The implementation of the simple symmetric information encryption algorithm, providing the protection of ciphertext based on gamma with feedback, as was stated above.

Asymmetric algorithms

The main difference between asymmetric and symmetric algorithms is the presence of 2 different keys for encryption and decryption. One of the most popular asymmetric algorithms today is RSA, on its example the essence of asymmetric encryption and decryption will be examined.

Implementation. RSA Algorithm:

1. 2 primes p and q are randomly selected; for security purposes, it is desirable that they will have at least 10 characters.
2. The module $n = p * q$ is calculated.
3. Calculated Euler's totient function. $\varphi(n) = (p-1) * (q-1)$.
4. The open exponent $1 < e < \varphi(n)$ is calculated. It is important that the open exponent and the Euler function in 3 points are relatively prime, that is, their greatest common divisor is 1, otherwise the keys will be wrong.
5. The closed (secret) exponent d is calculated $\varphi(n)$. $d = e^{-1} \, mod \, \varphi(n)$.
6. Public key - $\{n, e\}$, private key - $\{p, q, d\}$.
7. Ciphertext - $C = M^e \, mod \, n$, plaintext - $M = C^d \, mod \, (p * q)$.

Key generation.

1. The first thing you need to start key generation with is the choice of two prime numbers p and q. The smaller these numbers, the easier it is to crack the ciphertext, so the ciphertext will be more resistant to attacks if they are large numbers.

2. Then the number $n = p * q$ is considered, at this stage no difficulties should arise.

3. Euler's totient function, $\varphi(n) = (p-1) * (q-1)$. This function is necessary for calculating further open and closed exponents. There should be no problems with it either, since p and q are prime numbers.

4. The larger the open exponent, the higher the cryptographic strength of ciphertext, it should be $1 < e < \varphi(n)$.

5. The calculation of the secret exponent consists in finding the smallest element $k \in N$, in which the expression $\frac{1+k \cdot \varphi(n)}{e}$ will be an integer. The result will be this expression with a valid k.

6. After generating the main components of the keys, we can get them. Public key - $\{n, e\}$, private key - $\{p, q, d\}$.

Encryption process. Since encryption involves very large numbers, directly raising the number to a large degree and taking the remainder of the division will be very problematic due to the limited resources of the computer. The solution to this problem will be the use of the algorithm of fast modular exponentiation [4]. In the algorithm, the number of actions will be equal to the number of characters of the binary representation of the degree. The answer to the first will always be the number that we exponentiate. The second action corresponds to the second symbol of the binary representation of the degree, the third action to the third, and so on. If it corresponds to 1, then two sub-actions must be performed. In the first sub-action, the result of the previous action is taken, then it is squared and the remainder of the division by the original is taken. In the second sub-action, the result of the first sub-action is multiplied by the original number, which is exponentiated, then the remainder of the division by the original is taken. If it corresponds to 0, then you just need to square the result of the previous action and take the remainder of the division by the original. The solution will be the result of the last action. The implementation of the algorithm will work correctly only for $M \in [0; (n-1)]$, provided that the plaintext and ciphertext for 0 will be 0, for 1 will be 1 and for $n-1$ will be $n-1$, therefore it is recommended to use a number $M \in [2; (n-2)]$.

Let's consider it with a small example of the expression $43^{11} \, mod \, 15$. The binary representation of the degree consists of 4 characters, since $11_{10} = 1011_2$, therefore there will be 4 actions. For convenience, we compile a table:

Action	1	2	3	4
Binary number	1	0	1	1
Result	43	4	13	7

1. The answer to the first action will be the number 43.
2. The second action corresponds to the second character of the binary representation of the degree, namely 0.
   2.1 $43^2 \ mod \ 15 = 4$
3. The third action corresponds to 1
   3.1 $4^2 \ mod \ 15 = 1$
   3.2 $(1 * 43) \ mod \ 15 = 13$
4. The fourth action corresponds to 1.
   4.1 $13^2 \ mod \ 15 = 4$
   4.2 $(4 * 43) \ mod \ 15 = 7$

The answer is 7. Using this algorithm, you can also encrypt large numbers, which can't be solved directly.

Decryption process. For decrypting, it is more profitable to use the Chinese remainder theorem [5] to speed up the process. Since the secret key is used during decryption, we know all its parameters, namely $\{p, q, d\}$ and with their help we can successfully apply this theorem.

System $\begin{cases} m_p \equiv c^d \ mod \ p \\ m_q \equiv c^d \ mod \ q \end{cases}$, will have the only solution $x \equiv x_0 \ mod \ n$, where:

1. $n = p * q$
2. $x_0 = (m_1 * y_1 * c_1) + (m_2 * y_2 * c_2)$
   2.1 $m_1 = \frac{(p*q)}{p} = q, m_2 = \frac{(p*q)}{q} = p.$
   2.2 $y_{1,2}$ can be found from: $qy_1 \equiv 1 \ mod \ p$ and $py_2 \equiv 1 \ mod \ q$. The answer are numbers $k_{1,2}$, such as: $(p > k_1 > 0$ and $((q * k_1) - 1) \ mod \ p = 0)$ and $(q > k_2 > 0 \ and \ ((p * k_2) - 1) \ mod \ q = 0)$.
   2.3 $c_1 = c^{d \ mod \ (p-1)} mod \ p$, $c_2 = c^{d \ mod \ (p-1)} mod \ q$. These numbers can be found using the fast modular exponentiation algorithm discussed above.

Conclusion

Both methods are important in ensuring information security, although they have their advantages and disadvantages. Without them, it is impossible to imagine a secure exchange of information, as only these methods can provide it. Therefore, cryptography will always play a major role in data protection.

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Scientific publication

International Conference
"Process Management and Scientific Developments"

Birmingham, United Kingdom
(Novotel Birmingham Centre, November 14, 2019)

Signed in print 18.11.2019 г. 60x84/16.
Ed. No. 2. Order 182. Circulation of 500 copies.
Scientific publishing house Infinity, 2019.